

in memoriam

Prof. Egon Bauman 1923–2016

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Recollections of a memorable time

Egon Bauman (EB), who reached such a respectable age, had long maintained a great interest in Chemical Engineering education and served and promoted profession in many ways throughout his entire professional life. Looking back, I was happy that both Juraj Božičević, who infected me with Chemical Engineering virus and appointed me as teaching and research assistant at the Petroleum Engineering Department at Sisak, and EB, who was my first boss, have seen a promise in me as a young engineer. It was EB who, being a genuine mentor, gave me a push at the Chemical Engineering gate, encouraging me to make the decisive steps towards something that became my professional way. To avoid getting lost in the flood of reminiscence, let me mention just few of EB related past-times that stayed with me throughout my life.

First urging push I felt being his assistant came from his zest for collecting and reading relevant books and technical and scientific publications not readily available to us at those times. Besides a strong persistence this implied also a good command of English and German, and his example and fluency in this respect were a source of inspiration and strong motivation for me for a personal development along the same line, anticipating that a longer stay abroad is a prerequisite for adequate professional forming. This affected others too. Soon the Department in Sisak got depleted of young talent

eager to learn abroad. First who left (in 1972) was the youngest acquisition, i.e. freshly married Viktor (Zmago) Simončić (Karlsruhe, Germany), followed by Vladimir Mahalec (Houston, TX, USA), by me (Karlsruhe, Germany), then Želimir Kurtanjek (Houston, TX, USA), and finally Grozdana Bogdanić (Paris, France). Not to forget Dinko Sinčić, whose relation to Sisak was temporary, who went to Houston. Unfortunately, upon return, through many unhappy circumstances we never got a chance to work and act together.



Professors (from the left: Marin Hraste, Mira Legin, Egon Bauman)

For me, at very beginning, a literally eyes-opening step was a visit to AICHE in Frankfurt in June 1970 under EB's lead (Vladimir Mahalec and Željko Vrbanović, other two freshly appointed teaching and research assistants, travelled with me in my aunt's car), where I came into immediate contact and got fascinated with the state of

the art of chemical and process engineering in general, and in Germany in particular. AICHE, organized every three years, has become an important station on my professional journeys, and now, 45 years after my first visit, I am still enthusiastic about this unique and highly inspiring chemical engineering event, looking forward with great pleasure to attending (for the 14th time) and presenting a lecture at next meeting to be held in Frankfurt in June 2015. When on a trip to Frankfurt, I use to think of EB and those days.

It was a privilege to be EB's apprentice and a companion during my years at the Faculty of Technology at Zagreb in a long and exhausting struggle

for establishing our profession in an unfriendly environment. Nevertheless, strongly backed up by him and Marin Hraste I was able to climb rather smoothly up the academic ladder, and the Chair of Reaction Engineering (Zoran Gomzi, Stanka Zrnčević, Djurdja Vasić-Rački, and Ljubica Matijašević) provided a home basis and comfortable work surroundings for me. During these years I had a great pleasure and personal and professional satisfaction in co-operating with people I was able to learn from: Marijana Gjumbir (applied mathematical modeling and numerical solving), late Franc Šef (educational and practical aspects of process plant design) and Božidar Jazbec (applied process/equipment design in process plant retrofitting efforts). Throughout the years at Sisak and Zagreb, many colleagues and friends provided support and encouragement, but eager to do more relevant work professionally and to secure the existence for my family I had to go abroad again.

While I definitely left the home grounds (in 1987), EB continued with sustaining efforts to strengthen the position and promote Chemical Engineering discipline in Croatia. Most importantly, after his retirement he remained active and as a devoted first editor introduced and posted CABEQ on solid foundations.

In 1997, after 14 years of demanding effort he handed the editorship to Želimir Kurtanjek, another genuine chemical engineer who took the responsibility and, supported by publisher (late Ivan Butula and Danko Škare, both at their time Editors of "Kemija u industriji"), managed to keep this Zagreb-based Central European Chemical Engineering torch shining throughout all these years.

An editorial, written by Željko and me as guest editor [CABEQ 18 (2) 2004], on the occasion of EB's 80th birthday, provides a concise overview of his professional career and contributions including our personal reflections on his role and impact as well as a recollection of some episodes and curiosities from our professional past. What I learned to appreciate more and more with the time was EB's personal and professional attitude and how he always found a discrete way to emit positive waves to

his surroundings, widening and cultivating our views on the life and profession. Throughout his long standing professional life, he gave so much of himself to his students and younger colleagues. Many of these went on to have very distinguished careers in academia and industry. Indeed, a less visible but firm legacy.

Žarko Olujić

Mr. Bauman's Role – As Professor!

Honoured by the fact that, although for quite a short while, I was assistant to Professor Bauman – yes, his assistant, and not just an assistant under Professor Bauman, and thus had gained the opportunity to write something on the occasion of his great anniversary, I found myself in somewhat of a predicament. What should I dedicate to someone in

a scientific journal who deserves to be dedicated the result of several years of research, or at least a scientific spark capable of igniting a new scientific fire, when the time of my involvement in original science is long behind me.

I'm probably not the only one to say that Professor Bauman is an extraordinary person.

That is a fact! I'm sure that this could be supported by his many contributions to the development of chemical engineering in this region. However, what I wish to highlight are his other, in my opinion, no less important contributions that cannot be evaluated by citation indexes.

I'm referring to the qualities for which he deserves the title of PROFESSOR – in capital letters. He is a Professor of the older, more sophisticated style, a gentleman, deservedly addressed so because of his broad knowledge, and even broader need to encourage, help and give a chance to anyone showing even the slightest desire to learn more.

I was one among those for whom he pushed the door wide open and encouraged to study further. Having stepped through that door, I met another professor, my PROFESSOR. In the same way as he had been PROFESSOR to my many colleagues who



Promotion of new chemical engineers at Faculty of Technology, Department in Sisak, in spring 1975. From the left: Prof. Ante Markotić (vice dean), Prof. Egon Bauman (dean) and Prof. Darko Maljković (vice dean).

remained with him in their scientific and teaching careers, so had professor Riekert become mine.

Shortly after I took a different path, never straying far from the path he had shown me. I had the opportunity to apply my engineering knowledge in practice – mainly related to the environment. Soon I realized that investments in the private sector were not the same as investments in the public sector. A private businessman considers thoroughly whether his particular investment is economically feasible and how to secure his market share and a return on investment amidst the fierce competition. The market is an objective evaluator of feasibility. Engineers working in the private sector are required to shoulder great responsibility. They have to propose technically and economically feasible solutions; otherwise there will be no investment. The amount of available funds is known and solutions are proposed accordingly.

Public investments, however, may differ in the decision-making process from those in the private sector. In the public sector, where the concern for properly invested funds should be even greater, the mechanisms of objective control such as the market are absent, often due to political influence and pressure of related stakeholders. In many cases, the approach to solutions is less professional, since errors and losses are easily socialized and covered up far from the public eye by decisions of political quorum.

Partly to blame for such behaviour are the engineers, the experts who, with their engineering (mis)knowledge, often support realization of unrealistic wishes. The engineer working in the public sector would have to be like a physician; an expert – a physician of authority. One to whom you don't go for a mere antibiotic or a bunch of useless medication.

I have met many who instead of behaving like engineers-physicians, they behave like engineers-charlatans. With so much ease do they give out the prescriptions demanded by those to be treated (read: unrealistic bases for a project in the public sector), forgetting that their duty is to heal the patient (read: to give a technical solution appropriate to the economic and organizational strength of the community). The patient (read: those managing public funds – politicians) is sometimes a hypochondriac (read: demand only the very best merely to leave a good public impression. Such an example is set by the economically poorer EU states seeking application of environmental solutions that are applied by only two or three of the richest states, as if it had nothing to do with the economic strength of the community), demanding something that from the perspective of objective professional standards is unacceptable.

As an engineer, I try not to behave like a charlatan, and if it sometimes turns out that way, it's not premeditated. I try doing things in a way that would be best for everyone, although in societies where the acquisition of material goods is a socially accepted guiding principle, it is difficult to resist the opportunity of being a charlatan at someone else's expense.

How much is Professor Bauman to blame for this? Actually, a lot! It's as if in that short time I spent near to him, he instilled in me the odd compulsion not to be an engineer-charlatan.

Over his many years of activity, a good number of persons were lucky enough to have had the opportunity of working alongside him, the PROFESSOR. It seems to me that selfless professors, such as he is, are becoming ever rarer. Or is it just my imagination? His contributions, especially those that cannot be evaluated by a citation index, could be incentive to many, and an indication that it is worth being a true PROFESSOR!

Lucky are they to whom a PROFESSOR happens! I'm one of them. Professor Bauman, thank you for the time you spent pushing me in the right direction.

Viktor Simončič

Prof. E. Bauman was the constant source of energy, fueling our desires to learn, and making sure that we understood that the world body chemical engineering was within our reach. He encouraged us over and over to experiment, try new things, and to reach for the stars. His vision was to send a number of young people to diverse places and have them all return with different areas of knowledge that collectively would create a qualitatively new chemical engineering community in Croatia. Most of all, he provided never ending optimism that we can all work together and create a team that would move things forward at an accelerated pace. Looking back at the last 40 years, it is clear that his vision has become a reality.

Vladimir Mahalec

Prof. Egon Bauman, CABEQ and related topics

On the occasion of 90th birthday of Professor Egon Bauman, first editor-in-chief of Chemical & Biochemical Engineering Quarterly, as one of few direct participants of the events which led to its launching I feel that is my turn to give an "eyewitness account" and give some remarks concerning current state of affairs.

To understand the reasons, circumstances, significance and time in which CABEQ came into exist-

tence, one has to take into account the situation concerning chemical engineering education and research in sixties, seventies and eighties of the last century in Croatia and the surrounding countries. As a student at that time at Faculty of Technology in Zagreb I was, as anyone else leaning toward engineering aspects of the subjects taught, overwhelmed by technological nature of the curriculum best illustrated by certain courses which required literally learning by heart description of certain industrial technologies. For that reason the possibility of enrolling in Graduate Study in newly founded department of Zagreb Faculty of Technology in Sisak, city 50 km from Zagreb, was a rare opportunity for everybody interested to hear and learn something where mathematical and physical methods back the analysis of the chemical processes so much in contrast to the spirit of everything learned before in Zagreb. The Graduate program was initiated by two "outcasts" from Zagreb Faculty of Technology Juraj Božičević and Egon Bauman. The program included mathematical modelling, dynamic programming, computer programming, transport phenomena and similar subjects. One of the textbooks was freshly translated *Cybernetics in Chemistry and Chemical Industry* by V. V. Kafarov. J. Božičević managed to organize visit of D. D. Perlmutter professor at Penn State who published in 1972. groundbreaking book *Stability of chemical Reactors* and gave a few truly inspiring lectures. The Graduate School in Sisak attended among others V. Mahalec, Ž. Olujić, Ž. Kurtanjek and all of us continued chemical engineering education in USA or Germany.

After returning home in late seventies the situation regarding chemical engineering teaching did not change and fresh young PhD's were faced with reluctance from people which held corresponding positions and were decision makers at the Faculty of Chemical Technology regarding the engagement of possible troublemakers. For that reason various choices were made by the group members including the return of V. Mahalec to USA and the danger of somebody's changing the established order was successfully removed. I have chosen the career in the industry so that my attempts to change something were directed toward Union of chemists and technologists of Croatia (today Croatian Society of Chemical Engineers), the Chemical Engineering Section which I led for number of years. We organized numerous lectures by prominent people from abroad (J. Prohaczka, V. Vaclavek, J. Levec, G. Baldi), the most significant event being the two-day summer school *Multiphase reactors* with, M. P. Duduković (USA), G. Baldi (Italy), J. Levec, S. Waldram (UK), S. Zrnčević and D. Sinčić as lecturers organized at Brioni Islands. Also we initiated

establishment of Yugoslav committee for Chemical Engineering. J. Levec (Ljubljana) was elected president and executive council members were V. Karanović (Tuzla, B&H), G. Jovanović (Belgrade), F. PopovskaPavlovska (Skopje),

A. Dudukovic (Novi Sad) and D. Sinčić (Zagreb). The idea was to transfer positive vibrations from Italian Austrian Yugoslav Chemical Engineering conferences to all universities in former Yugoslavia and wishfully encourage concrete cooperation. Namely, situation regarding status and importance of chemical engineering was very much similar everywhere in Yugoslavia. In situation like that the possibility to publish the papers of ChE nature and promote its significance was crucial. The journal *Kemija u industriji* (KUI) was the only serious option whose Editor-in-chief was I. Butula. I met late professor I. Butula in Pliva after returning to that company from USA. He was one of the leading chemists in Pliva, who spend certain time as a research director in one German pharmaceutical company. There he met professor W. D. Deckwer (one issue of *CABEQ* was dedicated to him at the time of his passing) the well known two and three-phase reactors expert and author of the book *Bubble column reactors* who became his personal friend. On the occasion of his death, Professor Butula, being an industrial chemist, said that thanks to him he came to realize the importance of engineering discipline for the development of industrial chemical processes (unfortunately many chemist do not see that connection even today). For that reason Professor Butula naturally supported and participated in all activities of chemical engineering nature. From editorial board of KUI the dedicated group (I. Butula, E. Bauman, D. Sinčić, E. Beer) was formed who started discussing possibilities of creating the most suitable place for communicating various activities of chemical engineering nature including papers, research projects, industrial projects taking place in Croatia and the whole region. The idea was first to create an ChE annex to KUI, but through numerous discussions we made the decision to try to publish a new journal. Here the most important was the role of professor Butula since he accepted the obligations to do everything to secure financing in the first place. With his experience as KUI editor-in-chief he was familiar with the needed tricks of the trade to keep the journal coming out. I have engaged the designer from the company I was employed at that time in Chromos to do the cover design and after the discussion of various proposals the cover which held for 25 years was chosen. There was also discussion about the journal title. Although all of the people involved in the whole undertaking were chemical engineers, I suggested the name *CABEQ* for several reasons. First, we wanted to at-

tract larger number of interested people since chemical engineering field was underdeveloped in the whole region. In addition to that, biochemical engineering was alive in industry: in Pliva, pharmaceutical company, under the leadership of Professor Vera Johanides large fermentors were designed for antibiotics production. Unfortunately, something like that never happened in chemical industry in Croatia and all of the plants erected in those days were of foreign origin. For instance, construction of large petrochemical plant in seventies at island Krk was based entirely on the technology from abroad and the most domestic chemical engineers were able to achieve was running the plants. Besides this, I was working on my Ph.D when my mentor J. F. Bailey started writing the book he published with D. F. Ollis (*Biochemical engineering fundamentals*). He showed extensively how principles of chemical engineering are easily adapted to biochemical engineering so that main difference was that objects dealt with are of living or dead nature. It was also envisioned that the journal would be the official gazette of Yugoslav Committee for Chemical Engineering as well as Austrian and Italian counterparts. The result was somewhat different: Austrian counterpart became Austrian Association of Bioprocess Technology; Yugoslav Committee did not continue with the enthusiasm leading to its inauguration and ceased to function in few years because of dissolution of Yugoslavia while no Italian counterpart ever joined. The aspiration was also that industry of all countries involved will recognize the significance of the journal which was planned to be not only the place for publishing scientific but also professional papers as well as forum for industrial activities and products presentation. The financing of such an undertaking was also envisioned to be joint effort, but in reality it was left to Croatian editor(s) and their ingenuity. The journal is still published constantly increasing its impact factor, which is by all means great success. Sadly however, the most important of original plans never came true. The industry from this region never saw the journal as an opportunity to reach the potential new customers or to present its accomplishments. The most significant failure with the respect to original plans and hopes is that domestic schools do not recognize the papers published in this journal as worthy of their CV when applying for particular the position in the teaching hierarchy.

All in all, I want to state clearly: the whole undertaking of CABEQ launching was an off institutional endeavour emerged and realized in Zagreb, not the result of some inter-faculty cooperation as occasionally erroneously claimed since in this field it did not exist. It was led by individuals who shared

mutual understanding and wish to improve their profession in this part of the world. Faculty of Technology in Zagreb in particular, just ignored everything happening considering it more threat than opportunity. In my opinion the institutions of the region (universities as well as industry) never fully appreciated the opportunities which this journal offered. For instance, the Editorial board of CABEQ was never invited by any corresponding Faculty, let alone University in the region to discuss ways and means of taking full advantage of having such a journal.

Having in mind the points I have mentioned above, it is my strong belief that it is time to reconsider every detail of its present status in order to (re)define its future. We must dare to ask the question what we (who is we?) did, do and shall gain by putting so much effort and money in the project which appears to be more welcome in China, Iran, India contributing to their chemical engineering development than in this country and this region. In this era of internet, European projects and all other ways and means of establishing cooperation the role of such a journal is naturally totally different than in times of its launching. Is there any sense in promoting regional cooperation? Is there any way for appropriate adjustments which would revive originally envisioned goals and benefits if they make any sense nowadays at all? What are the conditions for our schools to value papers published in CABEQ to become worth of their full respect? What should be done in order to achieve the conditions that publishing in CABEQ becomes esteemed success rather than second rate occurrence? If we do not find the right answers the impact factor increase will remain the only focal point of its issuing as for any other publication and in my opinion that is not enough to justify all the efforts and money put in existence of this very journal.

Dinko Sinčić

I met Professor Bauman more than forty years ago when he was still Professor at the Faculty of Chemical Technology, Sisak, University of Zagreb. Over the years, particularly when he moved to Zagreb and became Professor at Faculty of Food Technology and Biotechnology, I got to know his warm personality and modesty. When I needed support in drafting my doctoral thesis, his was always ready to help with discussions and tips. Finally, he agreed to be a member of the committee for the defense of my PhD thesis, which was a little out of his area of chemical engineering. As I started toward biochemical engineering, he did not hesitate to support me, thus indicating me in the literature and purchasing it for me. The first book he had given

me was B. Atkinson "Biochemical Reactors" London: Pion, 1974. He encouraged me to go abroad for my specialization and wrote me a letter of recommendation without considering the risk if I should not succeed. Upon my return, he supported my entry in the editorial board of the *Chemical and Biochemical Engineering Quarterly*. He also supported me at every stage of my academic career advancement in getting participation in committees for promotion and evaluation. After he had retired, I would come across him very often on my way to work, when he would be walking his dog. He would always stop and ask about my scientific progress, my coworkers, issues on which I was working – everything that interested him. All my encounters with Professor Bauman I remember as very pleasant and friendly, and him I remember as a person with very broad horizons and always ready to give sound advice.

Đurđa Vasić-Rački

Tribute to Professor Egon Bauman on the occasion of his 90th birthday

I met Professor Bauman in the early 1970s when I got a position as assistant professor at the Zagreb University, Faculty of Chemical Technology in Sisak. At the time, Professor Bauman was the Dean of the Faculty, and I had been preparing for a doctoral study at the Institut Français du Pétrole in Paris, France. Professor Bauman warmly supported my plans, for which I have always been grateful to him.

Today I have the honour and pleasure to recall these days as an active member of the Scientific Committee of the International Congress of Chemical and Process Engineering (CHISA), a biennial scientific meeting held in Prague, Czech Republic, that usually gathers about 1000 participants from 60-odd countries all over the world. In 2014, *Chemical & Biochemical Engineering Quarterly (CABEQ)* became one of the official journals of the CHISA Congress [www.chisa.cz/2014], joining the eminent company of high-ranking international journals, including *Chemical Engineering and Technology* (John Wiley), *Catalysis Today* (Elsevier), *Chemical Engineering and Processing: Process Intensification* (Elsevier), *Czech Journal of Food Sciences* (Czech Academy of Agricultural Sciences), and *Journal of Food Engineering* (Elsevier), that were to publish congress communications of all participants as full-length papers. It is expected that this list of journals will remain for all the forthcoming biennial events.

This inclusion of CABEQ wonderfully coincided with the 90th birthday of the esteemed Professor

Egon Bauman, who was its first editor-in-chief. Looking back at the last 27 years of the journal, I am happy to see that Professor Bauman's visions have come true.

Grozdana Bogdanić

Prof. Egon Bauman, PhD., came to the Faculty of Food Technology and Biotechnology, University of Zagreb in the nineteen-eighties. He became head of the Department of Unit Operations, today's Laboratory for Unit Operations.

It's hard to write about a man with whom I have spent so many years and who, in the scientific, professional, and overall educational sense, was so much ahead of most of his contemporaries at that time. His arrival marked a new start for this department, today laboratory. Especially noteworthy is his contribution to the development of scientific research and international scientific cooperation, particularly as coordinator of a project realized in cooperation with the United States of America regarding the drying of various food products. He worked on several other similar projects related to cooling and storage of food products. Also significant is his contribution as a public figure. Namely, he was a member of the Croatian Parliament, and Dean of the Faculty of Food Technology and Biotechnology, University of Zagreb.

Branko Tripalo

My recollection of Prof. Egon Bauman goes back to 1971 when I became a teaching assistant to Prof. Juraj Božičević in the Laboratory for measurements and process control at University of Zagreb, Faculty of Chemical Technology, departments in Sisak, where at that time Prof. Egon Bauman was the dean of the department. Soon I became friends with my colleagues Žarko Olujić and Viktor Simončić who were Prof. Egon Bauman teaching assistants. Prof. Egon Bauman gave to all of us, young teaching assistants, his view of modern chemical engineering as an industrial discipline but also as an independent scientific field. His Laboratory for process unit operations was always open for all of us, and most importantly, he encouraged us to follow modern literature including text books and numerous international journals. He excelled with his open approach to different scientific fields, cooperation with industry and friendly communication among faculty members and especially with young teaching assistants. Our decision to continue with our doctorate level studies abroad was a result of Prof. Egon Bauman encouragement to view chemical engineering science which develops through international cooperation. Most of us finished post-

graduate studies in chemical engineering at distinguished universities in Europe and USA, and later some of us became professors in various and related fields in chemical engineering. The international aspect of our faculty chemical engineering cooperation soon became firmly realized in 1983 by with appearance of Chemical and Biochemical Engineering Quarterly journal as a part of Alpe-Adria EU cooperation between chemical engineering departments of universities in Zagreb (Croatia), Graz (Austria), Ljubljana and Maribor (Slovenia) and Trieste (Italy). Prof. Egon Bauman was the Edi-

tor-in chief for first 14 years, after which I was selected to continue his work. Now, at the moment of his 90 year celebration, I hope that we can look back at the last 40 years and see that the main ideas and objectives have been realized as a result of the initial views and objectives set by Prof. Egon Bauman.

Želimir Kurtanjek

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