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HENRYK GÓRECKI – THE MAN WHO MADE AGH, A UNIVERSITY ORIGINALLY KNOWN AS THE ACADEMY OF COAL AND STEEL, FAMOUS IN AUTOMATION, ELECTRONICS, IT, TELECOMMUNICATIONS AND BIOMEDICAL ENGINEERING

HENRYK GÓRECKI – CZŁOWIEK, KTÓRY AGH, UCZELNIĘ PIERWOTNIE ZNANĄ
JAKO AKADEMIA WĘGLA I STALI, UCZYNIŁ SŁAWNĄ W AUTOMATYCE,
ELEKTRONICE, INFORMATYCE, TELEKOMUNIKACJI I INŻYNIERII BIOMEDYCZNEJ

Professor Henryk Górecki, about whose achievements I would like to tell in this paper, was the prominent scientist and engineer, graduate and worker of AGH University of Kraków for all His life. AGH is one of the greatest Polish technological universities. Prof. Górecki performed great transformations in the history of the international science, made the extreme contribution to development of Polish engineering, conducted the radical changes in his *alma mater* and, also, created my own career and life. Therefore, when on December, 20, 2022, I had the occasion to speak at his open grave, I commenced from the following words:

– It is the end of certain epoch.....

It is true that together with the passing away of Prof. Górecki, a certain epoch has been ended in the history of AHG and in the domain of automation.

We used to speak about one of the Polish Kings that he “found Poland in wood and left it in brick”. We may say about Professor Górecki that he found the Electric Department of AGH as being highly mining-metallurgy-oriented unit and left it as a department famous of its achievements in respect of automation, electronics, computer science, telecommunication and biomedical engineering.

He performed it owing to extreme wisdom, patient work and persistence in his deeds.

When he graduated in 1950, he commenced to work at the Chair of Mining Electrification. He defended his doctoral thesis in 1956 and obtained the post of associate professor and began to



Fig. 1. Prof. Henryk Górecki with prof. Ryszard Tadeusiewicz, 2017
Source: author's archive

implement his great ideas. In 1957, he founded the **Department of Automatics Backgrounds**. At the beginning, the mentioned unit had only three employees but had the enormous intellectual potential which made that as early as in 1960 it became developed and transformed into the **Chair of Automatics and Industrial Electronics**.

For Professor Górecki, the word “impossible” did not exist. When he encountered the obstacles, he tried the unusual but ef-

fective solutions. To organize the practical work of the students in contact with the advanced automation and electronics systems, Professor Górecki obtained the bomber from the army. The mentioned scrapped airplane was full of modern (as for those times...) electronic devices and automatic systems. The co-workers of Professor Górecki disassembled patiently the mentioned elements and constructed the successive laboratory posts in which the students acquired practical competences, developing the theoretical knowledge which was supplied by Professor Górecki during his lectures. We should mention that the level of the mathematical advancement of the discussed lectures was very high.

To organize the student and scientific laboratories on the basis of the mentioned above bomber (*inter alia*, of course), there were necessary the appropriate rooms. There was always a lack of such place at the quickly developing department of AGH. To solve the problem, Professor Górecki obtained the corridor in the connector, joining the pavilions B1 and B2. Today, the mentioned area has been completely rebuilt and there is a lot of place there; it comprises the greatest lecturing hall of the faculty (H24). But during the start of automation and electronics, there was really only **the corridor** in a narrow passage where the laboratory tables were arranged against the walls. The research work and student practice were carried out just there.

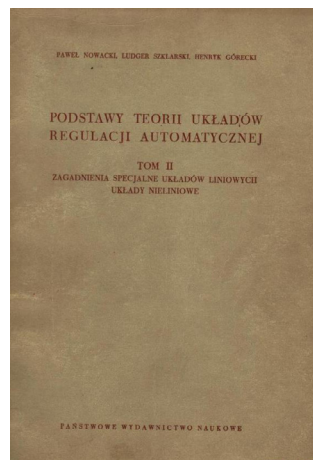
When the army saw such good utilization of the bomber, they offered a scrapped tank to Professor Górecki. The mentioned proposal was not utilized as the advanced systems of automation and electronics in tanks were to appear in the tanks in decades later so it could not give any profit during the discussed period.

Moreover, at the end of the sixties of 20th century, the students had also another device at their disposal. It was imported by Professor Górecki from DDR (German Democratic Republic) and was called Regelkreis. We named it "water brain". It was a system in which it was possible to program a dynamics of different object of steering (control) and models of different regulator; the dynamic processes, occurring in the whole system, could be observed in a form of flows of stained liquids in transparent pipes. It gave the similar possibilities as computer stimulation gives nowadays. The classes were so interesting that we did not paid attention to the persons who passed constantly from B1 to B2 in both directions (because the function of corridor was all the time maintained).

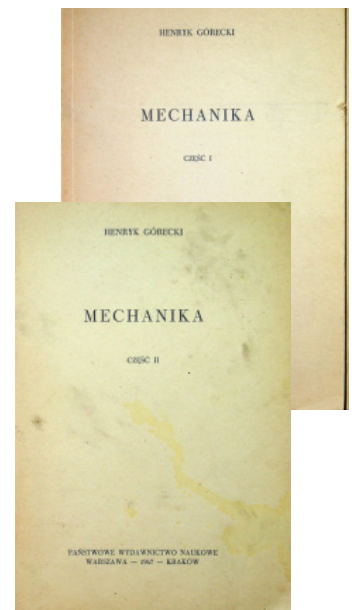
I constructed my electronic dog just at the discussed place; it was equipped with the elements of AI, what was the subject of my MSc thesis.

When I already allowed myself to insert here the personal elements I would like to add that when I passed (1965) the entrance examination to AGH, I was writing it at the lecture room at the 3rd floor of pavilion B. At the vicinity, there were the doors to paradise which I wanted so much to enter. Good luck made that my dream became true!

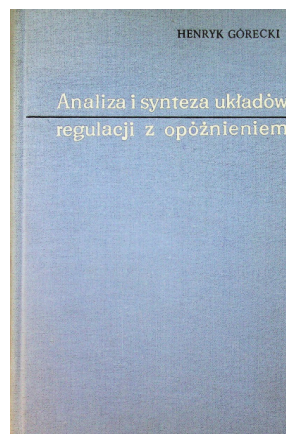
The Chair of Professor Górecki was developing and had more and more scientific successes (it will be discussed later on) and in 1969, it became transformed into Institute of Automation



Paweł Nowacki, Ludger Szklarski, Henryk Górecki, *Fundamentals of the theory of automatic control systems*, Polish Scientific Publishing House, 1962

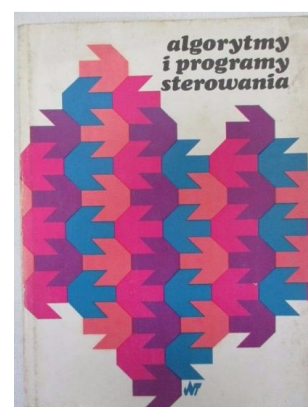
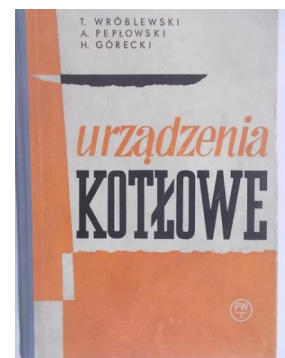


Henryk Górecki, *Mechanics, Part 1 and 2*, Polish Scientific Publishing House, 1967



Henryk Górecki, *Analysis and synthesis of the regulating systems with delay*, Polish Scientific – Technical Publishing House, 1971

Teodor Wróblewski, Adam Peplowski, Henryk Górecki, *Polish Technical Publishing House*, 1960



Henryk Górecki, *Algorithms and control programmes*, Polish Scientific – Technical Publishing House, 1980

Henryk Górecki *Optimalizacja systemów dynamicznych*

Henryk Górecki, *Optimization of dynamic systems*, PWN (Polish Scientific Publishing House), 1993

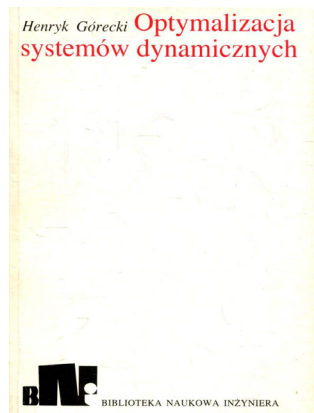


Fig. 2. Book publications by Prof. Henryk Górecki

and Industrial Electronics (IAEP). In the same year, I managed to enter the experimental student group where we acquired the knowledge in the field of automation and tele-mechanical engineering. I was happy as I could listen to the lectures of Professor Górecki. At his request I recorded his lectures in a written form and consulted the context with Professor as it was to be a new handbook of automation. Professor wanted to publish it as a successive part of monograph: "The basis of the theory of automatic regulation systems" (the authors of the first two parts of the monograph were: Paweł Nowacki, Ludger Szklarski and Henryk Górecki).

The consultations of the recorded lectures were somewhat difficult as when Professor was present in his cabinet, the entrance to his room was guarded by his secretary, Mrs Isabel (Zula) Zawadzka.

– Professor is resting! – She used to say.

It was a barrier impossible to be passed.

I was not so bold as to bother Professor at his house and the short exchange of opinions at the corridors was not sufficient to form finally the whole range of the topics of Professor lectures, being based upon the theory of control, optimization and automatic regulation. In effect, the mentioned book based on my records from the lectures by professor Górecki was not created but the records were often used by the numerous students who prepared themselves to the examinations. They appreciated the mentioned elaboration and used them for several years.

Allow me also to refer once again to my own experiences as they are – in my opinion – a very meaningful evidence of the professor's silhouette: what man he was and how he acted.

Similarly as the majority of my colleagues from the mentioned above group, specializing in automation and tele-mechanics, I wanted very much to work in the Institute, guided by Professor Górecki. I evaluated my chances as being very small because my "competitors" derived from the eminent Cracow professor families whereas I was a son of accountant from Myślenice...

So, I was much surprised when after the defence of my MSc, during which I presented the mentioned above electronic dog, Professor Górecki came up to me and said:

– "Richard, I have already sent information that you applied"

– "Professor, where I could apply?" –

– "Well, for work at my Institute".

It was the happiest moment in my life!

Indeed, I checked it later in HR department; there was the official letter signed by Professor Górecki that Engineer R.T. M.Sc., applied for work on 1.04. 1971. But the diploma for MSc. is dating back to 2.04. 1971.....

The further successive run of achievements and successes of Professor Górecki may be described by me as first-hand information as assistant, adjunct, associate professor and professor at the Institute guided by professor, Deputy Director of the Institute and, later on his successor to a certain degree (after retirement of Professor Górecki, I became the Head of his Chair).

I would like to stress the fact that the whole work of Professor Górecki was characterized by a high level of mathematic advancement. His scientific papers were especially highly advanced

and refined in respect of mathematics but the lectures for the students were also found at the high level what made what he (technician!) became the member of Polish Mathematical Society and American Mathematical Society. He had a person who helped him in solving difficult mathematical problems. It was the friar, Benedictine from Tyniec, priest professor Andrzej Turowicz whom Professor Górecki dared to invite for the lectures for his students and later on, made him the regular lecturer at the Doctorate Student Centre, created by the Professor. (1969). In the sixties and seventies of the XXth century, it require a great courage as the Communist party, being very strong in those years at AGH, became furious when perceiving the lecturer in habit; Professor Górecki resisted, however, the pressure and owing to it, his students and doctoral candidates had the best mathematical preparation in Poland!

The innovative conceptions and organizational successes of Professor Górecki made that the Institute was quickly developing and constantly extended the range of the research and didactic topics. In 1972, the University Centre of Computer Science of AGH was included into his Institute. It was founded earlier (1966) but it did not function well as a separate unit. Professor Górecki restored it and brought to the state of splendour, lasting until now.

In 1973 a series of transformations was commenced and it brought about generation of the whole series of scientific units within the Institute of Professor Górecki. After obtaining the appropriate degree of "maturity" (under the guidance of Professor Górecki), they were separated and created the independent chairs and institutes, giving a meaningful contribution to the Faculty and the total University. The first step towards this direction was made by independence (1973) of the group of the employees of IAEP who created the self-governing **Institute of Electronics**. At the same year, Professor Górecki organized the **Independent Unit of Biocybernetics** and entrusted me with the function of the head of it. At present, the Faculty includes the Chair which strongly develops biomedical engineering.

After departure of the electronic engineers, the Institute of Professor Górecki adopted the name of **Institute of Computer Science and Automatics** (until 1980). In 1980, the computer science-related part of the staff of the Institute was separated and created the Chair and later on, **Institute of Computer Science**. Due to the fact that the majority of my publication concerned information science problem, there was a general expectation that I would go to the Chair of Computer Science but I remained faithful to Professor Górecki. Our group (being still most numerous at the university) adopted the name of **Institute of Automatics, System Engineering and Telecommunication**. In 1980 I was nominated to the post of Deputy Director of the Institute so I had the direct and indirect impact on its fates. Professor Górecki anticipated the effects of telecommunication development as early as in 1976; therefore, since the mentioned year, one grade of the doctoral students received the education oriented to telecommunication. The mentioned grade yielded, *inter alia*, the long-time manager of Institute of telecommunication and former Vice-Recto of AGH, Prof. Andrzej Pach, and, also, the known business-

man, creator and President of Comarch company, Prof. Janusz Filipiak.

In 1986, according to the expectations, the Chair of Telecommunication was separated from our Institute. Prof. Górecki decided that our group would be called since that moment shortly: Institute of Automatics, as not to make any further divisions.

The change of the name from "Institute" into the "Chair", as being introduced on the administrative way in 1992 did not change anything. At the moment of the mentioned change, the Chair had 12 titular professors, 8 university professors and 4 doctors with habilitation (PhD) and 49 assistant professors (adjuncts in Polish) (not mentioning other employees, 116 persons in total). It was a resource from which it was possible to create at least few chair units. But the ties between the people, generated owing to the personal authority of Professor Górecki caused that the Chair maintained its integrity for many years although it was the greatest chair at AGH and different external pressures were aimed at its division.

I took over such integrated Chair from the hands of Professor Górecki in 1997. Later on, I separated – with awareness and purposefully – the **Chair of Applied Computer Science** and then, I helped to create the **Chair of Biocybernetics and Engineering in Biomedicine** and to transform the remaining part into the **Chair of Automation and Robotics**. I am not going to comment the mentioned undertaken measures as it is not connected with the activity of Professor Górecki (although it was the consequence of his far-reaching decisions).

After this brief review of certain organizational achievements of Professor Górecki, I would like to focus on the Scientific Authority of my Teacher and Master. It cannot be expressed by the bare fact, figures or dates.

All those who followed the development of Polish automation, and, partially also computer science during the recent 50 years know that there are not many persons whose contribution to the development of the mentioned domains would be so commonly recognized and appreciated as the achievements of Professor Górecki.

I could quote here a long list of the problems which were solved by Prof. Górecki, the statements which were proven by him, the problems which were discovered and the automation systems which were constructed by Professor. Such listing would be readable and understandable only for some specialists who remember still the elements of automatics based on the analogue systems as the most of the achievements of Professor Górecki occurred in the second part of the 20th century when the digital technology was not so much developed and popular as now. Therefore, in spite of the fact that the essence of the discussed achievements still remains actual and they are located in highly abstractive regions of the controlling theory and remain true, irrespectively of the progress which has been made in their practical application, due to the evident reasons, the discussed theories are weakly referred to the most advanced problems of automation dating back to the end of the second decade of the 21st century. Due to the mentioned above reasons, they are not always understandable for the current specialists. Hence, at the

beginning of my funeral speech, I said about the **end of a certain epoch**. The approach of Professor Górecki, based upon the profound mathematic studies, the final result of which is transferred not earlier than to the implemented automation systems, is not longer used today in practice. At present, we employ the methods of computer simulation, digital support of decision making, the methods of machine learning (especially of the so-called profound, deep learning) and the total developed CAD methodology (CAD = Computer Aided Design). Meanwhile, Professor Górecki developed automatics based not on artificial intelligence (AI) but on the brain effort of appropriately educated engineers.

It is not the proper place to come into details and refer to the specific results of the scientific researches of Professor Górecki but a short outline of the most important achievements would allow placing his activities in the light of the achievements of other researchers.

All know how difficult and important problem is the **phenomenon of instability** in automatic control in the closed systems. It is manifested most frequently in the situation when in the controlled system, the burdensome self-induced vibrations or non-controlled aperiodic processes occur; they lead to "escape" of the object of control and often to a final catastrophe. The mentioned phenomena are extremely dangerous and therefore, the problems of instability and the methods of its control are studied all over the world, constituting one of the most important challenges of the contemporary automation. It is nice to state here that professor Górecki made a meaningful creative contribution to this difficult and interesting "front" domain of automation. He solved some fundamental problems, with the utilization of very advanced mathematic methods.

It is worth noting that Professor Górecki performed his deeds as early as in the sixties that is, really pioneering period for automatics and therefore, he is cited everywhere and indicated as one of the creators of the background on which the whole domain of the contemporary automation and robotics is based. The achievements of Professor Górecki were the basis for the whole generations of automatic engineers and His pupils and students gained the advantage at the beginning of their scientific career as compared to other scientists due to the position of the Master. It resulted in establishing and wonderful development of the unique scientific school at AGH in Kraków.

I will dedicate some attention to the mentioned above school, being the true *opus vitae* of professor Górecki in the later part of this paper. At this moment, I would like to indicate the further scientific results which are the most known scientific achievement of Professor in the international scale.

All automatics engineers know that the most difficult and complex problems of automatic control (steering) appear in a special class of automation systems and namely, in the systems of regulation covering the objects with **delay**. The objects of such type are especially "thankless" in all attempts of automation, as the delay causes that the consequences of regulation are not visible at once and the control system must – to a certain degree – steer the supervised object "in blank", anticipating its future behaviour. It rises enormous practical difficulties which are en-

larged by additional big mathematic problems in the attempts to analyze and synthesize such systems as for their description it is necessary to employ special classes of differential equations with the deviated argument. It is also necessary to define differently the initial and edge conditions, and moreover, overcome the difficulties consisting, *inter alia*, in the fact that the attempts to apply classical engineering calculation methods in the mentioned systems cause in certain cases the absolute impossibility to solve the obtained equations and in other cases, there was the appearance of infinitely many solutions.

The mentioned above problems caused that the researchers and scientists dealing with the analysis and synthesis of steering systems tried to avoid, for many years, the problems connected with systems with delay. It resulted in many practical problems in the field of application of automation during the attempts to automate certain processes e.g. in papermaking factories or in metallurgical plants. The mentioned problems appeared often in practice. Therefore, the obstacles which made other researchers discouraged were the challenge for Professor Górecki. He was the first in Poland and one of the first scientists in the world who undertook the intensive theoretical work, connected with the development – in fact, as a single person – of scientific methods for construction of automatic regulation systems, including just the most inconvenient objects. Professor Górecki as the first recognized the difficulties occurring in the discussed area and as the first suggested the solutions which have been until now employed and are permanently connected with his name. Profes-

or Górecki published his achievements in the field of analysis and synthesis of automatic systems for the objects with delay in the most known scientific periodicals, submitted them during the greatest scientific conferences (he was often invited as the lecturer). Moreover, he collected and published his work in a form of few book monographs which were distinguished by the highest awards and were also translated in other countries. No wonder that the papers of Professor Górecki in the field of theory and technology of steering of the objects with delay are known today and cited all over the world. Professor is known and highly respected Person in the total described domain of knowledge which meanwhile – just owing to his work – has been developed and hardly established from the scientific viewpoint.


The achievements of Professor Górecki in respect of optimization were also extremely meaningful for the development of automation. In the 60ties the mentioned elaborations indicated the completely new possibilities of constructing the regulation systems which ensured optimum and adaptive steering; in the 80ties and 90ties, they undertook the extremely important and (again!) difficult problem of multi-criteria optimization.

As it is known, typical problems of optimization for which Professor Górecki elaborated numerous mathematic methods in the 60ties, consist in automatic selection of the best steering, with the simultaneous preservation of all limitations. The example of the task of such type may be the task of transferring of any massive object from one place into another at minimum time, with the preservation of all limitations, resulting from the maximum

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Special Issue
on "Dynamic Systems, Stability, Controllability,
and Automatic Control"

Dedicated to Professor Henryk Górecki



this issue is the paper written by professor W. Mitkowski entitled "Dynamic Properties of Metzler Systems" related to the similar works of Professor Górecki. Analysis of dynamic systems has several viewpoints. However, one of the most important aspects of the analysis is discovery of the stability conditions. This special area of interest, evident in numerous scientific works by Professor Górecki, is represented in this issue as a collection of four papers originated by the scientists from the Białystok University of Technology. First and the most important in this section, is the paper by professor T. Kaczorek entitled "Practical Stability of Positive Fractional Discrete-time Linear Systems"; Next, let me recommend to you two papers by professor M. Białoszewicz: "Stability of Linear Continuous-time Fractional Order Systems with Delays of the Retarded Type" and "Simple Stability Conditions for Linear Positive Discrete-time Systems with Delays". Last but not least in this group is the paper written by doctor A. Ruzewski "Stability Regions of Closed Loop System with Time Delay Inertial Plant of Fractional Order and Fractional Order PI Controller". This paper, however, originates from the theory of stability of dynamical systems, but leads to practical applications of the theory in industrial stabilization problems.

Stability of dynamic systems is closely related to the concept of the system controllability. This area of interest is represented by professor J. Klamka's paper entitled "Constrained Controllability of Semilinear Systems with Delayed Controls". The paper is also related to yet another area of professor Górecki scientific activities – the control of the dynamic systems with delays. The same area is represented in another paper entitled "Parallel Compensator Versus Smith Predictor for Control of the Plants with Delay" by professor R. Gessing. Selected problems of automatic control system are presented in papers "Applicational Possibilities of Nonparametric Estimation of Distribution Density for Control Engineering" and "Application of LMI for Design of Digital Control Systems" by professors P. Kojczyński and A. Krowczyński respectively.

Very special type of control problem is discussed by professor A. Świerniak in the paper "Direct and Indirect Control of Cancer Populations". Let me express here my own gratitude to professor Górecki, who since 1971 has actively supported the expansion of the biocybernetic group (including my own research) in his Institute, although he personally was not engaged in this particular subarea of cybernetic and system theory.

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Dedicated to Professor Henryk Górecki

Operational Research was another subarea supported by professor Górecki. The paper "Queueing Systems and Networks. Models and Applications" by professor B. Filipowicz represents in this issue such branch of scientific activity of the Automatic Control Institute personnel under supervision and scientific patronage of professor Górecki.

Research work performed in the Automatic Control Institute has been always firmly grounded in the mathematics. Professor Górecki himself was not only famous automatic control engineer and extremely creative scientist in the area of system science. He has been also an outstanding mathematician, a member of the American Mathematical Society. The Institute led by professor Górecki was a launching point for several excellent mathematicians. An example is professor S. Białas, who after work in professor Górecki Institute, directed the Mathematical Institute, and became the first Dean of the Mathematical Faculty in the AGH University of Science and Technology. Therefore, it is no wonder that the article entitled "An Algorithm for the Calculation of the Minimal Polynomial" by professor Białas is also included in the presented issue.

Not only scientific research, but also didactic activities were the area of great attention by Professor Górecki. New methods of teaching have been always promoted and developed in the Automatic Control Institute. This area of activity is a subject of two final papers: "Dependable and Certifiable Real-world Systems – Issue of Software Engineering Education" and "Selected Problems Resulting from the Use of Internet for Teaching Purposes" written by professors A. Korncicki and R. Tadeusiewicz respectively.

Obviously, the presented issue cannot include all the possible papers dedicated by the students and co-workers as a tribute to professor Górecki. I hope, however, the selection of papers presented below shows how rich and multifaceted are the fruits of professor Górecki professional activities.



Ryszard Tadeusiewicz

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Bull. Pol. Ac.: Tech. 56(4) 2008

Fig. 3. Henryk Górecki in Special Issue on "Dynamic Systems, Stability, Controllability, and Automatic Control", Bulletin of the Polish Academy of Sciences Technical Sciences, Vol.56, No.4, 2008

Source: <http://bulletin.pan.pl/%2856-4%29misc.pdf>

values of available forces, the limited power of steering signals, limitations of total available energy etc. The tasks of such type have a great practical amending as almost always when undertaking any task, we try to perform it maximally quickly, maximally effectively, maximally sparingly etc; it means the necessity of referring to the methods of optimal steering which we are able to create today owing, *inter alia*, the work of Professor Górecki.

After solving of the tasks, which could be come down to one established criterion: "mathematic talent", the restless spirit and creative imagination of Prof. Górecki began to seek for the successive challenges. Professor found them in the issues of **polyoptimization**. He dealt with it as one of the first persons in the 70ties and was involved in the mentioned problems until his death.

Polyoptimization differs from common optimization in the following: when we seek for the best steering, we must ensure the best values simultaneously for few independent criteria, which cannot have a joint index. So, if we want, for example, to maximize the economic effect of the conducted production and, at the same time, we want to minimize its ecological harmfulness, we have to deal with the task of multi-criteria optimization. In the tasks of such type, a lot of which we meet in our work (for example when undertaking political decisions), the traditional approaches and traditional methods occur to be completely unsuitable, so we must seek for the new methods and new solutions. Such was the work of Professor Górecki for many years. He gained also here the success and international recognition.

I mentioned here certain areas of the contemporary automation where Prof. Górecki made the extremely meaningful, creative contribution. They are not the sole scientific domains where we may find his successes. I would like also to add some examples, a priori informing that it won't be the complete list. Classical (dating back to the sixties) elaborations of Prof. Górecki concerning the assessment of extreme values of regulation errors in linear and non-linear control systems have permanently entered the canon of the knowledge in respect of the theory of control. His studies connected with the modern automation outlined (in the 80ties) one of the main directions of development, connected with the modern automation. Later on, in spite of being retired for 10 years, Professor Górecki did not give up scientific activities. His newest (very impressive!) deed was monograph: "Optimization and control of dynamic systems", published in 2006 and counting precisely 768 pages. The mentioned book is to be published also in English.

Apart from the personal research contribution to the development of automation, and especially theory of control, Prof. Górecki had also big merits in the field of **education of scientific staff**. He inspired his co-workers and numerous students to undertake new scientific problems. When guiding (for many years) the Centre of Doctoral at his Chair, Professor Górecki brought about to more than 100 doctoral dissertations, including 90 papers where he played a function of promotor. He did not leave his students later on, he guided them and inspired to further stages of scientific development. We may mention at least 30 papers for the scientific degree of habilitated doctor. The mentioned dis-



Fig. 4. Henryk Górecki during receiving the title of honoris causa of AGH, during the solemn meeting of the Senate of AHG, on November, 19, 1997
Source: https://historia.agh.edu.pl/wiki/Henryk_G%C3%83recki

sertations were developed owing to a big assistance of Professor Górecki. It is also worth mentioning ca. 10 professors (working at present in Poland) who owe their scientific development and scientific titles to scientific cooperation with Professor Górecki in a meaningful degree.

These outstanding achievements in the field of education of the young scientific staff derive from four features of personality of Professor Górecki which I would like to emphasize and, in the context of the education of the staff, extremely highlight them. The first feature, necessary for gathering and inspiring such a great number of the students – is the enormous **knowledge** and research invention. Everybody who has a good luck to meet Professor Górecki in his scientific life did not go away with the empty hands. On the ground of his literature studies and comprehensive knowledge he was able to indicate the promising and interesting research area to everybody. Every interested person found the scientific areas which allowed him obtaining a scientific degree and, also, formed and shaped his scientific silhouette, often for the whole life. The second feature of the Professor's personality which brought such perfect results in the field of the staff education was His great friendliness to the people. Everyone who has a good luck to cooperate with the Professor was under the impression relating to the degree of identification of the Professor with the problems and needs of his co-workers. If the doctoral student had the troubles or the candidate for habilitation reached a dead-end, if the candidate for a scientific title was not able to evaluate whether his achievement is sufficient, it was enough to ask Professor for help and you obtained a good advice which was always effective as it was based on a profound wisdom of Pro-



Fig. 5. The text of laudation delivered by promoter of granting the degree of doctor honoris causa to Professor dr hab. Henryk Górecki, Eng., during the solemn meeting of the Senate of AGH, on November, 19, 1997, Informational Bulletin of the Employees of AGH Source: https://www.academia.edu/35508125/Profesor_Henryk_G%C3%B3recki_wielki_uczyony_niezwyk%C5%82a_osobowo%C5%9B%C4%87

fessor Górecki. The mentioned advice was so constructed that it could help a given person in the implementation of his ambitions and scientific aspirations to the greatest extent.

The mentioned already features of the Professor's personality included also his unbelievable intuition and knowledge of people. The decisions of Professor in respect of choosing the collaborators were always strikingly right, and His choice in respect of finding the performers for the specified research undertakings occurred to be – after many years – practically without exception, optimal. The persons entrusted with the solution of the specified scientific or organizational problems possessed, as a rule, the appropriate knowledge and talent as to deliver on the entrusted tasks with the profit for science and with the own success. The mentioned capability of optimal adjustment of the persons to the respective problems acted also in the case of Professor Górecki in the opposite side,. It means that it never occurred that he gave the task which exceeded the possibilities of a given person and brought about to his mental crisis and frustration. The scientific degrees and other successes under the care of Professor Górecki were obtained by the most talented students as well as by those who made up the lack of mind volatility with diligence and perseverance. Owing to skilful, extremely cultural and friendly attitude and behaviour of Professor Górecki, all His collaborators were able to make the contribution to development of science (each in his own way) as the instructed tasks corresponded to their possibilities. The extreme talent and intuition of professor Górecki allowed discovering the best from his pupils. It resulted in extremely abundant list of the persons whose scientific carried was developed owing to the initiative, enormous friendliness and care of Our Master. And, finally, the fourth feature of Professor which was most appreciated – His unchanging constancy. If he once has given us the confidence, He supported

him permanently, reliably and with a full dedication. Each of us, the students of Professor, may remind at least one such event when the total scientific career, all achievements and the whole future were found questioned. During these difficult moments we obtained complete, decided and effective support of Our Master which allowed avoiding many misfortunes.

There is no doubt that the contribution of professor Górecki to Polish and international Automation is meaningful and, in certain areas, even outstanding, Also, it is not doubtful that he created Polish school of steering theory which is developing nowadays and has a numerous successes. It is also true that the Faculty of Electric Engineering, Automatics, Computer Science and Engineering in Biomedicine of Mining-Metallurgical University (AGH) in its present shape was shaped just owing to the work and, what is important, owing to right and far-reaching initiatives of Professor Górecki. Finally, it is evident fact that He promoted and shaped (in scientific aspect) the record number of researchers who owe their total scientific carrier to the work and inspiration of Professor Górecki.

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