

***REPORT on the
National Technical University of Ukraine
“Kyiv Polytechnic Institute”
Ukraine
May 31-June 4, 2004***

SALZBURG SEMINAR

UNIVERSITIES PROJECT VISITING ADVISORS PROGRAM



**The Universities Project of the Salzburg Seminar
Visiting Advisors Program**

**Summary Report of the Follow-Up Visit to the
National Technical University of Ukraine
“Kyiv Polytechnic Institute”
May 31–June 4, 2004**

Team Members:

Daniel O’Hare, President Emeritus, Dublin City University, Ireland

Nikolay Nikolaevich Kudryavtsev, Rector, Moscow Institute of Physics and Technology, Russian Federation

Hans Wiesmeth, Technical University of Dresden, Germany

Dorothy Zinberg, Lecturer in Public Policy; Faculty Associate, Belfer Center for Science and International Affairs, Kennedy School of Government, Harvard University, Cambridge, Massachusetts, USA

Jochen Fried, Director, Universities Project, Salzburg Seminar

1. Introduction and Visit Overview

1.1 Introduction

This report summarizes the findings of a follow-up visit by a Visiting Advisory Team of the Salzburg Seminar to the National Technical University of Ukraine “Kyiv Polytechnic Institute” which was conducted at the request of Rector Mychailo Zgurovsky less than three years after the initial visit in September 2001. One member of the original Team (Daniel O’Hare) also took part in the second visit, thus providing continuity and contextual experience. All other members joined the current Team, offering fresh perspectives and additional expertise related to the subjects raised by the National Technical University of Ukraine “Kyiv Polytechnic Institute” (hereafter referred to as “KPI” or “the University”) for further discussion.

In preparation for the visit, the Rector’s senior management team with the support of other KPI colleagues had written a comprehensive Self-Evaluation Report which gives an overview and analysis of the developments at the KPI as well as the Ukrainian higher education system more generally in the course of the past three years. This report, as well as other descriptive materials, were very helpful to the Team and equipped it with a reasonably good understanding of the critical issues that were addressed during the meetings at the University.

The KPI leadership had put together a tight program for the revisit paying particular attention to involve different constituencies of the University in the deliberations on the subjects that formed the agenda of the visit. We appreciated the broad scope of exposure and engaged in intense interaction with Rector Zgurovsky and his Vice Rectors, many Deans and Vice Deans, as well as a larger group of students and student representatives. All of our meetings were characterized by an atmosphere of frank and open discussion which bodes well for the future of a university that continues to strive for structural reforms and changes.

As on the first visit, KPI had identified a number of issues on which it sought advice. Some of these were overlapping with the topics of the first visit which allowed the second Team to focus on the progress what the University achieved in the course of the last three years. Other issues reflected opportunities and challenges that emerged or became prominent more recently, specifically those related to the Bologna Process and its adoption into national and institutional policy-making.

The discussion topics were as follows:

1. NTUU “KPI” on its way towards the Bologna process
2. Research as part of the NTUU “KPI” activities and its integration into the European Research Area
3. The material and technical basis and the financial system of NTUU “KPI”
4. Student government affairs

The topics chosen by the KPI are both timely and pertinent. In presenting this report, the Visiting Advisors Team hopes to contribute to the discussions, decisions, and actions that the KPI must undertake in order to meet the challenges that lie ahead of the University as it prepares to become more integrated within the emerging joint European Higher Education Area. We do so in full recognition that we don't know all the relevant local factors or have all the suitable answers; but, as a Team, we combine a broad spectrum of relevant knowledge and experiences from our own contexts. We appreciate the opportunity to share our views not in expert judgment but as colleagues engaged in the struggle of advancing higher education in all of our countries.

The Visiting Advisors Team (hereafter referred to as “Advisors”) owes special thanks to the chief organizers of this visit, Rector Mychailo Zgurovsky and Vice Rector Sergiy Sydorenko who were ably assisted by Professor Borys Tsiganok, Head of the International Relations Office. The warm and gracious hospitality as well as the candor in the discussions and the willingness to engage in a mutual learning process during the visit made the stay in Kiev a highly memorable professional and personal experience for the Team members.

1.2 Overview

The NTUU “KPI,” in its role as innovator in higher education reformation in Ukraine, was one of the first in Ukraine to sign "The Magnum Charter" of the European Universities, and was the organizer and active member of eight international conferences on higher education. Further, NTUU “KPI” has become recognized by the state as the country’s leading educational-scientific center for higher engineering education, principal developer of democratic principles, and outspoken champion for academic freedoms in higher education.

In the following we will presuppose that the readers of this document are familiar with the report of the first visit of a Visiting Advisors Team of Salzburg Seminar to the KPI in September 2001. The KPI had considered that first report and had presented a report in May 2003 on its reaction to that first report and to the actions which it had taken on it. Entitled, *Report on the Impact of the VAP on the National Technical University of Ukraine*, it reviewed the 2001 Salzburg Seminar Report, summarizing its recommendations, describing those which it considered the most relevant, and describing its actions in relation to those recommendations, as follows:

During the first reading of the final Advisors report the following recommendations were seen as most relevant by the leaders of the NTUU “KPI”:

1. The necessity to increase access to the Internet for students and teaching staff
2. The attaining of sufficient skills in English amongst the teaching staff and students
3. The creation of a network of shops, cafeterias, banks, and vending machines on campus
4. The daily release of new information about important achievements of the NTUU “KPI”, its students, and lecturers
5. The creation of the KPI Rector Consultants Council
6. For the recognition of NTUU “KPI” diplomas in the world—use of interuniversity agreements, cooperation with the British Council as well as the intensification of the participation of Ukrainian universities in the work and meetings of the European Universities Association, the Organization for Economic Cooperation and Development, and other international organizations
7. The upgrading of book resources of the library to modern standards (readers have virtually no access to the Internet).
8. Improvement of the work efficiency evaluation system on individual and interdepartmental levels
9. The review of the professional activities of certain departments created decades ago in order to ascertain

whether new departments are to be created or present ones are to be merged or eliminated.

10. Introduction of research priorities

11. Development of business thinking and use of business-plans

This follow up visit can be seen as a response to this task list and to the progress made in relation to the first Report of September 2001. At the outset, we want to emphasize that we find, in general, the KPI to be a fine institution with an impressive history and a rich tradition of dedication to academic excellence. In our view, it is also an institution with an enormous potential for qualitative growth that could benefit the entire country. KPI is a good institution that should get even stronger.

The recommendations of the Advisors follow in no order of priority. They focus on the following topics:

1. Organizational Matters: organizational structure, library, computing, budget, teaching and assessment, training of graduates for the market economy
2. Integration of Education and Research
3. The Formation of Graduates/Students for a Modern Economy
4. International Activities and English Language Proficiency
5. The Problem of "Brain Drain"
6. Student Self-Government at KPI

2. Organizational Matters

2.1 Organizational Structure

In the 2001 report we placed a heavy emphasis on the matter of the organizational structure of the University. We commented on the existence of a very substantial number of Departments and suggested that such structures (those of narrowly focused departments) were not conducive to interdisciplinarity and were now seen in the international community as constituting a barrier to new program development; they are also a substantial obstacle to interdisciplinary research. It is widely accepted that much of the most exciting and relevant research occurs at the boundaries of traditional disciplines. Numerous international funding agencies have for many years emphasized cross-disciplinary themes in their requests for proposals; indeed it has gone further within the EU in that industry partners are a *sine qua non* for success. Newly taught programs are also more often—through the benefits of modular course provision—an amalgam of many disciplines.

The Team learned that, during the period since the last visit, eighteen new specialties were licensed in technical, economic and humanitarian fields; and that new study programs in attractive fields like biotechnology and medical engineering were created, which apparently are the first centers of interdisciplinary education in Ukraine. However, even in light of the progress that has been made in this area at NTUU “KPI”, it seems to the Advisors that the current academic structures at KPI are not as conducive as they could be

to these new and established trends. Many universities, even some of the most traditional, have moved away from such rigid structures (e.g., Trinity College Dublin, which was founded in 1592, is now reducing its Faculties from six to three and its Departments from some sixty-six to twenty-two).

In a rather short visit, it is difficult to be sufficiently knowledgeable as to the background to a reluctance to change the organizational structure of a university. Of course one might, as always in all countries and in all universities throughout the world, expect that many academics might feel threatened by change or might be so wedded to the rigor of the traditional academic structures that a departure from them might be regarded as being tantamount to a lowering of quality. It might also be the case that the creation of a Professorship or its retention has traditionally been predicated on the creation of, or on the existence of, a Department in that Professor's discipline. Whatever these traditions are, means must be found to set them aside if KPI is to become a truly modern university. We recommend the creation of multidisciplinary Departments or Schools—a well established practice in the United Kingdom and in Ireland—from the amalgamation of the existing narrow disciplinary Departments and the creation of Faculties which would group cognate Schools/Departments.

2.2 Library: books, periodicals and accommodation

Our 2001 Report placed some emphasis on the Library. It did so based on the widely held conviction that a library is the very heart of the university. Without a vibrant, accessible and well resourced library the development of students will be truncated even if the face to face teaching in class and tutorials is excellent. It is gratifying to note that electronic periodicals have been acquired at the KPI Central Library and that user access to the internet has been greatly enhanced beyond the 2001 situation. However, it appears from the necessarily brief visit that the book stock is still rather outdated. Even though some rooms and PCs have been assigned for internet access, the extent of this access is rather limited still. It would not be unusual to expect some 1,000 to 1,500 PC stations in a modern library per 9,000 fulltime equivalent students, for example. The Team was happy to learn following the visit, that NTUU “KPI” is following a program of informatization for their library, the first stage of which included the installation of 218 computers which are all connected to the local-area network.

Another area of concern in relation to the library is the total amount of accommodation (i.e., its area and therefore the number of study places to which students have access). Whereas sufficient detail was not available upon which to base a more precise statement of need in this regard, we believe that a doubling of current provision would be more than merited. The standards regarding library accommodation can be accessed by contacting the British Library Association, a body of considerable reputation in the United Kingdom. Perhaps a librarian from one of KPI's partner universities from the United Kingdom, Germany, or France could be asked to evaluate the needs of KPI and to advise. Along these lines, information received after the visit indicates that the KPI Library does maintain close contact with the British

Council Library in Ukraine and regularly receives printed methodological materials, recommendations, and standards on British library services.

2.3 Computing Infrastructure

Whereas the Self-Evaluation Report from KPI described the steps which it has taken recently to enhance its computing facilities, efforts which should be loudly praised, it remains as our perception that much more remains to be achieved. A target ratio of PC to fulltime equivalent student should be set by the University and argued with its funding authority. During the visit, the team heard a variety of differing figures quoted regarding student to computer ratios. As a general rule, the Team suggests that an initial ratio of 1:5 for technological/scientific students and 1:10 for humanities/business students should be set for achievement within the next three years.

2.4 Budgetary Processes and Participation

It is unclear to the Advisers as to how the budget allocation process at KPI operates. From the enquiries which we have made, it would appear that it is based on a very centralized system. By this we mean that the process by which the financial estimates for a forthcoming year are assembled and upon which the approved budget for KPI is allocated within the University is almost entirely in the hands of the central administration of the University. The system which appears to apply is reminiscent of the processes which were commonplace in many universities up to the 1980's. In such arrangements, the central administrations of universities controlled all aspects of a university's funding and fund dispersal; academics would have been seen not to have a valid role in relation to such matters. Their opinion, when rarely sought, was in response to some financial crisis which central administration, of itself, could not solve. Consultation, transparency, and the detailed involvement of academics in the financial affairs of universities became the norm as the business community itself realized that the involvement of its employees, as partners in the development of business, was essential to its success. The preparation of expenditure estimates and the concept of the devolved budget following detailed consultation with the academic community became commonplace.

The new approach generated many benefits for the universities who proceeded in that way: efficiency drives were more vigorous and more successful; and fundraising from the private sector gained momentum when academics found that their activities benefited for their special efforts, rather than, as heretofore, the destination of such monies or savings disappearing into the 'black hole' of central administration and/or being used by a faceless bureaucracy in ways and to ends not at all understood by the academic community. The autonomy of Heads of departments in controlling their budgets led to greater cost-effectiveness and to greater innovation in the use of those finances. In short, the University benefited, and commitment to the University by academics and staff at all levels was enhanced greatly.

There are many models available within a wide range of universities which KPI could choose from. We recommend to KPI that one of these systems should be chosen and put in place as yet another step in creating a more effective and innovatory climate at KPI. Indeed, the Advisors could recommend eminent and expert persons whom KPI might like to engage to assist and advise on this transition to a more participatory budgetary system.

3. The Formation of Graduates/Students for a Modern Economy

3.1 Training of Graduates for the Market Economy

In times of totalitarianism, universities were an integral part of the centrally planned economy. Based on questionable methods of forecasting, they were being told by the relevant state authorities exactly how many graduates they have to “produce” each year in the different subject areas in order match the alleged needs of the “consumers” of graduates, chiefly: the huge industrial conglomerates, the State apparatus, and the Academy of Science. That system was extremely inept and conservative because, firstly, it hindered and discouraged a continuous modernization of the curriculum, and, secondly, the universities did not feel responsible for the professional careers of their graduates because they did not pay for them—usually, they were ‘over-fulfilling the plan’ and produced more graduates than were actually needed. Over the years, this led to a fossilization of the study programs—some professors taught their courses without change throughout their careers. The situation was aggravated by the fact that many of them also stopped their engagement in research and thus their teaching did not reflect new scientific ideas and achievements.

What is the most typical shortcoming of universities in the former Soviet countries? They continue to ignore new realities and to prepare graduates in an out-of-date manner. Such a system is extremely inefficient. First, labor market surveys are ignored; and second, graduates leave the universities ill-prepared for their future jobs, which often requires them to undergo a retraining. Obviously, this dampens the preparedness of their employers, and the outside stakeholders more generally, to support universities financially, politically, and morally. Unfortunately, this situation prevails at many universities in Russia and the Ukraine, and we also saw traces of it at the KPI. Students talked about their weak motivation to study some of the subjects taught at KPI because they did not offer any job prospects. They emphasized that many courses were not modernized for a long time, and that teachers often did not seem to care to do so.

Recommendations:

1. To carry out an analysis of labor market needs for each of the “specialties” taught at KPI, and to formulate goals to renew these programs in accordance with the labor market (which will probably require the involvement of external experts like representatives of major companies, the chamber of commerce, labor market experts, etc.)

2. To establish regular and functioning communication with external stakeholders and future employers of KPI graduates in order to take their views into account in the reform of the study programs
3. To trace the careers of graduates, at least during the first few years after their graduation including regular surveys in which they are asked to comment on the usefulness of the University education in the light of their initial work experience; and further, to cultivate alumni relations (many graduates will eventually hold influential positions in companies or in the local/federal state administration, and being able to draw on such contacts is a matter of prudent foresight planning for each university)

We would also like to note, that practical realization of each of the given items is very hard to achieve.

Further communication with the University following the visit, however, shows that the University is making great strides in the right directions. The branches of the University's departments have been established to integrate education with the needs of industry and to provide individualization of education. The system of job placement of graduating students is currently in operation and places a remarkable ninety-five percent of graduates in jobs according to the student's qualifications. This success seems to reflect the dynamic growth of the nation's GDP. In order to better meet the needs of the labor market training in eighteen new professions and sixty-eight specializations has been initiated.

3.2 Modern Teaching and Assessment of Students

It appears to the Advisers that the teaching and student assessment methods which are employed at KPI are in general need of review. It is our impression that the methods which are employed are similar to those which were prevalent in western universities of twenty or more years ago. In the intervening years universities have progressed to integrating technology, self learning, project based elements, etc. into both teaching and assessment. Such universities that have moved most firmly in those new directions have reaped significant benefits: employers applaud the more self-reliant/self-starting graduates who are the result of the new teaching and assessment approaches, for example. Students have been better prepared for careers in research also and there has been much curricular innovation. The Team applauds the recent improvement in time devoted to self-dependent learning (between one third and one half of general academic hours), and hopes that this trend will continue. This is a challenge for Universities worldwide (how to be more a mentor than a teacher; improve on active learning methods like group discussions, project work, dialogues; i.e. more freedom for the student).

We feel it important to state that many new ideas which help to transform universities can be heavily reliant on significant financial expenditure and are, therefore, problematic for many under-resourced universities. However, transforming teaching and assessment is much less dependent on finance but rather relies on academics and their attitudes and willingness to change what

they have been doing and how they having being doing it for many years. The cost is rather modest; it merely relies on the skills and, most importantly, on the disposition of the academic community and institutional leadership to achieve successes of immeasurable significance.

We recommend to KPI that a radical review of teaching and assessment be undertaken as a matter of urgency with the objective of leaving the old and trusted methods behind by embracing worldwide best practice.

4. Internationalization

4.1 International activities and English language proficiency

The University is justifiably proud of its historical connection with Mendeleyev at the turn of the 20th century. As the originator of the periodic table, he provided the basic structure for chemistry and revolutionized research. He also personified the life of the gifted scholar as he traveled from one center to another, always in search of new ideas and opportunities. A cursory glance at his movements reveals a familiar pattern that goes back as far as the 13th century when scholars from Europe converged on the University of Siena, then the center of academic excellence. Mendeleyev moved from Siberia to St. Petersburg, Odessa, Heidelberg, Krakow, Paris, and London where, unlike at home, his work was highly esteemed.

His remarkable career comes to mind when standing in front of his statue on the KPI campus, but even more so during informal conversations with students and faculty: going abroad and bringing international students and scholars to KPI remains for them the *sine qua non* of academic excellence.

Two recent revolutions—one in the decoding of the human genome, the other in the development of information technologies—make the need for internationalization of any university even greater. For the purposes of scientific research, both require as the most basic prerequisite a solid understanding of English and an active exchange of faculty and students. The students and junior faculty both privately and in larger groups mentioned their desire to spend time abroad in other institutions. Lack of funding and problems in obtaining visas were most frequently cited as the impediments.

Obviously even if these obstacles were overcome, KPI faculty and students must have a solid base in the English language (as well as those of the countries they visit). As the medieval scholars spoke Latin, and later scientists conversed in German, so now the universal language is English. At KPI, despite much rhetoric devoted to learning the language, there is a long way to go. Many of the faculty are fluent in English (and other languages). Those working in international arenas—systems analysis, distance learning, medical diagnosis outsourcing (to mention only the few that we met) - operated comfortably in other languages and English. Further, international students have the opportunity to study in English in three faculties. Nevertheless, the push for fluency that began some years ago should be accelerated.

The changing demography of Ukraine highlights the need to move quickly on further internationalizing the University. The drop in the birthrate coupled with a decline in pre-college science education portends that fewer young people are being well-educated before reaching college age. Even if the percentage of the age cohort to attend university were increased, the need for more educated professionals will grow exponentially. In the words of the Rector, “Before joining the EU, we need a renaissance in education, fundamental research, and industry...so as not to become only a source of cheap labor.”

The efforts to recruit more overseas students are evident. Some 1,600 international students from more than 40 different countries are already enrolled at KPI (highest number of international students in the history of the University, and the highest among higher technical educational institutions in Ukraine), among them about 750 Chinese and a larger number of Turkish students. The tuition fee for these students is comparatively low (\$1,300 per year for Bachelor and Specialist programs), and KPI has established a one-year preparatory course which provides both language training in Ukraine and/or Russian as well as some academic training to ensure a smooth transition of these students into the regular study programs. The Team also learned that a separate building has been constructed and designated specifically for foreign students, and that a modern hostel is being planned, the building of which should allow for an increase in the number of foreign students. While all of these efforts are highly laudable, the overall percentage of international students at KPI remains small with less than four percent of the total student population. (Many technical universities world-wide have as many as 50 percent - and sometimes more - of their students from overseas. In a significant number of U.S. schools of engineering, fifty percent of the faculty is international.)

This, of course, raises the specter of brain drain, mentioned frequently by administrators. In the short run this might be a problem but it could be mitigated by increasing the numbers of visiting international scholars and students. For many years, brain drain was considered a threat to South Korea, Taiwan, China, and India. However, a combination of economic growth and vigorous recruiting by industry and universities has resulted in the return home of thousands of nationals. (Many also move to third countries, but with increasing globalization and more open borders among European countries in particular, this will be a natural development as degrees are normalized and EU membership established.)

The challenge will be to make KPI a net gainer in human resources even as its internationalizing faculty begins to move more freely around the world.

In addition, Rector Zgurovsky noted that the country had to further develop democracy and the relationship of Ukraine to the world. Both of these aims will be enhanced by increased exposure of students to different cultures and values as well as lifestyles.

Recommendations:

1. With the growing financial renaissance in Kiev and its environs, the University should explore the possibility of seeking funds from international and Ukrainian corporations to provide scholarship funds for travel abroad for KPI students and junior faculty. In the long run, the international experience will improve the human resource base available to industries in Kiev and the country. (A successful example of this can be seen at Arizona State University, where international industries have moved to Phoenix and helped finance the education of the very engineering and business students they want to employ in their own organizations.) Following the visit to Kiev, the University made the Team aware of relationships the University has with Motorola, Siemens, Samsung, Festo, and PietroVietnam. These relationships could potentially be a good place to start such efforts.
2. The goal of introducing English as a second language should be given even more precedence than at present. The University may want to consider making a good command of the English language a requirement for the employment of new faculty (or at least a bonus when selecting new academic staff). Additionally, awards for faculty that teach in English and for students that excel in the language could be established.

4.2 The Problem of “Brain Drain”

The problem of migration of scientific staff and highly-skilled experts is a typical phenomenon for industrialized as well as for developing (or redeveloping) countries. This movement, however, is very useful for mankind as a whole, since it allows intellectual resources to be concentrated in places where they can give the maximal results. In all advanced countries there are streams of experts both to and from the country, thus producing either a net-gain or net-loss. It is necessary to recognize the importance for young people to acquire a wide range of experiences on an international level; however the emigration of those experts continues to produce a net-loss in post-Soviet countries. The reason behind this is that graduates and Ph.D.'s, who once leave the region, extremely rarely return. What results is a one-way flow of expertise and knowledge. Advanced universities, including KPI, are most strongly subject to this "brain drain." One of the reasons for this phenomenon is the potential to earn a higher income in another location, but this is not the reason most frequently cited by those who leave, who note income difference usually as a second or third deciding factor. The most important incentives noted by young experts considering leaving their home countries are access to modern equipment and the opportunity to be competitive with leading western laboratories. Naturally, the most pressing (and also very difficult) task for universities in countries with a net-loss of their future academic staff is to provide such opportunities and access to equipment. To this end, it is necessary to search for opportunities to fund the budgets of modern centers of science. (These funds could be acquired through participation in international grants and projects, for example.) Finally, in order to retain promising young people, it is necessary to develop special measures to keep

them motivated. To this end, there should exist (as a reward for their support) special programs and grants for young researchers, as well as the possibility of fast-track promotions.

5. Integration of Education and Research

5.1 Vision of KPI Developing into a Strong and Internationally Renowned Research University

There is no doubt about the necessity of integrating research activities into innovative study programs. In a time when science is developing so fast and knowledge is increasing so rapidly, no open society can afford to educate its students on the basis of dated or even obsolete study programs, which actually diminish their chances on the labor market, and which also hinder the economy from becoming internationally competitive. The demographic development of Ukraine aggravates this fact with the possibility that a smaller and smaller number of young people will constitute the scientific elite in near future.

5.2 Favorable Developments at KPI

Since the first visit of experts from Salzburg Seminar in 2001, KPI has revised and updated 25 percent of its 128 “specialties” (roughly equivalent to study programs). We assume that most of these revisions include an orientation of the existing study programs towards more recent research results. As previously stated, we also noted the creation of new study programs in attractive fields like biotechnology, and the University has also mentioned since the visit that a wide variety of other new programs have also been initiated including, among others, programs in physical and biomedical electronics, aircrafts and complex management systems, information communications networks, industrial biotechnology, intellectual property, nonconventional power sources, information management, computer network technologies in social informatics, computer financing engineering, information technologies in the power engineering, computer technologies, materials and thermal physics, medical cybernetics, bioinformatics, and music and language computer processing.

Moreover, we were pleased to learn that internal research funds are awarded according to a competition based on the scientific attractiveness of the applications. In addition to that, the successful research activities at KPI led to the establishment of a Technopark at KPI, which also functions as a business incubator, and which assists scientists in transferring their knowledge to the market. The planned educational activities of the business incubator will help to stimulate spin-offs from the University, and will eventually produce small, innovative companies, which are necessary for the further development of the Ukrainian economy.

Regarding faculties and institutes, it is worth mentioning some activities of the Faculty of Management and Marketing and of the Institute of Mechanical Engineering. Some faculty members of the Faculty of Management and

Marketing are simultaneously educated in economics, and, in the field of engineering, students are being provided with an interdisciplinary training. Moreover, engineering students at KPI have the opportunity to take classes in economics. This demonstrates the possibility of an integrative, interdisciplinary approach to education and certainly strengthens the position of this Faculty in the University.

The Institute of Mechanical Engineering cultivates a close cooperation with private industry, especially with international companies, which also provide innovative equipment for educational purposes. This together with the double degree agreement with the University of Magdeburg in Germany will soon ensure a training of young mechanical engineers according to the highest standards. In addition, these well trained engineers will attract foreign direct investments, which again are essential for the further economic development of Ukraine.

5.3 Some Problematic Aspects

As the examples above clearly demonstrate, KPI is on its way to being a renowned research university. However, a closer look at some figures, which are of essential relevance to research activities and education at KPI, reveals some problems, which deserve the attention of the Rector and the governing bodies of the University.

1. The training of research graduates, both for academic careers and private companies, is one of the pre-eminent tasks and duties of a university. This refers in particular to KPI as the National Technical University of Ukraine.

The numbers communicated to us show that KPI is training approximately sixty Candidates of Science and twenty Doctors of Science per year. Although increasing over the last years, these numbers are far too low for a university the size of KPI. As an example, the Technical University of Dresden, with 32,000 students (almost 20 percent smaller than KPI), typically has more than 1200 Ph.D. students, and approximately 400 defend their Ph.D. thesis each year (as Candidates of Science). In addition to that, there are between thirty and forty Doctors of Science (Habilitationen).

Of course, the current economic situation of Ukraine may not yet require an extraordinarily large number of Candidates of Science. But still, given the leading role of KPI in Ukraine, the current number is not sufficient for the rejuvenation of the country's scientific elite in the near future.

2. A good indicator regarding research activities is usually provided by the number of research projects funded by national research organizations or by private industry. Usually this money from “contracted research” reveals the “competitiveness” of a university among all research

institutions, and its attractiveness for the national as well as for the international industry.

The research budget of KPI amounts to approximately 2.8 million Euro per year. Even if this amount does (probably) not include contracted research funds, it demonstrates again a large gap between the situation at KPI and Technical University of Dresden (e.g., at the former, contracted research funds alone surpassed 100 million Euro in 2003).

Of course, one again has to take into account the different economic situations in Germany and Ukraine with GDP per capita in Germany approximately seven times as high as in Ukraine. But even then, there remains a remarkable difference which should prompt a closer inquiry in order to support the development of KPI as an internationally renowned research university.

5.4 Reasons for these Deficiencies

Apart from obvious economic reasons (in particular the general economic situation of Ukraine together with low funding and low salaries at the universities, which restrict the development of KPI, and which limit research activities), these deficiencies might also, at least partially, result from an insufficient endowment with full professors, hence with Chairs.

According to the, *Charter of the National Technical University of Ukraine—Kyiv Polytechnic Institute*, the “Chair” is the main training and scientific unit of the University. More exactly, the effective operation of the Chair is the main goal of all activities of NTUU and its departments. In particular, the Chair is, among other things, entrusted with the

1. implementation and development of education programs
2. preparation of textbooks and the introduction of new educational equipment
3. organization of all types of practical work for the students
4. scientific research at the expense of the state budget and commercial funding
5. training of scientific and pedagogical staff of high qualification (candidates and doctors of science)
6. organization of scientific conferences

A Chair’s staff includes professors, lecturers, scientific workers, engineers and support staff, whereby professors and lecturers are hired on a contractual basis for a term from one to seven years. Lecturers and scientific workers may participate in the scientific and pedagogical activities of the Chair.

This short summary of chapter five of the *Charter of the NTUU* demonstrates the outstanding importance of the Chairs at KPI, both for education and for research. Any efforts to further develop KPI into a strong and internationally renowned research university should therefore concentrate on strengthening

the position of the Chairs within the University, or enhancing the effectiveness of the Chairs with respect to teaching and research.

Recommendations:

Currently there are 241 (another number communicated to us mentions only 154) Chairs at KPI together with more than 900 Associate Professors, and approximately 750 Senior Lectures, Assistants and Lecturers. Again, in comparison to these numbers, at the Technical University of Dresden there are about 380 Chairs and 190 Associate Professors. In addition to that, a large number of Research Assistants support teaching and research activities.

1. As the Chairs typically supervise research projects, initiate new research activities, and are responsible for all kinds of educational activities, we strongly recommend increasing the number of Chairs at KPI. This should and could be done at the expense of the number of Associate Professors. Whereas universities in Western Europe typically have two Chairs for one Associate Professor, this relationship is one Chair for four Associate Professors at KPI.

An increase in the number of Chairs will have the following beneficial implications for the KPI. It will (a) allow the establishment of new Chairs for innovative study and research areas; (b) help to increase the number of graduate and doctoral students; (c) contribute towards a larger number of qualifications, as well as study and research fields, that are being offered to students; and (d) help to raise more funds for contracted research.

2. The existing Chairs should be “encouraged” to attract and train more graduates, in particular more PhD students. However, since we have no closer knowledge of the specific situation of the Chairs with regard to this aspect, we cannot provide any detailed recommendation on this issue.

The examples of the Faculty of Management and Marketing and of the Institute of Mechanical Engineering should provide a guideline for all other faculties and institutes of KPI. Therefore,

3. Contacts of Faculties and institutes of KPI to the private industry ought to be intensified. The economic situation of the region of Kyiv should allow a closer cooperation especially with international industry for investing in Ukraine. Foreign direct investment in Ukraine, which will continue to increase due to the enlargement of the EU, is currently profiting from low wages. As some kind of “compensation” these investors should be interested and involved in research activities at major universities like KPI. Since the visit, the Team has learned that KPI has a wide variety of long-term agreements on the training of specialists as well as agreements on the organization of practical work with more than 200 enterprises and organizations of Ukraine. This is

very promising, and the Team is hopeful that the University will be equally successful with international companies and investors.

A closer cooperation with private industry will have the following beneficial effects for KPI. It will (a) help to raise more funds for contracted research; (b) result in a larger number of research projects, into which students could be integrated; and (c) help to provide interesting jobs for the students at KPI after graduation.

Interdisciplinary training is a characteristic of technical institutions of higher learning all around the world. Usually it means a basic training for engineering students in business administration, but it typically also includes an intensive contact with private industry in the sense of an internship. Therefore,

4. The above mentioned closer cooperation with private industry should be used for extended periods of practical work experience for students at relevant private companies. Students should be encouraged to undertake this kind of activity as part of their regular study programs (i.e., they should receive credits for these internships).

The following beneficial effects, in addition to the ones already mentioned, should be expected from this recommendation. It will (a) without any doubt, help to integrate teaching and research, teaching and practical work experience; and (b) make students more familiar with what they can expect after finishing their studies.

Clearly, some of these recommendations cannot be adopted immediately. But they should be taken as part of a vision to develop KPI into a strong and internationally renowned research university.

6. Student Self-Government at KPI

The Visiting Advisors were asked to assess the mechanisms and the effectiveness of students' involvement and participation in the governance structures of the KPI. Accordingly, a considerable part of the program was devoted to meetings with students and student representatives as well as discussions with those responsible for student affairs within the University's senior management. We found the students that we met, in general, to be articulate, well-informed and open-minded; similarly their representatives from various self-governing bodies of the University are clearly committed to their work and highly motivated to act in the students' best interest.

From an outsider's perspective, the way students' interests are being taken care of and organized at KPI follows more or less the pattern that is common at European universities: There is a Student Council on the level of the University as a whole as well as for each Faculty whose members are elected by a multi-layered election process that involves all students of KPI. Representatives of the Student Council send representatives to the Academic Council of the KPI where they hold 10 percent of the votes. Apart from this, the range of tasks and responsibilities of the Student Council encompasses all

aspects of student life from academic to social and cultural affairs. However, the catalogue of activities which the Council describes as constituting its own work also includes some items that one would not find in other countries like “education of patriotism, need to adhere to the legislation, moral and ethical standards,” or “propagation of a healthy way of life, prevention of committing student offences and of the use of alcohol, drugs, etc.” When asked what difficulties they are facing in their daily work, representatives of the Student Council referred to a lack of a clear legal mandate for the Council’s activities as well as not having its own budget (as far as the Team understood it, at present the Council receives the financial means for its work directly from the Rector’s office on a discretionary basis).

The system and structure of students’ self-government described above was only introduced in 1998. The Student Trade Union Committee of NTUU “KPI” on the other hand, is celebrating its centenary this year and prides itself in being “the most powerful and experienced student organization of Ukraine and one of the largest in CIS.” Membership of the Student Trade Union is voluntary and open to all KPI students. Currently, close to 30,000 KPI students are members of the Trade Union which is almost 80 per cent of the total student population. The activities of the Trade Union and its relationship with the administration of the University are regulated by the respective federal laws and a written agreement that is renewed annually. It sees its main task in protecting the rights and interests of the students, in educating the students about these rights, and in standing by and providing practical help should a student face educational, social, financial, or personal problems. The Student Trade Union finances its activities through fees that it collects from its members.

It is not uncommon in other countries (for example, in Germany) that there are two organizations that work in the interest of student concerns, one that focuses on student politics and the shaping of institutional policies as far as it affects the students, the other that deals exclusively with student services like housing, canteens, social counseling, etc. (“Studentenwerk” in German) with a professional management and staff.

The situation at KPI seems to be different in that there is a considerable overlap between the objectives of the Student Council and the Student Trade Union, and it was not entirely clear to the Visiting Advisors Team how the two organizations interact with each other to avoid duplication and redundancy of efforts. This may be a temporary phenomenon arising from the coexistence of two structures, a deep-rooted old one, or a relatively recent one undergoing a process of gradual differentiation. But it appeared to us that there is room for a more proactive approach towards agreeing on a common framework that allows both organizations to work side by side in a complementary fashion instead of competing with one another.

It might be useful to create a joint working group that studies the examples of various European countries and drafts a report and recommendations on how to better coordinate the activities of the two student organizations at KPI. It is important that the initiative for closer coordination and cooperation comes

from within these organizations and is entirely motivated by the goal to provide even more effective support and services to the KPI students.

With regard to international experience, the Visiting Advisors were surprised to learn that no Ukrainian student organization is a member of ESIB (The National Unions of Students in Europe) which is the most representative and most widely acknowledged voice of students in the European higher education policy arena. The Ukrainian Association of Students Self-Government (UASS) has only consultative status at ESIB which means that it does not yet fulfill the criteria for full membership. Given the fact that the European dimension of higher education is becoming more and more a tangible reality (mainly due to the Bologna Declaration—which the Ukraine has not yet signed—and the subsequent move towards the creation of a European Higher Education Area), and, given ESIB's pivotal role in this process, it seems highly advisable that KPI's student representatives help build a national organization that is recognized internationally as the legitimate envoy/voice of the Ukrainian student population.

Academic freedom, autonomy, and shared governance are the pillars on which universities are built and have survived over so many centuries. They are neither subordinate entities of the State or of any particular government, nor are they knowledge companies which can be run like a private enterprise. Their strength and their durability lie exactly in the fact that they belong to nobody but only to the community that constitutes them. This is why the notion of shared governance is so important: Universities are the locus of the republic of the minds, and it needs republican virtues to sustain and cultivate these places, most of all the sense of responsibility and the readiness to share a common vision among all of its citizens. In this regard, the participation of students in the governance of the University is not a mere formality; it is a vital element of the formation of a democratic citizenry. The role that students play in the academic and institutional affairs at any given university is an indication of the democratic maturity of the society as a whole.

The Visiting Advisors are confident that this wider concept of student participation is well understood by the KPI leadership. We noted with satisfaction that, since the last visit of a Team from Salzburg Seminar three years ago, a number of younger colleagues, who until recently served in prominent positions for the Student Council, are now employed at various positions within the central administration of the University thus bringing the students' perspectives to bear on the future direction of the KPI. This is a positive signal in that it shows the trust of the current leadership in the next generation's willingness and ability to maintain and fortify the tradition of this fine university.

As a final comment on the issue of student self-government, the Advisors suggest to the KPI leadership to consider the possibility of strengthening the legal status of the Student Council and of providing it with more financial independence based on strict rules of accountability in terms of spending monies. Positive changes in both directions would go a long way with regard to securing the long-term viability of student self-government at KPI.

Visiting Advisors

Daniel O'Hare, Ireland - (Team Leader)

Daniel O'Hare is president emeritus of Dublin City University. He is chairperson of the Irish Government Organizations as well as the Committee on Expert Skills and the Food Safety Authority of Ireland, and is a member of the Food Safety Promotion Board. Recently he has been appointed chair of the Irish Information Society Commission. His interests center on higher education governance, management, and planning. Dr. O'Hare holds B.Sc. and M.Sc. degrees from the National University of Ireland, Galway, and a Ph.D. from the University of St. Andrews, Scotland. He has been an active participant in the Universities Project and Visiting Advisors Program of the Salzburg Seminar.



Nikolay Kudryavtsev, Russian Federation

Nikolay Kudryavtsev is rector of the Moscow Institute of Physics and Technology (MIPT), Russian Federation. He is a member of the Presidium of the Board of the Principles for Moscow and the Moscow Region, and of the Academy of Information Science, and co-chairman of the Board for the All-Russia Inter-Institutional Program “Production Technologies.” He previously served as dean of the Faculty of Molecular and Chemical Physics at MIPT, and as lecturer at the University of Maryland, Baltimore, USA and the University of Delaware, Newark, USA. Professor Kudryavtsev's research includes chemical physics, physics of plasma, hypersonic aerodynamics, and molecular lasers. He holds both Ph.D. and Doctor of Science degrees from MIPT. He is an alumnus of a Salzburg Seminar Universities Project symposium on Globalization in the University in April 2000; MIPT hosted a Visiting Advisors Program team in November 2000.



Hans Wiesmeth, Germany

Hans Wiesmeth served as vice rector for science at the Technical University (TU) of Dresden from 1993 to 2000. From 2000 to 2003, he was the (founding) director of BIOTEC, the Biotechnical Center of TU Dresden, and managing director of TUDIAS, TU Dresden Institute of Advanced Studies. Since 2003 he has been head of the Department of Economics and Business Management at Dresden International University, a private institution closely related to TU Dresden. Dr. Wiesmeth was an associate professor of economics at the University of Bonn from 1981 to 1988 and is currently a full professor of economics at the University of Dresden. He has been a visiting professor at several institutions, including the University of Haifa in Israel, York University in Ontario, Canada, and the University of Aix-Marseille in France. He has published extensively on the topics of theoretical economics, concentrating on microeconomics and general equilibrium theory. Dr. Wiesmeth holds a degree in mathematics from the University of Erlangen-Nuremburg and a Ph.D. from the University of Hamburg.



Dorothy Zinberg, USA

Dorothy Zinberg is lecturer in public policy, faculty associate at the Belfer Center for Science and International Affairs, and a faculty member with the Program for Science, Technology, and Public Policy. She is author and editor of numerous books and articles, including *Uncertain Power: The Struggle for a National Energy Policy* and, more recently, *The Changing University: How the Need for Scientists and Technology Is Transforming Universities Internationally*. She writes a monthly column on science and technology issues for the (London) Times Higher Education supplement. Her current research includes an examination of the social-political aspects of educating foreign scientists and engineers in five industrial countries; the changing relationships of universities, government, and industry; and the impact of information technology on higher education. Zinberg has been a visiting scholar at the Institute of Policy and Management at the Chinese Academy of Sciences in Beijing, and at the National Institute for Science and Technology Policy in Tokyo. She currently serves on NATO's Science and Technology Policy Committee, and is also a visiting professor at Imperial College London.



Jochen Fried, Germany

Jochen Fried is academic director of International Studies Program of the Salzburg Seminar. Prior to joining the Seminar in 1998, he worked as head of programs at the Institute for Human Sciences in Vienna, and as senior officer in the secretariat of the German Science Council in Cologne, Germany. After receiving a doctorate in German literature from Düsseldorf University, Germany in 1984, he was lecturer at Cambridge University, United Kingdom and at the University of Ljubljana, Slovenia under the auspices of the German Academic Exchange Service. Dr. Fried's main area of professional interest is higher education and research policy. He serves as an expert for the Austrian Federal Ministry for Education, Science and Culture, and is a member of the editorial board of the UNESCO-CEPES quarterly review *Higher Education in Europe*.



Monday, May 31, 2004	Events	NTUU “KPI” Participants
17.30 – 19.00	Walking Tour of the University	B. Tsyganok
19.00	Welcome party	
Tuesday, June 1, 2004		
9.30 – 11.00	Discussion with Rector, vice-rectors, specialists of NTUU “KPI”. Program Presentation	Rector, M.Z. Zgurovsky; Vice Rectors; Heads of Departments, M. Ilchenko, S.Sydorenko, G. Varlamov, M. Pechenyck, A. Babenko, V. Shehovtsov, B. Tsyganok
11.00 – 11.30	Coffee break	
11.30 – 13.00	Topic of discussion: <i>NTUU “Kyiv Polytechnic Institute” on its way towards the Bologna Process</i>	Educational and Methodical Direction, V. Shehovtsov, V. Golovenkin; Member of the Methodical Council, Yu. Zinkovetsky; Head of the Students’ Council, D. Kysylevsky; Deputy Head of the Students’ Council, V. Ladan; Deans of the Faculties, B. Novikov, V. Gerasymchuk
13.00 – 14.00	Lunch	
14.00 – 15.30	Topic of discussion: <i>The Research Effort as a Part of NTUU “KPI” Activity</i>	Vice Rector, M. Ilchenko; Deputy Vice Rectors, V. Voronov, I. Slobodyan, V. Barbash; Deans of the Faculties; Director of the Technopark
15.30 – 16.00	Coffee break	
16.00 – 17.00	Discussion Topic: <i>Problems Concerning the Development of the Material and Technical Basis and Financial System of NTUU “KPI”</i>	Vice Rector, M. Pechenyck; Chief Accountant L. Subbotina; Architect General, V. Lyhovodov
17.00 – 18.00	Team Members Meeting	
18.00 – 18.15	Snack	
18.15	Departure to the National Opera House	
Wednesday, June 2, 2004		
9.00 – 11.00	Discussion Topic: <i>Developing of Students Self-Managing</i>	Vice Rector, G.B. Varlamov; Deputy of Vice Rector, I.O. Mikylonok; Chief of Students’ Council, D.T. Kucelevskii; Deputy of the Chief of Students’ Council, V. Ladan, Chief of Students Trade Union, V.J. Mironov
11.00 – 11.00	Coffee break	
11.30 – 13.00	Continuation of discussion about developing of students selfmanaging	Vice – Rector Varlamov G.B., deputy of vice – rector is Mikylonok I.O., the chief of student council is Kucelevskii D.T., deputy of the chief of student council is Ladan V., the chief of student students profcom is Mironov V.J.
13.00 – 14.00	Lunch	
14.00 – 15.00	Meeting with active students (student council)	The chief of student council is Kucelevskii D.T.
15.30 – 16.00	Coffee - break	
16.00 – 17.30	Meeting with prof committee of students	The chief of student profcom is Mironov V.J.
17.30 – 18.30	Team Members Meeting	
18.30 – 19.00	Snack	
19.00	Tour of Kiev	

Thursday, June 3, 2004		
09.30 – 11.00	Discussion Topic: <i>Integration of NTUU "KPI" into the European and Global Educational Spheres</i>	Vice Rector, S.I. Sidorenko; Chief of IRD, B.A. Tsyganok; V.I. Shehovcov; Chief of Department, S.M. Shykaev; L.M. Shukalova; V.G. Koval; Chief of UDLC, I.G. Maljkova; Dean, I.A. Duchka
11.00 – 11.30	Coffee break	
11.30 – 13.00	Preparing of report	
13.00 – 14.30	Lunch	
14.30 – 16.30	Presentation of the last report to the Rector	
16.30 – 17.15	Press Conference	
17.15 – 18.00	Team Members Meeting	
18.00 – 18.15	Snack	
18.15	Trip to the National Philharmonic	
Friday, June 4, 2004		
08.30	Go to the Kievo – Pecherskaia Lavra	
12.00	Departures	

THE UNIVERSITIES PROJECT OF THE SALZBURG SEMINAR

Universities throughout the world are undergoing systemic changes in their governance, academic design, structure, and mission. From 1998 to 2003, the Salzburg Seminar's Universities Project focused on higher education reform in Central and East Europe, Russia, and the Newly Independent States as universities in these regions redefined their relationships with governments and try to become more integrated into the global intellectual community.

The Universities Project was a multi-year series of conferences and symposia convening senior representatives of higher education from the designated regions with their counterparts from North America and West Europe. Discussion in the Project's programs focused on the following themes:

- University Administration and Finance
- Academic Structure and Governance within the University
- Meeting Students' Needs, and the Role of Students in Institutional Affairs
- Technology in Higher Education
- The University and Civil Society

OBJECTIVES

Universities and other institutions of higher learning are seeking to reshape themselves in ways that will prepare them more fully for the twenty-first century. Even as these institutions are considering extensive systemic changes in their academic design, structure, and mission, all desire autonomy in governance and in their intellectual life. Accordingly, the Universities Project aimed to promote the higher education reform process by inviting senior administrators to participate in conferences and symposia concerning issues of university management, administration, finance, and governance.

THE VISITING ADVISORS PROGRAM (VAP)

The Salzburg Seminar launched this enhanced aspect of the Universities Project in the autumn of 1998. Under the VAP, teams of university presidents and higher education experts visit universities in Central and East Europe and Russia at the host institutions' request to assist in the process of institutional self-assessment and change. By the end of the Program in June 2004, seventy visits have been held at universities in Central and East Europe and in Russia. The addition of the Visiting Advisors Program brought to the Universities Project an applied aspect and served to enhance institutional and personal relationships begun in Salzburg.

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FOR MORE INFORMATION

For more information regarding Salzburg Seminar programs, please contact one of the Seminar's offices below.

Salzburg Seminar
Schloss Leopoldskron
Box 129
A-5010 Salzburg, Austria

Telephone: +43 662 839830
Fax: +43 662 839837

Salzburg Seminar
The Marble Works
P.O. Box 886
Middlebury, VT 05753 USA

Telephone: +1 802 388 0007
Fax: +1 802 388 1030

Salzburg Seminar website: **www.salzburgseminar.org**