

Charles University Research Evaluation

Executive Summary

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INTRODUCTION

Charles University is a dynamic institution that continuously strives to increase the quality of research, development, innovation, education, social impact as well as artistic and other creative activities. This evaluation is an important tool for achieving an international standard of research excellence, and for strengthening the position of the university as a prestigious European research institution. The objective of the evaluation has been twofold: a) to obtain accurate and impartial information on the quality of research at the university through national and international benchmarking, the intention of this evaluation was not to compare the CU units between each other; and b) to recommend the course of future development of the university based on the information obtained. The Board offers here a summary but strongly urges all stakeholders and interested parties to read the full reports.

Charles University officially started this process to evaluate the quality of its research more than two years ago, based on the *Strategy for Evaluating Creative Activities at Charles University* (Rector's Measure No. 44/2018, amended by Rector's Measure No. 8/2019). The current evaluation covering the period 2014-2018 is the first attempt to evaluate comprehensively the research activities of the whole university. It is intended to be repeated every five years.

As with many projects, this evaluation has encountered a variety of challenges, some of which could be expected, and some of which were unpredictable. First, the most important phase of the evaluation process took place during the COVID-19 pandemic. As a result, some aspects of the review process took longer than expected. Second, because of the pandemic, evaluation bodies held meetings exclusively online. This included meetings with the representatives of the faculties which would have been preferable in person.

Third, and most important, it became evident to the Board that different fields have different evaluation cultures and visions of excellence. These differences can be broadly aggregated into two groups of fields. One group, including medicine, the natural sciences, economics, political science and some of the other social sciences, rely on the publication of articles in peer-refereed journals with international prominence for measuring the quality of their research activities. The other group of fields, including the humanities, law, and some of the social sciences, emphasize the reception of books and other publications domestically and on the national and international reputation of scholars for measuring the quality of their research activities. This difference means that in the first group of fields the evaluation focused primarily on research output in the evaluation period based on bibliometric measures, while the evaluation of the second group of fields relied more heavily on peer review of the best outputs offered by each field to represent their research activities. The work of the Board reflects our best efforts to honor and respect these different cultures of academic excellence. Evaluations of areas and fields thus always measure performance of CU relative to benchmark universities, and *should not* be used for within-university comparisons.

Despite these challenges, we are confident that this large and complex project has been a success. We also believe that all stakeholders in this process -- evaluators, faculty coordinators, and administrative support staff -- have obtained valuable experience that will inform future evaluations and amplify their impact.

Three types of bodies participated in the evaluation process: the Research Evaluation Board whose members were nominated by the International Board of the University and by the partner universities within the 4EU+ network; four Expert Panels established on the advice of the Research Evaluation Board organized by research areas; and many individual reviewers approved by the panels.

The **Research Evaluation Board** has managed the evaluation process. It is also responsible for this final "Research Evaluation Executive Summary" report. The Board set the evaluation parameters and supervised the evaluation process; its members also chaired the Expert Panels and approved their membership. The Board's main task was the assessment and grading of the units (faculties and institutes) in the final phase of the process. The Board was composed of 18 academics from universities from around the world, plus five internal members who acted as observers of the process.

There were four **Expert Panels**. Each was responsible for the assessment of one of the following research areas: Arts and Humanities (HUM), Social Sciences (SOC), Medical and Health Sciences (MED) and Natural Sciences (SCI). A particularly challenging aspect of the work of the Panels was to ensure that the peer review was completed comprehensively, with each output receiving two high-quality reviews. This was challenging because of the high number of reviewers needed, as well as the high number of outputs written in Czech. Altogether the panels analyzed the data and produced reports for 22 research areas, including grades for the individual areas and fields. There were, in total, seventy-three panellists involved in the process, most of whom were experts from foreign universities.

More than 700 **reviewers** were secured to provide written reviews for individual research outcomes chosen by the units that were under evaluation. The purpose of the review of selected outputs by independent international experts was to evaluate the extent to which these outputs -- provided by the units as representing their best work -- meet international and national standards of excellence in the field.

The evaluation was based on five main evaluation tools: (1) The evaluators were provided with basic research **indicators** such as the number of persons involved in research, the number of research outputs, lists of grants and projects, lists of study programmes as well as the number of students and graduates in these programmes. (2) Faculties and institutes produced extensive **self-evaluation reports**. (3) Experts in scientometrics prepared an extensive **bibliometric analysis and comparison of the benchmark institutions**. (4) The **peer review** of selected outputs, described above, provided a window on the best outputs in each

field. (5) Finally, the evaluation was informed by **site visits** across the many units and faculties at Charles University. Unfortunately, only one face-to-face meeting of the Board was held in June 2019.

The main outcomes of the evaluation process are the **Area and Field Reports** and **Unit Reports**, accompanied by assessed grades. It is important to reiterate that the individual faculties and fields are evaluated in comparison to similar units at the international benchmark institutions. They are not evaluated in comparison to one another.

We appreciate that during the whole process the faculties and institutes shared their views with members of the Board and panels -- and commented on both the evaluation procedures and the reports. As evaluators we are grateful for their feedback, which is an integral and important part of the outcome of this review. In this report, we provide a brief summary of the assessment of the faculties and institutes along with recommendations for how to incentivize and foster an accelerating trajectory of research excellence at Charles University.

SUMMARY OF ASSESSMENT OF THE UNITS

This is a summary of the assessment of the faculties and institutes of Charles University (henceforth referred to as “the units”), accompanied by a final grade and its justification. Detailed assessment of each unit can be found in the Unit Reports.

Catholic Theological Faculty

KTF has been evaluated in four fields: Theology with C as its main field, History of Arts with B as its second strongest field, History with B and Philosophy and Ethics with C+. While the peer review brought forth very high and high grades, all panels note that too little effort is placed on international (especially high-impact) publications. There were no major international grant holders at KTF during the evaluation period, however the unit has an increasing tendency in obtaining funding from national grant sources. The evaluation revealed a great gap between the remuneration of young researchers and senior professors which hampers its ability to attract and keep young talented researchers. While the KTF is actively participating in international research activities using the opportunities offered by the national and international instruments, the degree of international cooperation and recognition in the international scientific community is quite limited.

Protestant Theological Faculty

PTF has been evaluated in six fields: Theology with the grade B in its main field, History with B as its second strongest field, Philosophy and Ethics with C, Social Work with D, Jewish Studies with D+ and Religious Studies with C+. Fields graded with C and D represent new fields (Social Work) or fields with a very small share of core faculty participating. Remarkably, most of the outputs submitted for peer review were non-native language outputs. PTF has a relatively high (3.8) average number of journal articles (per core faculty) published in Scopus-indexed international journals in the field of theology. It is almost double the CUNI average in the field (2.08). The panel stresses the activity and efficiency of PTF in obtaining foreign grants and in participating in the implementation of international scientific and educational projects and through this its visibility and productivity contributes to the profiling of the evaluated research fields. PTF has a functioning system of attracting and keeping young researchers and the level of remuneration of junior faculty members is the highest among the three theological faculties. International visibility through the membership in scientific organizations and international institutions is at a good level.

Hussite Theological Faculty

HTF has been evaluated in four fields: Theology with C, Jewish Studies with D+, Religious Studies D and Social Work C. The evaluation panel noted that it is quite striking that HTF chose not to be evaluated in either Philosophy and Ethics or Pedagogy since almost half of the core faculty members produced outputs in these fields. This is especially true in the field of Philosophy and Ethics, which accounted for the output of 11,3 of 45 core faculty members, yet was evaluated by the respective panel as below average. There are no major international

grant holders at the HTF. The unit lists 4 national grants and 26 grants awarded by CUNI. The degree of international cooperation and recognition in the international scientific community is quite limited. While HTF has a strong PhD program with many opportunities for younger researchers, it fails to reach the CUNI average level of remuneration for young researchers.

Faculty of Law

The Faculty of Law is a well-established institution within Charles University, with a good reputation also at the international level. The Faculty maintains intense cooperation with legal establishments outside academia both at the national level (Constitutional Court, the Supreme Court, and the Supreme Administrative Court, the Prosecutor General's Office, lawyers and notaries, executive bodies such as ministries) and at the international level (with the Court of Justice of the EU or the United Nations Organization). As a whole, the Faculty is well balanced in terms of quality in various areas of the law. In the peer review process that assessed the best outputs nominated by the faculty, the outputs have often been graded as very good (47%) and sometimes as excellent. The outputs of the core faculty that were put forward for peer review were graded as being of a very good quality (99%).

The performance of the Faculty as measured by publications in indexed periodicals and by EU funded research grants is not, however, at the level of the best-performing benchmark universities. In fact, only 1 CUNI output can be assigned to the 1st quartile AIS Journals (5.5 %), 5 outputs to the 2nd quartile (27.7 %), 6 outputs to the 3rd quartile (33.3 %) and 6 outputs to the 4th quartile (33.3 %). Although the citation index based on the WoS Articles & Reviews has limited coverage of legal publications, especially from non-English speaking countries, some benchmark Universities (Leiden and Copenhagen) did better than CUNI Faculty of Law in delivering outputs published on AIS Journals, whilst the others (Heidelberg, Milan, Vienna and Warsaw) obtained comparable results. Despite a pool of internationally recognized and active scholars, the Faculty bears limited traces of internationalization compared to other CUNI Faculties in terms of international research grants and the presence of core Faculty members and PhD students from abroad. During the evaluation process some concerns were also raised with regard to the organization of PhD studies. While fully appreciating the commitment of the Faculty as a whole to improve its performance on various levels, the Board has deemed opportune to formulate certain recommendations, among which:

- (i) to concentrate the existing economic resources on fewer full-time PhD students and increasing their stipend, thereby allowing them to work full-time on their PhD dissertation (while preventing them from working for other employers).
- (ii) to set up a strategy of inter-universities research centres, which would enable the projection of comparison with other foreign faculties active in legal research and a reciprocal cross-fertilization
- (iii) to set up joint teaching collaborations with foreign well established Universities and international PhD programmes, which could also represent the basis for joint international research projects and also enable collaborative training of junior researchers.
- (iv) to facilitate discussion and feedbacks at international level, the Faculty might consider arranging online seminars (to minimize costs), inviting foreign experienced researchers who work in the same area of law (or any other relevant area) to discuss the matter and provide their feedbacks on the draft papers (circulating them well ahead of the seminars).

- (v) to favour networking and cooperation with other CUNI Faculties' members with the objective to participate in European calls for multidisciplinary projects;
- (viii) to organize training classes on research and publishing methodologies aimed at younger researchers, including PhD students;
- (vi) to organize training courses for younger researchers on how to draft an effective application for EU research projects, benefitting from the experience of ERC winners belonging to other faculties;
- (vii) to encourage self-reflection on the quality of the outputs, by frequently organizing discussion among peers over preliminary and final research outcomes
- (viii) to abandon the preference for local periodicals and set up a strategy of publishing in internationally prestigious journals which appeared in a very limited way in the review process.
- (ix) to actively encourage the publication of in-depth and original research resulting in academic monographs or well refined essays, as opposed to informative outputs mainly aimed at training practitioners.

Finally, the Board recommends that the Faculty assess its research strategy and objectives on a regular basis, also with regard to the tutoring of PhD students, in order to achieve further advancements.

Medicine and Medical Sciences - General comments

The Czech Republic has eight medical faculties to care for its 10.5 million inhabitants, with five of them belonging to Charles University. Of 2 pharmaceutical faculties in the Czech Republic, one belongs to the Charles University and is located in Hradec Králové. Three of the medical faculties of Charles University are located in Prague, while one is located in Plzeň and another is located in Hradec Králové. This organisation is unusual in Europe, yet provides opportunities for multicentre studies, as reflected by the successful Prague Trials.

The panel and the Board had difficulties with grading of each faculty as each faculty has strong areas of research and some weaker than the other faculties, however the panel recommended the following conclusions to the Board.

Although some research teams collaborate with European and even American centers and may apply for European funding, national funding is suboptimal and significantly below benchmark institutions in Europe. Increases in funding should be prioritized in the future. A specific analysis of this issue is mandatory, as funding provides the foundation for research. Considering the low level of resources with which to work, the overall research output of the Medical faculties of CUNI is remarkable. Compared with the benchmark universities, there is potential for improvement;

- Increase the amount of institutional grants to allow long term strategic planning of research programs by financing postdocs and PhD's.
- Reconsider the system of academic titles given for life and employ periodic reevaluation to stimulate continuous output.
- Encourage collaboration among the five faculties focusing on multi-center studies, i.e. RCT's

- Introduce systematic training in research methods (study design, data analysis) and in writing grant applications and scientific publications for PhD students and junior members of staff.
- Stimulate and reward participation in international research activities and European projects.
- Award high quality publications in Top 10% AIS Journals and place quality above quantity.
- Establish links between the faculties and across disciplines to share best practice and peer review grants prior to submission in order to improve success rates. This is particularly important for EU grants.
- Establish centres of excellence across the faculties to leverage top quality research as well as pool resources and facilitates. This will also help to avoid duplication and be more strategic in terms of grant submission.

The system of five Medical Faculties in one University is unusual and unique. Advantages of this system include the ability to pool resources and patient populations, as in the Prague Trials. Disadvantages include the difficulties of organization of long-term research. For long-term research strategy it is questionable if this system is justifiable. One Research Advisory Board for all five faculties might be more efficient. The advisory board could identify central core units, identify areas of expertise, and identify novel clinical research questions that Charles University is in a good position to study. It is especially important to identify areas which are unique to Prague, in order not to compete with other much richer research groups. The evaluation panel feels that this description will be in vain if it is not used to co-design novel research strategies and increase funding appropriately.

Bibliometric evaluations have the advantage of precision that is easy to evaluate and monitor, but have the disadvantage that numbers do not always represent the meaning of the work, the innovation, novelty, risk, international standing etc. Moving from evaluation to recommendation requires a new discussion process with experts in the field. The discussion would include questions of international leadership or following others in incremental research. Such a discussion should be based on personal meetings and development plans of the faculties. A common evaluation development plan that addresses the future plans of all medical faculties together would foster cooperation between the splintered faculties.

First Faculty of Medicine

The First Faculty of Medicine (1.LF) of CUNI is by size and history the largest and one of the most important among the five faculties of medicine of the university. It is traditionally viewed as the founding institution of all the medicine in the country and all other faculties of medicine (inside as well as outside of CUNI) view it as a benchmark.

The organisation structure of the faculty seems to be rather complex. High interest is devoted to the selection process of the new professors and associate professors. As concerning the international cooperation, 1.LF seems to exploit the most of the international projects, in comparison with all the CUNI medical faculties.

The international mobility of 1.LF students and researchers is well-established and institutionalized. The number of international students is quite satisfactory. The list of visiting

professors is rather long and contains interesting and respected individuals. The faculty lists some highly productive and internationally recognized researchers which is a good sign for the future. The most striking deficiency is that this major research institution has not a single ERC grant recipient. It is absolutely necessary for the faculty to increase its efforts in this task.

1.LF operates 22 doctoral programmes which is too many according to international standards. An important plan for the future involves use of the facilities in Biocev and, especially, the planned new building of Kampus Albertov. It is instrumental that these new structures are used for the recruitment of excellent researchers from abroad that might bring in new methodologies, research ideas and models.

In comparison of the 1.LF as a whole with the benchmark universities, the relative output of 1.LF normalized to the number of researchers is lower. But in national and CUNI comparison 1.LF is a leader in many research fields. The strongest research fields of 1.LF are as follows: 1.LF is rather active in cardiovascular research with high H-index that reflects the visibility of the research in this field in the medical literature. As well 43% of D1 papers (according to WoS) of CUNI in cardiology and cardiac surgery are authored by the 1.LF researchers. Another strong field is clinical neurology. Compared with the neurology as a whole at CUNI, 1.LF represents the most productive part of it, where the *Dpt. of Neurology* can be considered a leading department in this research field. 1.LF is also very strong and productive in Endocrinology and Metabolism (although some stagnation in this field shows a need for recruitment of young researchers), nephrology (among top 10% of papers in nephrology, there are a 14 out of total 18 CUNI papers from 1.LF), general surgery (55% of D1 + Q1 outputs of the CUNI are produced at 1.LF), toxicology and also psychiatry can be marked as a field with significant outcome and a reliable partner for international cooperation. 1.LF excels also in the field of Experimental Biology where it is on the second place in terms of the number and quality of outputs among all CUNI.

On the other side, research fields that are encouraged for improvement are oncology (which according to the bibliometric analysis seems to be performing less well in comparison with other international medical faculties) and psychology (only approx. 25% of the outputs are published in the 1st or 2nd Quartile). Furthermore, the Board took into account the fact that 1.LF is larger than all the other medical faculties, and thus its relative productivity per researcher/author is slightly lower, as shown in the bibliometric support. Too many research papers are published in the journals of mediocre quality in comparison to the benchmark universities, which if possible should be avoided.

Second Faculty of Medicine

The Second Faculty of Medicine (2.LF) was established as the faculty for paediatric medicine to distinguish itself from the 1.LF. The focus on paediatrics is still present in the research agenda of the faculty. 2.LF operates in close collaboration with the Motol Hospital, the largest hospital not only in Prague.

The research organisation structure is rather fragmented, as it follows the organisational structure of the Motol largest hospital not only in Prague and faculty departments heavily depends on a few leading research personalities.

The internationalisation of study and research slowly progresses, the total income from international projects is still rather modest. It is notable that there is not a single grant from the ERC for a faculty member. But because 2.LF is an active member in a number of international projects and consortia, an improvement of the internationalization can be expected. Also the establishment of the EpiRec joint research centre seems to be a very promising step, as well as the planned extension of the faculty facility and an opening of the spin-off Department of Bioinformatics which can create interesting opportunities for synergy within and outside the faculty.

The objective of 2.LF in research is to concentrate on a limited number of selected fields proven to be internationally competitive while keeping a high standard in the majority of other fields. This strategic decision seems to be truly followed specifically in paediatric molecular haematology and oncology, neurosciences with respect to epilepsy, paediatric endocrinology and paediatric and adult cardiology. Several top research groups can be mentioned. In the first place it is the "The Childhood Leukaemia Investigation Prague (CLIP)" that not only the bibliometric analysis singles out as an excellent research group which consistently publishes excellent papers in high impact journals. The Centre combines first class molecular biology research with advanced clinical investigation and is very successful in attracting and training PhD students and young investigators, as well as an outside grant support. The second excellent research group is the Children's Heart Centre, the only national centre for paediatric cardiology and cardiovascular surgery. The field of Clinical Neurology is considered to be very successful as well (one third of all the CUNI papers that belong to the top 10% according to WoS are of the 2.LF authorship), several papers were published in highly prominent journals. On a very good level is also Endocrinology and Metabolism where 2.LF (together with 3.LF and LFHK) closely follows the primacy of 1.LF. In surgery almost one third of all the D1 CUNI outputs are produced at 2.LF. In Experimental Biology 2.LF follows the primacy of the Faculty of Science and their share of AC outputs in the Q1 is quite high. An excellent ratio of outputs with AIS (higher than at the other faculties) needs to be mentioned also for the field of Psychology, even if the number of researchers in this field is rather low.

On the other hand, adult cardiology is an example of a department that should be encouraged to improve. Although they have published quite successfully, including high impact journals, the overall rating of scientific productivity is quite low. With an H-index of 16 this group is not competitive internationally. There is no clear research leader and the number of manuscripts published is low.

In general, the overall productivity of the faculty in terms of research outputs per author is relatively low, well beyond the benchmark international universities.

Third Faculty of Medicine

The Third Faculty of Medicine of CUNI (3.LF) has been originally founded as the faculty of epidemiology and public health. Later it underwent a rather unique re-organisation of its curriculum, which now uses problem-based learning throughout the six years of medical curriculum. The students are taught in both Czech and English languages. 3.LF is medium in size which gives opportunity to create a community spirit and encourage inclusivity and cooperation.

The organisational hierarchy has a relatively rigid structure that may be a barrier to collaboration and effective use of resources. 3.LF should consider strengthening the role of cross-departmental research coordinators and increase the autonomy of research group leads, for example, by allocation institutional support derived from research performance to group leaders rather than chairs of departments.

There are a number of important international collaborations at 3.LF. Nevertheless there is a room for improvement. International grants, such as those funded by the European Commission provided only a minor contribution to research funding during the evaluation period. They have had neither a successful application as the principal applicant for networking projects nor for ERC grants. 3.LF should also develop a positive motivational scheme for appointing international researchers. At the moment, there is no formalised mechanism for hiring and retaining senior academic staff. Head hunting is performed on an ad hoc basis.

The Bibliometric support suggests that the overall publication productivity of 3.LF does not substantially differ from other Prague medical faculties of CUNI when normalized to the number of researchers, but significantly lags behind comparable benchmark universities of Heidelberg, Milano or Copenhagen. 3.LF has the by far most visible Cardiology Department. It has a prominent international standing in the field of acute cardiovascular care (Prague Trials, Stroke management). In cardiology and cardiac surgery 3.LF has the second highest number of high impact D1 publications among other CUNI faculties, and has the most cited authors (the leaders are Ales Linhart and Petr Widimsky). Prof. Widimsky is clearly the leader in cardiovascular medicine in the country. Due to Dr. Tesar the field of nephrology has gained an international reputation as well. In Endocrinology and Metabolism 3.LF closely follows the primacy of 1.LF and is also stimulating international collaboration.

The Czech National Institute of Mental Health, affiliated with 3.LF, is a leading centre for research in psychiatry in the Czech Republic. This institution cooperates with other Faculties of Medicine of CUNI but also with other institutions in the Czech Republic and abroad. Prof. Höschl is a departmental and international leader. There are several research fields with both high attractivity and level of scientific work (for example, MRI in psychiatry, psychotropic substances for treatment of mental disorders).

Concerning the shares of AC-Outputs in the Top Decile, 1st and 2nd Quartiles, this faculty is the second best performing CUNI faculty in the field of Psychology. Despite having only a few faculty members in the psychology field, there are many publications in Journals with AIS.

On the other side, as a field which publication profile is limited can be pointed out the Obstetrics and Gynecology.

As it is the case for all other medical faculties of the university, too large a proportion of research outputs is published in the lower two quartiles according to the AIS.

Faculty of Medicine in Plzeň

The Faculty of Medicine in Plzeň (LFP) was established in 1945 and belongs to the smaller medical faculties of CUNI. The faculty sees its main research interest in regenerative medicine

(replacement, support and regeneration of vital organs, especially in the setting of infectious and oncological diseases), and focuses predominantly at sepsis, antibiotic resistance and viral infections in transplantology.

In 2014, using the funds from European Operational Programme the Biomedical Center of LFP was established, allowing integration of the best research teams and optimal use of research infrastructure and human resources. The Biomedical Center with a number of foreign professors, postdocs and postgraduate students grows steadily. Thanks to the Centre the internationalisation of the internal environment of the faculty gradually increases as well. LFP also participates in the project Biobanking and BioMolecular resources Research Infrastructure - European Research Infrastructure Consortium. Another large research infrastructure project, to which the Faculty of Medicine in Plzeň contributes is the National Center for Medical Genomics (NCMG).

The first major success in international European competition is the ERA Chairs (Horizon 2020 Widening) project Chaperon (CHAPERON – ERA Chair Position for Excellent Research in Oncology), which has been launched in 2019 (2019-2024, 2500 th. Euros). It has been obtained after the evaluated period but still could show the strive for internationalization at the faculty.

Concerning the performance in the field of Clinical medicine, LFP has the lowest output in comparison with the 3 faculties in Prague, however, since it has significantly less staff, resulting normalized output of papers per author is comparable. The Department of Microbiology and Biomedical Centre is a leader in the pharmacology of antimicrobial drugs. In endocrinology and metabolism LFP (as well as LFHK) is notably weaker. Also in Cardiology, Neurology, Endocrinology and Psychiatry and Sexuology the overall research and publication activity of LFP is lower. The question is, whether individual faculties have to be active in all fields or focus on those, in which it has selective advantage.

LFP seems to be successful in attracting and establishing young research groups (e.g. group of Experimental neurophysiology). LFP also has a long-term strategic plan where excellence of research teams, internationalization of the research and long term development of research activities and technology transfer are the main interests. Together with the establishment of the Biomedical Center it is a major opportunity for the future, which will possibly impact the grading.

Faculty of Medicine in Hradec Králové

The Faculty of Medicine in Hradec Králové was established in 1945 and it is closely connected to the University Hospital Hradec Králové, a very large and modern health care facility. It also closely collaborates with another faculty of Charles University that is located outside Prague - Faculty of Pharmacy in Hradec Králové. A new university campus Mephared has been currently built near the University Hospital Hradec Králové. The main goal of this project is to interconnect the two separate faculties and to promote their collaboration on interdisciplinary research projects.

Academic staff of the faculty actively participates in various international professional societies, many academicians are members of editorial and advisory boards of international

impact journals. The faculty participated in two prestigious collaborative research projects financed through the EU 7th Framework program. LFHK has more than 25 years of academic and research cooperation with the prestigious American Mayo Clinic where summer courses for students and researchers are held.

The faculty supports the research activities of undergraduate students who have the opportunity to participate in student research at any department and apply for junior projects. The Board noted that support of the young generation of medical researchers specifically in clinical sciences is critical as the upcoming generation is often lacking motivation, while focusing on clinical practice.

According to Bibliometric Support in the evaluation period the bibliometric indicators suggest slightly weaker overall publication performance of LFHK in comparison to the 1st and 2nd Faculty of Medicine (Prague) but comparable to the Pilsen LF and 3. Faculty of Medicine. LFHK showed generally less favorable distribution of research papers than the best performing CUNI medical faculties (1.LF and 2.LF). In terms of the international comparison, the bibliometric data for the LFHK seems to show slightly better picture than for the benchmark medical faculty of the University of Warsaw and even University of Vienna, and lags behind University of Copenhagen, KU Leuven, Uni Heidelberg and Uni Milano, both in terms of the most excellent results and research productivity.

Science and research areas that the faculty develops are age-related diseases, development of new diagnostic methods, experimental pharmacology and toxicology, liver physiology, modern trends in oncology and hemato-oncology, neurosciences, stem cell biology, surgical trauma and new operational approaches. Clinical research is carried out mainly in close cooperation with the University Hospital.

As examples of excellent researchers of LFHK can be mentioned Jan Vojacek who is the second most productive cardiovascular surgeon as judged by the bibliometric analysis of the CUNI authors. In Obstetrics and Gynecology Marian Kacerovsky is a faculty leader with an H index of 26. In surgery Filip Cecka stands out with a publication of D1 paper in high-impact class journal (Annals of Surgery). In Endocrinology and Metabolism LFHK (together with 2.LF and 3.LF) closely follows primacy of 1.LF in this field. In Pharmacy LFHK was second in productivity in high ranking journals over the last four years.

Faculty of Pharmacy in Hradec Králové

At CUNI the subfield Pharmacy and Pharmacology is much more strongly represented than the subfield Toxicology. Whereas in Pharmacy and Pharmacology FaF HK is the flagship faculty in the period 2014-2018, the flagship institution in Toxicology in the same period is 1.LF.

Research at FaF HK is focused on all traditional as well as modern fields of pharmacy and covers the entire process of drug development and clinical use, i.e. synthesis, medicinal chemistry, natural products – pharmacognosy, pharmaceutical analysis, molecular biology and pharmacology, pharmaceutical technology and clinical pharmacy, as well as drug regulations.

International grants allow purchasing of top equipment for analytical studies including environmental aspects (going green). Thanks to EU co-funded projects STARSS and EFSA–CDN, and further support from institutional funds, several new pieces of research equipment have been purchased and core facilities established. Commendably, FaF HK owns several patents protecting various structural types of antimicrobial compounds, instruments and methods. A patent application on new antituberculosic agents was licenced to a pharmaceutical company. While patent applications are numerous, successful technology transfer is still rather rare and should be supported more.

FaF HK currently curates two large EU co-funded projects focused on excellent research: STARSS and EFSA-CDN. The Faculty invites excellent foreign experts to present a lecture. Faculty also regularly organizes international meetings and conferences concerning separation sciences. The leading faculties and Departments are strongly recommended to analyse how continuous fostering international collaboration could provide added value to existing prevailing inter-CUNI or national collaboration. But it can be seen that FaF HK pays attention to this already at the time being - about 30% of all papers published by staff of FaF HK have been produced in cooperation with foreign institutions.

FaF HK pays a significant attention to inclusion of young researchers in new research teams. The FaF HK has the highest success rate of their doctoral degree programme students within CUNI. Publications in top journals are substantially bonified. Positive progress came with the EU co-funded projects that brought funds to attract foreign postdocs to work at FaF HK. The faculty bonifies the departments with foreign academic and research employees.

With some exceptions the FaF HK works have mostly not been published in highest ranking journals but importantly contribute to the coherence of pharmaceutical research at CUNI. The researchers in the cited areas are strongly recommended to increase the visibility of their research by targeting higher ranking journals. The highest number of top half publications in Pharmacy, Pharmacology and Toxicology in the period 2014-2018 were produced by FaF HK. The analysis of the published papers demonstrates that very often the research is performed primarily within one Faculty or within CUNI collaboration only.

Bibliometric analysis clearly confirms the analytical chemistry at FaF HK ranks among the best in the Czech Republic. Nearly 50% of publications of FaF in this area are in the 1st quartile and more than 75% are in the top half journals according to AIS (and also IF). In the WoS “Chemistry, Analytical” category, FaF HK produced the highest number of top half and also 1st quartile ranked articles among all research institutions in Czech Republic.

From the strategic point of view, an extremely important operation will be the completion of the joint research campus Mefared together with the Faculty of Medicine of CUNI in Hradec Králové using the EU Operational Funds. Smart use of this facility for not only enlarging the current facilities but also acquiring excellent young researchers from outside the university will be critical for the further development of both faculties in Hradec Králové. This opportunity must not be missed.

FaF HK could be considered as a role model for international collaborative research, grants, policy stimulating and motivating young researchers, as well as collaborating with the Medical faculty.

Faculty of Arts

The Faculty of Arts (FF) is the largest faculty at CUNI in terms of the core faculty members. It represents all fields of research in the humanities supplemented with some representation of social science research. FF has been evaluated very highly in most of its fields: more than half of the fields were graded very highly (A, B+ or B). More than 80% of the core faculty members work in fields that have been so evaluated (more than 20% work in fields evaluated as excellent).

The very high level of humanities' research at FF is clear in the high-impact international publications and in some of the native Czech-language publications. In most of the fields, there are some internationally recognizable outputs. International visibility is particularly strong in archeology, literary research, history, linguistics, religious studies. In absolute terms, FF is the recipient of the greatest number of international grants at CUNI. But it is 6th at CUNI in terms of the number of international grants per core faculty member. It has not received top international grants, although it has to be stressed that they are rare in the humanities. It is also very successful in competing for national grant funds. It has a system for attracting and supporting junior researchers, though FF's funds are limited. FF is involved in many international research networks. It ranks 6th at CUNI in terms of the percentage of international faculty members and 2nd in terms of the percentage of international students.

Since FF is much larger in size than the faculties at benchmark universities, it is all the more remarkable that the faculty manages to maintain a high standard in most of its research fields. FF should seek to support and encourage international high-impact publications. It should strive for the research publication culture to become predominantly international. It should also seek to support efforts to obtain top international grants.

Faculty of Science

The Faculty of Science was evaluated in Biology (SCI); Chemistry (SCI); Geography (SCI); Geological and Environmental Sciences (SCI). All fields of the faculty show a sound development with a clear tendency to strive for excellence. The overall performance of the Faculty of Science at CUNI is at a very good level. There is a large number of research that contributes to the high reputation of faculty with faculty members winning ERC grants, which is highly appreciated and a measure of the international competitive nature of the performed research. Biology has seen some important achievements for example with the opening of the BIOCEV centre of excellence in 2016, creating a stimulating environment for the development of its research labs and core facilities. Chemistry compares fairly well to European standards. The number of top 10% outputs (publications) are comparable with the other benchmark universities. Indeed, the majority of the outputs are publications in international journals with AIS, as is the case in most successful chemistry institutes worldwide. Geography occupies a prominent place in the international rankings scoring rather well (rank 51-100 globally), in the same tier as Heidelberg and better than Vienna or Warsaw. Geology and Environmental Science compares well to the benchmark universities. On the basis of the peer-reviewed outputs, there is indication of high-quality research in Geological and Environmental Sciences.

There are 14 PRIMUS projects (the university-initiated start-up program for young PI's) enabling several excellent international PI's to be supported. Hence, the faculty makes great strides towards internationalization.

The question has been raised by the panel, whether a flatter organization with more agility to react to research developments and the ability to make serious investment in people and plans for the future would suit the requirements better. It appears that units are fragmented in different Departments and disseminated in different buildings of the university.

Faculty of Mathematics and Physics

The Faculty of Mathematics and Physics is one of the flagship units at Charles University. It has been very successful during the evaluated period with several major outputs which have received international recognition, including several ERC grants. Physics at Charles University is well integrated into the international research network and contributes significantly to large international projects and infrastructures. Computer Science is a strong asset, with a Theoretical Computer Science group that has achieved top international recognition, and takes its share in the rapid development of the field, with huge potential for both basic and applied research. The School of Mathematics produced outputs of excellent quality which are very well recognized internationally.

The presence of talented and active young researchers is a good indicator of its vitality and potential. The Faculty has the full potential to become fully competitive in the near future and to reach the level of the top benchmark institutions. To achieve this, overall research strategies should be defined and regularly updated in the various areas to react to new developments and opportunities and to improve their visibility. In addition, more efforts should be made to leave the comfort zone of mainstream research and take up more risky and cutting-edge topics.

Faculty of Education

The Faculty of Education is a well-established institution within Charles University. Its primary goal is to train teachers and other pedagogical personnel for all types of schools and school systems, at various levels of study. In some fields PedF is well-known and recognized at the international level, less in others. Moreover, it has strong links with the most authoritative Czech educational institutions and this is definitely the variable that strongly determines the activity of the faculty.

PedF has been evaluated in 14 fields from Social Sciences and Humanities. As far as publications are concerned, the fact that they are often in Czech and published in local magazines is penalizing: while the peer review brought good results, especially in some fields, it has to be noted that too little effort is placed on international (especially high-impact) publications.

International cooperation and recognition in the international scientific community should be strengthened.

The research organisation structure seems to be rather fragmented: often, in fact, instead of focusing on specific aspects characteristic of the Faculty of Education, research themes common to other faculties are developed, and this sometimes results in fragmentation of disciplines and areas, and in difficulty in keeping a consistent level at which research is practiced.

It seems that relatively few doctoral and postgraduate students are involved in research. As far as PhD students are concerned, they are on average older than their colleagues in other faculties, they extend their studies for a long period of time because they are often working students, and they should be more supported both financially and from the point of view of the research organization.

Faculty of Social Sciences

The research evaluation exercise by the panels produced grades for 8 separate areas/fields, ranging from B in four fields (economics, history, public policy, and sociology); C+ in three fields (media and communication studies, area studies, and political science), to the grade of C in one field (anthropology). Weighted by staff representing those areas, the Faculty of Social Sciences (FSV) achieves a solid C+ grade in the international benchmarking exercise. This grade stems in part from the importance that panel in the social sciences attributes to publishing in English in AIS ranked journals with an international reach. The Board recognizes the 'intensity' of foreign cooperation by FSV evidenced in an admirable influx of foreign students and researchers, alongside a substantial number of visits and exchanges among FSV researchers and their counterparts abroad. However, the level of international academic engagement of FSV scholars that lead to publications in English in journals with an international reach remains low.

The Board acknowledges the support that FSV has already offered to researchers in designing and administering grant-funded projects and publishing books. Yet the FSV can engage to a greater extent with the continental European academic scene by supporting the publication of articles in international journals and securing milestone grants like the ERC. The Board's reading of numerous panel reports led to recommendations for enhancing research excellence that align with weaknesses that the FSV identifies in its own self-evaluation report. One key recommendation is to increase incentives for high quality rather than quantity of output through research training programs for FSV researchers at all levels, research sabbaticals, and reform of dissertation rules. Other recommendations include: increasing the use of English in research and teaching to create a more welcoming environment for international researchers; expanding recruitment outside the FSV to reduce academic inbreeding; and expanding inbound and outbound visitor programs to increase international exposure. The Board sees great potential for the FSV to contribute to international academic debates for which Prague-based researchers are well placed to gather qualitative and quantitative data. Political scientists at FSV should be at the center of debates on rising authoritarianism in the EU, or the long-term nexus between the economy and the

environment. The Board also recommends that FSV branch into new areas of quantitative social science research, in particular non-economic social sciences using modern digital methods.

Addressing these concerns will help propel FSV to greater research excellence. To remedy a sizable gender gap in promotion to associate and full professor levels, the FSV should make a more concerted effort to recruit, train and promote women at all levels. The Board recommends the institutionalization of an independent standing committee to monitor issues of discrimination and to recommend steps to improve the climate for women and minorities. Similarly, PhD programs should be standardized and streamlined; smaller numbers of students with greater financial resources, more methods training and more intensive supervision could be beneficial. Centralization and standardization of doctoral training across FSV would enhance professionalization across the departments as well as consolidate expectations in the job market and at the workplace. A coordinated reorganization of doctoral studies to harmonize examination procedures and quality standards would reduce overall fragmentation in the faculty. In general, fragmentation appears to be an obstacle to academic excellence in funding, training and evaluating PhD students and in incentivizing high-quality research across FSV and the entire university. Bold steps should be taken to overcome this fragmentation.

Faculty of Physical Education and Sport

The Faculty of Physical Education and Sport at Charles University in Prague (FTVS) is an important institution combining teaching and research. Research in sport and physical education is by nature interdisciplinary and includes areas such as education and methodology, psychology, ethics and philosophy, history, sociology, applied biomechanics and physiology, rehabilitation, nutrition, management, and others.

Taking the data from the Bibliometric support for FTVS 422 researchers are registered, however, only with 168 AIS outputs, 12% of the total amount 1409 outputs. Majority of the AIS papers are within the 3rd and 4th Quartile. Only 6 papers were published in the top 10% AIS Journals. In recent years the Faculty has registered a considerable increase in its research profile that is also evidenced by the continuous year-over-year growth of AIS outputs. A similar trend relates to research funding. On the other hand, only a very slight increase in the number of researchers has been noted.

In relation to PhD students there should be an increased focus on research and scientific orientation and more theoretically grounded training. A maximum effort must be made among students to help them to understand the importance of the scientific and analytical approach to sport, health-focused movement activities, physiotherapy and social-science topics.

Multidisciplinarity is welcome, but this is also sometimes done to the detriment of certain disciplines. The inquiry, for instance, could relate to the distribution of sports practices according to social groups, or to the way in which the younger generations favour certain practices to the detriment of others, or the way in which male and female practices evolve.

The Faculty would also benefit from accentuating international relations, in particular with European centres where research has a long tradition and with researchers with the track record of research originality.

Individual sectors within the Faculty, either the more practically as well as theoretically oriented could be better defined. The quality of research output needs to further improve, focusing on fields of competence of FTVS and aiming to publish in top journals in the field.

Faculty of Humanities

The Faculty of Humanities is the youngest unit within Charles University. In only two decades, however, FHS developed an original research culture based on a deliberate interdisciplinary profile (present throughout most of its departments) and on very specific innovative subfields (e.g. longevity studies). Specific to FHS has been its focus on socially relevant fields, which meet many of contemporary Czech society's challenges (migration, intercultural communication, gender inequality, social exclusions, and so forth). This dynamic research culture has been made possible to a large extent by the relatively small size of the unit: it encourages a direct dialogue between researchers, and, as a result, bottom-up research initiatives that have proved very fruitful. This also allows a more active involvement of PhD students in the faculty's research programs.

Although 11 fields from social sciences, humanities and medicine are represented at the FHS, 85,8% of its core people work in four main fields: Philosophy & Ethics, History, Sociology and Social & Cultural Anthropology. These fields have been rated from good to very good. Maintaining this dynamic culture based on grassroots research initiative can be a challenge. The faculty's original profile and small size can have its drawbacks both in terms of ranking (as some of the centres and departments escape traditional research areas), as well as in terms of publishing opportunities. Similarly, for want of a full-fledged administrative support system, FHS has only been able to apply to international grants in partnership with other institutions. Therefore, the internationalization of FHS is a work in progress.

Currently, FHS tries to address these problems as it has been engaged in a comprehensive internal restructuring. Similarly, it has managed to improve its infrastructure with the acquisition of a new building in the Summer 2020.

These efforts however need external support and interfaculty cooperation. This is necessary both in order to complement FHS's scant resources and in order to better integrate it into the university's larger research strategy. The Board would like to stress two points in particular:

- The necessity of an improved interfaculty dialogue. This would allow research teams and PhD students to increase their visibility while accessing the pool of resources of the university as a whole.
- The faculty, with the support of the University, can provide incentives for researchers to publish in very visible international journals with high impact. In our opinion, this should not diminish the importance of publishing in local venues: it is only by maintaining both local relevance and international visibility that the local journals will increase their prestige.

Institute of the History of Charles University and Archive of Charles University

The Institute of History and Archive (UDAUK) has two main and complementary tasks. The preservation and processing of exceptional archival resources is clearly predominant. Both require highly specialized technical competences and the process of digitization of the fund has made significant progress over the recent past years.

The second task is research on the history of Charles University and its larger diffusion. It has brought some major scholarly contributions whenever the global output is more mixed, with a number of traditional or casual publications. Most of them (90 %) are available in Czech only. Yet, there are some positive signs of renewal: an interest for the history of sciences and scientific disciplines, together with new openings towards sociology and the institutional contexts of knowledge, networks, gender issues, and more generally the so-called science studies. It goes along with signs of stronger international collaboration. In 2021, Charles University is expected to welcome the next International Congress for the History of Science. The Institute faces obvious material space constraints. It is waiting for a new, more favorable up to date setting.

In terms of research and training for research, we recommend the recruitment or, at least, the assignment of new scholars and overall a stronger integration and a more dedicated articulation with research teams at work in other faculties. Joint training programs at the Master and PhD level could work as a useful appeal for a number of students.

Center for Theoretical Study

The Centre for Theoretical Study (CTS) has been evaluated in five fields: Biology (SCI) with B+ is currently the main field of activity; History and Archaeology (HUM) evaluated as B; Philosophy and Religion (HUM) evaluated as C+; Sociology (SOC) evaluated as C; Economic Science (SOC) evaluated as C. It is clear that research conducted at CTS is very uneven, is dominated by one discipline, namely biology.

CTS is a joint unit of Charles University and the Academy of Sciences of the Czech Republic, however there is no clear evidence that CTS serves as a bridge or liaison between both institutions that established it. CTS primary mission was to conduct inter- and trans-disciplinary research covering e.g. mathematics and complex systems, biodiversity, theoretical physics, biology, economics, archaeology, sociology, philosophy. Thus, having such a broad context on board, the role of CTS can be rather considered as a think-tank that fosters the integration of researchers who work in various fields from exact and natural sciences to humanistic and social sciences focusing on complex phenomena and developing novel methodological approaches. Unfortunately, unlike the intended mission, the diversity is strongly unbalanced.

Although CTS is a relatively small unit within Charles University, with a very small number of core staff, accompanied by contract employees, the expertise of staff members is very diverse. This is a very important advantage and resource of the centre, but only if scientists work together to obtain the added value in their research. It is very important to promote ground-breaking, forward-looking research. As a small unit with the small number of

employees, the CTS does not have a strictly defined organizational structure. It is rather considered as a club of intellectuals, exchanging ideas and knowledge. Over the evaluation period, 3 grants financed via FP7 where CTS staff members served as principal investigators were identified; all of them were completed by 2014 (two grants) or by 2015 (one grant).

Apart from purely academic research, it is important to mention the role the CTS plays in shaping national and international discourse in biodiversity, sustainability and climate change, bringing into discussion biological and philosophical point of view. The leading researchers of CTS represent a very important voice in the public debate.

Center for Economic Research and Graduate Education

In the view of the Economic Panel and the Board, CERGE-EI comfortably exceeds the parameters defined by comparator institutions. It thereby achieves an excellent grade in the international benchmarking exercise, based on information from bibliometric performance measures, peer review, panel evaluation, and self-evaluation. The economic research conducted at CERGE-EI is broad, covering labor and family economics, econometrics, industrial organization, information economics, political economy, and the economics of innovation. The most outstanding research published in the measurement period features new frontiers of economics: behavioral economics, decision economics, and experimental economics, and to some extent macroeconomic theory. The institute's organizational structure reflects a concern for research productivity represented by publications in peer-reviewed international journals, freeing time for younger colleagues to focus on substantive projects and shielding them from undue bureaucratic burdens. Promotion of excellence permeates all parts of the institute. CERGE-EI scholars are visible at major international conferences as well as in editorial boards of leading international journals. They are integrated with the very top of the pyramid of world-class universities. Two very prestigious European Research Council (ERC) grants were awarded to CERGE-EI researchers during the evaluation period. Public outreach exists, but does not crowd out the ultimate goal of producing and publishing world class research.

Despite this excellent evaluation, the Board does note that some sub-disciplines of economics are underrepresented in CERGE's output. In these areas, demand for world-class research is emerging and economies of scope at CERGE-EI could be readily exploited. Environmental economics, the economics of climate change, health economics, urban economics, public finance, inequality, and applied macroeconomics and finance are less present in the CERGE-EI research portfolio. New and expanding research initiatives in data science and program evaluation ("big data and causal analysis") could readily be added to the research agenda. Praiseworthy efforts in outreach could be expanded in applied areas synchronized with public research needs.

In the Unit Report, the Board makes a number of concrete suggestions to help CERGE-EI achieve even higher levels of academic excellence. The expansion of research scope might be financed by creative integration or even consolidation of activities of CERGE-EI with those of the IES at the Faculty of Social Sciences. Partnering and coordinating teaching engagements between the two institutions could make CUNI economics a better-diversified powerhouse overall. CERGE-EI could assume the role of a dynamic "academy of excellence" to which IES

faculty members could be nominated for limited and renewable terms on the basis of excellent, measurable research output. This status would grant blanket teaching load reductions and more research time to its members on a pure merit basis. The Board also noted that the fraction of women at CERGE-EI is low compared with the rest of the university and the profession in general, and that this situation merits serious attention. More aggressive international recruiting, also from the best students of IES, could alleviate this problem.

Environment Center

The Environment Centre (COŽP) has been evaluated in four fields: Environmental Sciences (SCI) evaluated with B+; Economic Science (SOC) evaluated with C; Public and Social Policy (SOC) evaluated with B; Pedagogy (SOC) evaluated with B. The status of COŽP is unique in being situated within the organizational structure directly under the Rector and is largely financed by external grants, which to some extent may hinder long-term planning and time for more time-consuming in-depth studies. COŽP aims to conduct research and provide expertise in the broad field related to the environment and is of a different nature than the other units of the University. COŽP collaborates with governmental institutions, e.g. parliamentary bodies, the state administration, non-governmental organizations as well as a number of national and international academic and research institutions.

The COŽP is divided into five Departments and has its own Scientific Board that consists of 15 members. It has the tasks of approving the research concept of the Centre and evaluating its research results.

The specificity of research conducted at the COŽP is in its multidimensionality in the context of inter- and transdisciplinary research. It is worth highlighting that this distinguishes the research activity of the COŽP from research conducted within individual Faculties of Charles University. COŽP should be viewed as focused on applied research and evaluated in terms of, say, its financial contribution to CUNI, measured in terms of grants and contracts, but also in terms of the societal impact, the influence of the current discourse on sustainability, climate change etc.

There is a number of international grants, which cover close to 40% of all grant funds. Those projects exemplified the close collaboration with a network of international scientists. A significant number of staff members of COŽP are internationally recognised, and in general, the publications outputs are satisfactory, both in respect of the number of publications as well as quality of journals.

Although being a relatively small unit of Charles University in respect of the staff member, the COŽP can be considered to be a dynamic, expertise-oriented institute. Moreover, taking into account the high scientific position, it is worth emphasizing its effectiveness in obtaining international grants.

It will be very important for the stability and sustainability of research at COZP to secure a larger proportion of its budget from the institutional financing (directly from the University).

GENERAL RECOMMENDATIONS

During the evaluation process, we have arrived at a compact set of recommendations regarding issues that we have repeatedly encountered during the evaluation process. We kindly present them to Charles University as one means of improving its performance in research and to be a more competitive research institution within Europe and worldwide.

1. Publication profile

It is essential to focus on high-impact publications: publications that put scholars at Charles University at the heart of cutting-edge, transnational academic debates in their field. This does not need to be equated with publications in AIS journals. Many evaluators in the humanities and social sciences stressed Scopus-indexed (SJR-ranked) journals as more reliable indicators of potential international impact. Monographs published by renowned publishing houses are crucial, especially in the humanities. There is, however, a consensus among the evaluators that CUNI should do more to prioritize, support and reward publications in international outlets.

The transition from an inward looking 'native' publication culture to an international publication culture is the responsibility of individual researchers as well as the faculties and CUNI as a whole. CUNI needs to overcome the preference for local journals and establish a strategy that inspires and incentivizes publications in internationally prestigious outlets. This class of publications appeared in a very limited way in the review process. The translation of texts should not be understood as a tool to increase publishing in different languages. It may be useful, for example, to require at least B2 level of English/German/French as one of the conditions for enrolment in a CUNI PhD program. All researchers at CUNI should be offered courses in academic writing in English and other critical languages, and also courses in mastering the methodologies that may be required in different disciplines in order to publish in high caliber outlets with a transnational reach.

The Board recommends that CUNI offers training programs for faculty and PhD students in research methods and publication strategies in order to help scholars at ALL levels pivot towards publishing high quality work in international outlets. This can help foster a cooperative atmosphere and eliminate perceptions that there are different standards for different categories of researchers.

The Board also recommends that CUNI and each of the faculties consider the following policies:

- Organize working groups and other fora where researchers in disciplines and units provide constructive feedback on work in progress to researchers preparing articles and book manuscripts for publication.
- Increase support and incentives necessary to encourage scholars to pursue in-depth and original research that engages in transnational disciplinary and interdisciplinary debate and discovery (as opposed to producing outputs intended to train practitioners).

- Offer the support and the incentives necessary to encourage scholars to publish in high quality outlets (e.g. in top AIS journals). This means privileging the quality over the quantity of academic outputs in every way possible, including allocating research funds, granting sabbaticals and especially awarding degrees and promotions at all levels, from PhDs to senior CUNI leadership.

2. Research Strategy

Fields are changing rapidly and new opportunities are arising which should not be missed. The organization of areas into departments (that roughly correspond to what would be called a research group at other universities) has the effect of rigidifying the choice of new research topics; this leads to fragmentation and isolation. It is crucial that in the future the research strategy and hiring process are performed at the area/faculty level and not at the department/research group level. This is the only way to renew efficiently the research topics and to move from traditional areas to cutting edge research that participates in exciting debates and discoveries at the international level.

The Board strongly recommends the institutionalization of an "Advisory Board" for each research area, composed of scholars from foreign institutions who would provide assistance and advice in defining top priorities. In this context, the focus should be on the identification of specific problem areas (branches) of research.

CUNI should strive to support and reward research excellence at all levels. There are many ways to motivate excellent research. One invaluable tool -- and a relatively inexpensive form of internal recognition -- is the use of teaching load reductions to give staff more time to spend on research. Currently, researchers spend too much time obtaining and managing grants, at the expense of time to conduct the research and publish the results. A further recommendation is to provide sabbaticals that require faculty to spend time abroad. This would assist scholars in positioning their research in international debates and building international networks.

Retention of outstanding faculty is also an issue: more support is needed to provide competitive packages to researchers who have won large international grants so that they will stay at CUNI. They are the talents CUNI needs to keep; efforts with enhanced priority for personnel and space allocation should be made. A coherent strategy would create a supportive environment for these talented researchers. The institutionalization of a standardized evaluation process for researchers, preferably by an outside committee with international members, would encourage junior faculty to compete on the basis of merit.

3. PhD programmes and students

The PhD programs are clearly too fragmented. CUNI needs fewer programs so that the intellectual capacity of faculty and the resources of the university are better used.

One priority must be to improve the financial conditions for PhD students. The Board recommends using existing resources to fund fewer full-time PhD students with a higher

stipend, thereby allowing them to work full-time on their PhD dissertation (while preventing them working for other employers) and therefore increasing the quality of their work while also reducing the time it takes them to earn the PhD degree.

Faculties should also work on making their PhD programs more attractive to foreign students. Salaries are low, even when augmented by scholarships; the PhD positions at CUNI are not yet fully competitive internationally. Well-funded PhD scholarships would attract the best talents nationally and internationally.

Closer monitoring of student progress with feedback could help create an integrated PhD environment to counteract student isolation. Records should be kept of the reasons for student withdrawal, which can help to reveal systemic problems or issues that should be addressed. Faculty who are supervising PhD students should both be expected to adhere to common standards of high quality supervision and receive the support they need in the form of PhD committees where all members are dedicated to the student's success.

The requirements of a fixed (high) number of papers authored by the student before graduation should be re-evaluated. One practical solution would be to set a lower minimum (e.g., one paper authored by the student), with the decision on whether this is sufficient or not being left to the PhD committee, who would make individual decisions ensuring appropriate quality of work.

CUNI intends to create a position for an Ombudsman to which PhD students could turn in case of problems. Experience shows that it takes a lot of courage to ask for help, especially when one is in a subordinate position of a PhD student. A more effective alternative would be to implement annual meetings between each PhD student and a committee of 2-3 established researchers (excluding PhD supervisors and recruited within and outside the department of enrolment). Such thesis advisory committees (TACs) can break the isolation pattern described by the survey led by CUNI. Such committees could report to the Ombudsman about any problems experienced by PhD students. They could also expand the networks of PhD students and, critically, provide valuable feedback on the work of PhD students.

4. Internal university cooperation

The Board favors networking and cooperation among the members of different CUNI faculties with the objective to participate in European calls for multidisciplinary projects. Research centres across faculties as well as core facilities could be established, possibly in cooperation with research teams at the Czech Academy of Sciences. Cooperation among faculties could bring many positive outcomes including the administrative and scientific capacity to apply for international grants, high-impact international publications, international and national visibility, and the recruitment and training of excellent PhD students.

The Board strongly recommends stimulating collaboration among the five medical faculties by means of multi-centre studies, i.e. RCT's. It is questionable if the system of five medical faculties can be justified as a sustainable long-term research strategy. A single Research Advisory Board for all five faculties appears to be a more efficient strategy. The advisory board could identify central core units, identify areas of expertise, identify novel clinical research

questions and help identify areas which are unique to Prague, to avoid unnecessary and possibly inefficient competition with better-endowed research groups.

5. Internationalization

Recruitment of more international scholars is needed. In this direction we recommend the establishment of a strategic plan in order to identify important hot topics and new directions of research. The recruitment of talented junior researchers trained abroad on these topics should be a high priority. It is recommended to set up joint teaching collaborations with foreign well established Universities and international PhD programmes, which could also represent the basis of joint international research projects and also enable collaborative training of junior researchers. The participation in the 4EU+ alliance is a step in the right direction.

The Board recommends financial support for researchers in order to improve international collaboration with foreign colleagues. It also recommends that CUNI expands cooperation with other research institutions both nationally and internationally. It is a way to avoid inbreeding when hiring, especially when hiring post-doctoral researchers and assistant professors. Along these lines, the panel encourages the development of strong projects led by the CUNI PIs that could attract foreign collaborations (maintaining the leadership positions by the CUNI PIs). Supporting international mobility, that must be sustained, both in terms of inward and outbound mobility, is crucial.

The Board also supports the continuation and intensification of internationally advertised open calls for junior job openings, and the active utilization of the European job market and similar venues for recruitment and graduate placements. To enhance the attractiveness of working at CUNI, the increased use of English in administration documents and announcements should be considered. To accelerate the impact of these measures, CUNI could consider the expansion of the exchange to members of the administration with other cooperating universities.

Units should exploit all available options already provided by the university (PRIMUS program) or by the national grant agencies to recruit first class outside researchers at the early stage of their careers. The Primus program for attracting young scientists from abroad is a great tool and should be maintained and if possible extended. The efforts to help scientists in raising major international funds, particularly from the European H2020 and follow-up programs, should be continued and if possible intensified.

6. Research infrastructure and facilities

Office and lab space is needed for an attractive infrastructure. Although large efforts are currently underway to alleviate existing problems, the situation should be carefully monitored. This is also true for the digital infrastructure.

Efforts to help scientists apply for major international funds should be continued and if possible intensified, for example by organizing training courses for major grant writing, offering support (research skill workshops, courses, seminars) etc. EU projects are extremely complex and often require weeks of working and meeting to prepare. If some of the tasks

could be done centrally (also at the application stage) it would save a lot of effort for researchers. This holds true for the feedback on the applications.

7. Gender

CUNI should make a concerted effort to recruit, train and promote women at all levels. The goal must be to reduce the current, dramatic imbalance in the number of men and women promoted to the associate and full professor levels. The Board recommends the institutionalization of independent committees at each faculty as well as at university level to monitor issues of gender equity and discrimination, and to recommend steps to improve the climate for women and minorities. They can help faculties design orientation sessions about appropriate standards of behaviour that recognize all parts of Charles University as a professional workplace. These committees can also gather information about the climate for women and other marginalized groups through anonymous surveys, interviews and other methods. They can assist in the regular analysis of gender balance at the undergraduate, graduate, postgraduate, and faculty level and during admissions, hiring and promotion. A good guideline has been prepared by a working group within LERU. Since CUNI is part of the LERU-CE7 alliance, it would have access to the material.

8. Fragmentation

The Board would like to point out the risks of fragmentation. Some fields appear to be splintered among multiple units or even within one single unit. Resources and efforts are likely being duplicated. The result is likely to be that fields lack the capacity to adjust to the rapid changes currently taking place, leading to the lack of innovative, cutting edge research and international visibility. Fragmentation means that the critical mass of researchers in any unit is not reached. Another consequence of fragmentation is missed opportunities for students who, after basic training, are looking for some kind of specialization while they want to keep in full touch with their original discipline. Fragmentation can severely affect the training programs and therefore the future of research at CUNI. The university should seriously consider creating disciplinary departments that bring together scholars from across the faculties. Departments organized by discipline would better channel resources and promote cutting edge research and disciplinary rigor.

We offer further thoughts on fragmentation below.

The Board strongly urges all stakeholders and interested parties read the full reports that contain much more extensive evaluations and recommendations of the faculties and units.

FRAGMENTATION

A note on the risks of fragmentation of the research and training resources and the governance at Charles University, including suggestions for reorganisation and improvement of performance.

CUNI is a large university. It hosts 17 Faculties, 4 University Institutes (not to speak of a number of more specialized technical resource centres). Most of those units claim for a larger autonomy and seem to be self-governed at least for what regards the basic choices ruling their scientific policy.

There are extreme differences in size, composition and organization among the units. Some of them are focused on one single disciplinary field, others are resolutely pluridisciplinary, some claim for an interdisciplinary pattern. All these choices are fully legitimate. They may depend on the characteristics and traditions of each scientific field, on the choice of given specialisation, as well as on the requirements of a specific form of work organization and training. They may depend on the history of resource endowments over decades as well as plain luck.

Some Observations

On the occasion of our collective survey and evaluation of the research fields and units, members of our Board have been sensitive to what might be described as the risks of fragmentation. Some fields appear to be splintered among multiple units or even within one single unit. There may be different reasons for such a state of the affairs:

- As many other major institutions, CUNI has a very long history. In the long run, it has accumulated a series of experiences, which have left visible marks on its organization. The relative autonomy of the different units (the so-called *Oxford model*) is one of them. The risk here may be one of mere juxtaposition of resources and sometimes of consolidating the effects of a sedimentation over times.
- In some cases, fragmentation may be the result of deliberate scientific choices and strategies. The powerful Faculty of Arts (FF) has been established for a longer period. The Faculty of Humanities (FHS) was created only twenty years ago on the basis of an explicit interdisciplinary profile and the choice to privilege *non-traditional topics* and approaches, often on the margins of the instituted disciplines. More generally, we all agree on the fact that within each single field, different scientific options are possible and deserve to coexist.
- Another possible reason for fragmentation may be the lack of university-level mechanisms that enable cooperation in research and teaching across university units.
- The problem begins when we have a sense that the resources (scholars, and especially core persons, students at all degrees, training technical means, libraries and, obviously, funding) are unduly dispersed. Let us take a couple of examples:
 - Psychology is present in 10 units, as the evaluation report on the field mentions. (In fact, it is splintered over 5 additional units, see §2.) Such

fragmentation does not help in fostering an effective collaboration among psychology researchers, nor does it contribute to create a strong adherence to psychology mainstream research areas. Furthermore, most psychology researchers work in psychology areas that are on the border between different scientific disciplines, coherently with the Faculty to which they are affiliated. As a consequence, strong teams of researchers seem to be rare. It would be important that they could create a community that goes beyond the divisions by different Faculty policies on research and topics of research. (for details see Psychology Evaluation Report, p. 8, 13.)

- History is present in at least 8 units, actually more of them (for details see History/Archaeology Evaluation Report, p.7, 13). One is fully dedicated to the discipline, UDAUK, within the limits of a highly specialized topic, the history of Charles University and the management of its exceptional archives. The Faculty of Arts (FF) has an impressive offer in history and archaeology with a large number of core faculty and students. To a lesser extent, this is true for the Faculty of Humanities (FHS) and the Faculty of Social Sciences. The remaining history research appears to be splintered among minor entities. It may be fully legitimate that some disciplines (e.g. theology, law, sociology, medicine, why not other ones) are willing to introduce a historical dimension to their own range of approaches. Yet, although its global assessment is clearly positive, the Evaluation Report deplores the difficulty to give a full account of the state of the discipline *across a number of faculties*.

We all know that behind their label, academic disciplines are complex and plastic entities. Despite their apparent unity, they offer a number of different methodological, practical, and sometimes epistemological choices that may be compatible or less so. They may even happen to diverge radically. The choices of psychologists, historians, as this is the case with any specialized scholar, depend as well on the local context, the availability and requirements of interdisciplinary confrontation or collaboration. All those factors should be kept in mind as they design the actual conditions of any research program.

Yet, we may be concerned with the consequences of an excessive segmentation of the resources. Whenever some minor teams appear to be well integrated within the unit they belong to, this is not always the case and others seem to be kept on the margins. What is more puzzling is the fact that those splintered teams have limited or no relations with the core of the discipline, the current debates and innovations, the international areas.

Negative consequences ensue:

- Lack of visibility within and outside CUNI;
- Loss of resources of all sorts, which might be usefully put in common and shared among the teams;
- Risk of insufficient funding and allocation of research, teaching persons and advanced students;
- Insufficient resources to adjust research areas to the rapid changes currently taking place, leading to a lack of very innovative, first line research topics;

- Missing opportunities for students who, after basic training, are looking for some kind of specialization while they want to keep in full touch with their original discipline. It can severely affect the training programs and therefore the future of research at CUNI.

Fragmentation and Splintering

The situation raises a basic problem of governance at the university level. It suggests also some practical solutions:

- An inter-faculty field/area community should be promoted; it could encourage scholars affiliated with different units and their students to keep in permanent connection and possibly some forms of provisional or more lasting regrouping among different teams;
- International colloquium series in fields, areas, or particularly vibrant interdisciplinary research areas, would increase international visibility but also provide an opportunity for a better integration and collaboration within CUNI;
- A more efficient management of library and more generally data resources;
- A field-specific website could gather transverse field information: research groups, study programs, PhD topics, lectures and events, bibliographic update, etc.
- In medicine central core units are needed, adjusted to the selected areas of expertise, for example a CRISPER/Cas unit, metabolomic unit etc., which requires a commitment to sharing resources and on campus focus on certain research topics, which seems to be impossible when medicine is split into so many faculties and places

The problem is by no way marginal. It may be more sensitive in some fields and units more than others but it affects Charles University as a whole.

Fragmentation affects both research and teaching. One can gain some approximation of research fragmentation when one considers the number of CUNI units that employ core faculty members in a field or research area. In other words, we can get some measure of field/area fragmentation by looking at the number of CUNI units that employ core faculty members in the field/area. Fig. 1 shows the number of CUNI units that employ core faculty members in particular research fields. It is evident that fragmentation affects some fields but not others. Indeed, science fields are in general less fragmented than the fields in the humanities, social sciences or medical sciences, although there are occasional exceptions (e.g. Experimental Biology core faculty members are affiliated at 9 units). Fig. 1 also shows that some fields are represented by core faculty members in many CUNI units: Psychology (15 units), History (13), Linguistics and Philosophy and Ethics (11 units), Experimental Biology (9 units), Sociology and Biochemistry (8 units). Other Medical and Health Sciences area has core faculty members affiliated at 12 CUNI units. On average, the fragmentation is highest in the medical areas (Fig. 2), though the most highly fragmented fields are in the social sciences and the humanities.

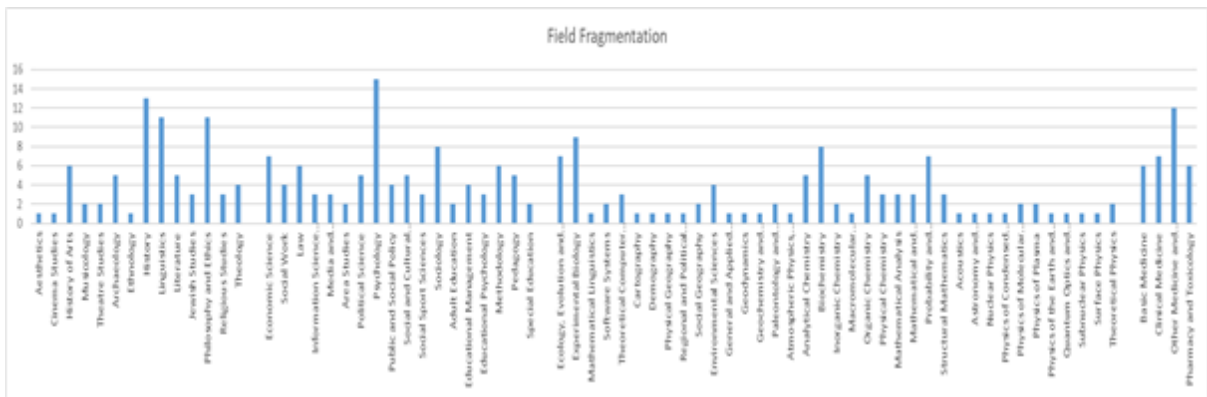


Fig. 1. The number of CUNI units that employ core faculty members in the research fields of the humanities, social sciences, sciences and medical science areas at CUNI

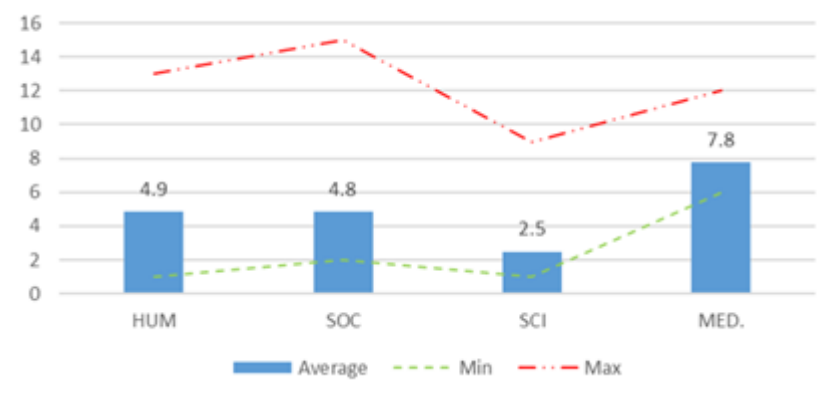


Fig. 2. The average, minimum and maximum number of faculties that employ core faculty members in the fields of the humanities, social sciences, sciences and medical areas at CUNI.

The above approximation measure does not allow us to fully appreciate the phenomenon of fragmentation, however. For example, although core faculty members in Law, Mathematics, Anthropology, or Geological and Environmental Sciences are affiliated at 5 units or more, more than 80% (99% in the case of Law) of core faculty members work at a single unit. In such cases, it is perhaps more appropriate to speak of “splintering” rather than fragmentation proper.

In other words, we can say that a field/area is splintered if the core faculty members in the field/area are affiliated at multiple CUNI units but in negligible proportions. When the proportions of core faculty members affiliated at multiple CUNI units are sizable, we can say that the field/area is fragmented (proper).

Fig. 3 allows us to take a closer look at the distribution of core faculty members in a given research area (not a field!) across CUNI units. The distribution is ordered so that the first column always represents a CUNI unit that hires the most of core faculty members in a given research area.

It is clear that some areas are merely splintered (e.g. Law, Computer Science, Physics). There are other research areas that are not only splintered but also fragmented more deeply, i.e.

where sizable proportions of core faculty are dispersed over multiple CUNI units. The case of the area of Philosophy and Religion seems to be the most striking example where 90% of core faculty members are affiliated at 5 faculties with a relatively even distribution (22%, 21%, 19%, 16%, 12%). Of course, one could look at individual fields in that area but the fragmentation would still be clearly visible for Philosophy and Ethics as well as for Theology. In the social sciences, Psychology and Sociology are highly fragmented. First, the number of units that employ core faculty members is very high and many of the units affiliated have very few core faculty members in those areas – the areas are “splintered”. However, in the remaining units the percentage of core faculty members employed in those areas are quite sizable.

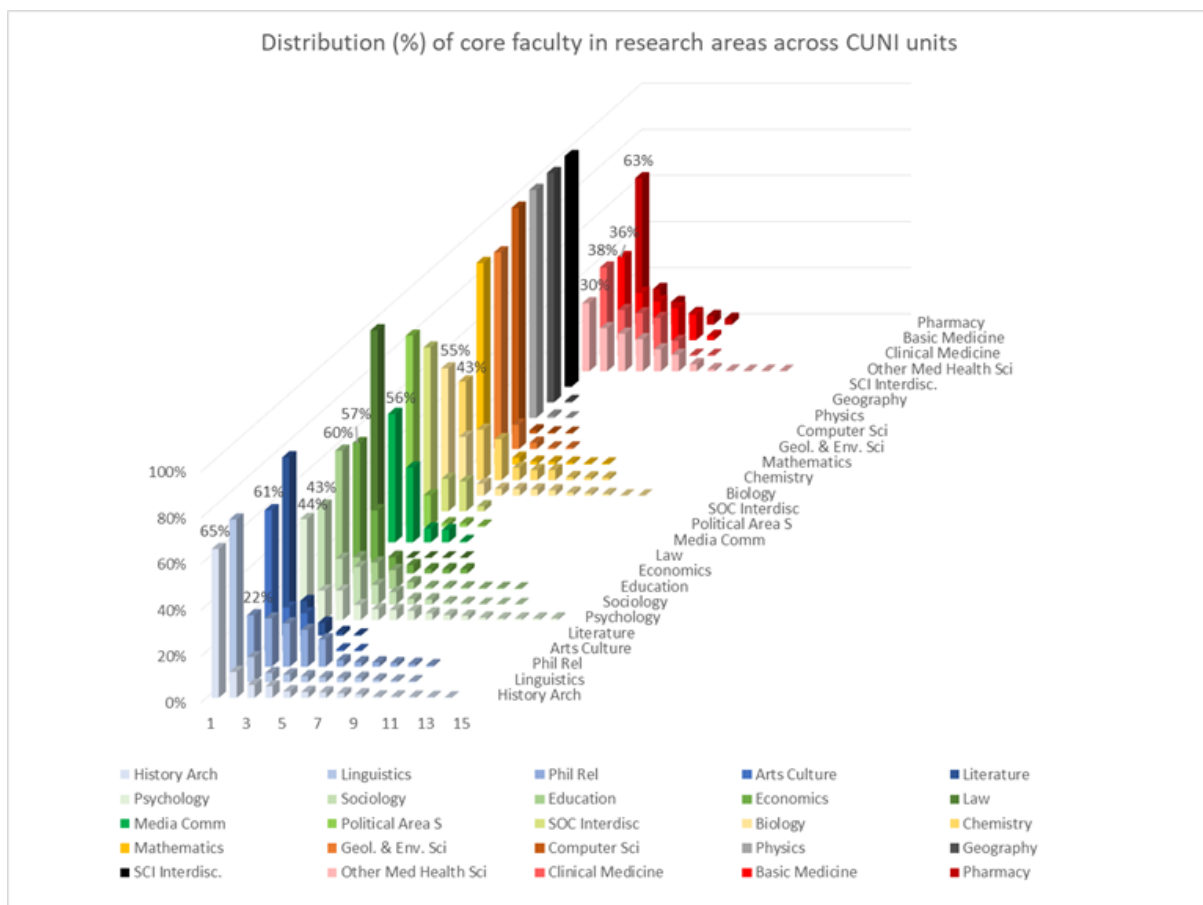


Fig. 3. Percentage of core faculty within research areas across a number of CUNI units (each column represents one CUNI faculty/unit that has core faculty members in a given research area; the columns are ordered: the first column always shows the highest percentage of core faculty employed at a CUNI unit, the percentage is shown if it falls below 70%; research areas are represented in different colours: HUM (blue), SOC (green), SCI (yellow-black), MED (red)). Note: the first columns represent various CUNI faculties depending on the research areas

There is a deep fragmentation of medical areas. Its source is also relatively easy to trace. It has to do with the fact that there are 5 distinct medical faculties, 3 of them in Prag, 1 in Pilsen and 1 in Hradec Kralove with an additional Faculty of Pharmacology at CUNI with 4'336

researchers. The fragmentation of medicine also affects the fragmentation of such areas as Biology and Chemistry. Fragmentation and Splintering "par excellence" resulting in waste of energies, human resources, funds. There is no coordination by an Interfaculties Research Board. Each faculty has some strong fields, mainly due to personalities and not always based on long term strategy. The best way out of this problem might be a process guided by an international advisory board, helping to identify areas of special focus based on the expertise of the people present and the synergism possible. Areas should be identified in which medical research and teaching at CUNI does not follow the mainstream, but rather identifies its own focus of innovation. Such a strategy might involve the faculties of biology and chemistry as well. Starting from an identified research question agreed on, the reorganisation might take place and even involve relocation of people in order to enable the experts to cooperate and use common resources on one campus.

In sum, there appear to be two types of fragmentation at CUNI. First (fragmentation proper), there are fields/areas where sizable proportions of core faculty members in those fields/areas are affiliated at many different units. Second (splintering), in some fields/areas, small proportions (sometimes working part-time) of core faculty members in those fields/areas are affiliated at many different units.

The medical areas are deeply fragmented. Their fragmentation has a clear source in the multiplication of medical faculties at CUNI. Indeed, the multiplication of medical faculties accounts to a large extent also for the fragmentation of biology and chemistry.

As mentioned earlier, fragmentation of fields and areas also affects teaching. It would be advisable for Charles University to consider the question of fragmentation from the point of view of students (of all levels). Some fields can be studied in various programs at various faculties. How pervasive is this phenomenon? Are students in a good position to choose the different fields/programs/faculties? Are they provided with an opportunity to take classes in alternative programs? Are there tools for the evaluation of education achieved in the alternative programs?

Scientific Policy

Such facts raise a more basic question of governance: to enforce its scientific policy, its priority and the necessary forms of regulation, which kind of tools of arbitration are at the disposal at Charles University?

From the very beginning, this has been a blind spot in our collective task. Thanks to the generous efforts of our partners at CUNI, we have received a massive amount of elaborated data in terms of creative activities indicators, bibliometrics, self-evaluations, peer reports, etc. Despite unexpected difficult conditions in relation with the current Covid pandemic, the Board and the Panels have been able to offer a large coverage of the multiple aspects of academic life, teaching and research. But we still know very little about the working of the University as a whole, that is as an institution, especially in terms of decision making. The question has repeatedly been raised by one or the other of the Board members, when asking

for the possible future consequences of our gradings. Answers have been mostly elusive and delayed. A better understanding of modes of cooperation is needed.

Let's be clear at this juncture. Our Board certainly does not aspire to substitute the regular authorities of Charles University on those matters. But it might have been a crucial aspect of its responsibility, in strict terms of evaluation, to have a critical view on the process of deliberation and decision for what regards the making of a scientific policy.

At this stage of our collective task, it is probably too late to open one more field of investigation. But it might not be too late to raise such basic questions. Confronted with the problem of an excessive fragmentation, which may be taken as a symptom of a more general state of the play, a possible solution might be the reinforcement of transverse relations and collaborations between the different units (or even within some units). It raises as well a more general problem of regulation at CUNI:

- Is there an existing permanent advisory scientific board able to formulate priorities and to make a selection among the multiple expectations and requirements addressed by the units?
- Is such a board invested with an autonomous capacity of initiatives?
- Is it able to recommend, or even enforce, more efficient and innovative forms of organization, both in training and research?
- If this were the case, how is this advisable core institution's work coordinated with the Faculties and other units?
- Is there a strategy to develop a pool of money given for extraordinary successful co-operations and proof of synergy?

For the time being, these crucial questions remain open. It is up to the authorities of Charles University to bring us some answers if they are willing to do so. We are all confronted with such problems in our own institutions and we know that different answers are possible. On this point too, the comparison with the benchmark universities would be most welcome.