Forum

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Writing helped me see the world from a different perspective

Med student Marcela Remeňová, author of popular fantasy/sci-fi series / 48

Dear readers,

Photo by René Volfík

It seems like the 1980s have been in the news a lot lately. Perhaps it's the phenomenal success of the Duffer Brothers' Stranger Things (a tremendous love letter to all things '80s including Spielberg, Dungeons & Dragons and Stephen King). Or it might be because this year we finally reached "November 2019" – the month in which the 1982 cult classic Blade Runner is set. While the world is not yet nearly as desolate as Rick Deckard's Los Angeles, many of the warnings are decidedly bleak; many of us pondered to what degree the film, made almost 40 years ago, predicted the future. What was fantasy and what could still come true?

For Czechs, 2019 was the year to look back and mark the 30th anniversary of the Velvet Revolution which brought down communism in Czechoslovakia. Against all odds, the events of November '89 spelled the end of a repressive and unjust regime, putting the country back on the path to democracy and freedom. The most remarkable chapter in the fairy tale? That playwright and dissident Václav Havel – previously jailed by the authorities – became president.

Highlighted inside, are two new publications by our own Karolinum Press: The Velvet Revolution – 30 Years After and one of the most important books of the Normalisation period: Ludvík Vaculík's A Czech Dreambook. Along with an interview with editor Mike Baugh, this issue of Forum includes historic photographs from '89 as well as testimonies from some of the main student figures who witnessed the brutal crackdown by the communist police at Narodní třída. Protestors' courage and determination and conviction of their beliefs remain an inspiration, many people in Prague told us this year. What Czechoslovaks achieved over the period of "just a few weeks" in November and December '89, they said, was unforgettable.

To return for a moment to pop culture, Czech bookstores just recently stocked the new Czech translation of another seminal work, William Gibson's Neuromancer which – in 1984 – seamlessly fused American Noir with a future including cyberspace and emerging AI still fairly different from our own. In his introduction to the Czech edition, writer Ondřej Neff recalls how the '80s in Czechoslovakia really were "punk" for budding programmers, a time when microcomputers had to be smuggled into the country. Luckily, we have a history of the period written by Charles University's Jaroslav Švelch (published by MIT Press). In our interview, you'll learn how programmers in Czechoslovakia coded their own text-based games and stuck a finger in the eye of the communist authorities – without them being the wiser! We even provide a handy link to some of those games today.

In this issue, we also take a close look at the work of doctors and researchers at the Second Faculty of Medicine and the Motol University Hospital, helping children who suffer from type 1 diabetes and other illnesses. We are luckily a long way away from the days when pediatric patients died from such diseases on a fairly regular basis. While no one has a warranty for a healthy child, it is the work of specialists like these that give children and their families hope. Every advance, large or small, helps. While most researchers caution there is no breakbrough around the corner, I am confident one day there will be.

Have a great holiday season and if you too are enjoying the continuing '80s vibe, you know what to do. Pull out the old cassette player from your (parents') basement and don't be afraid to wear your sunglasses… at night.

Jan Velinger
Editor

You can read the articles online too!

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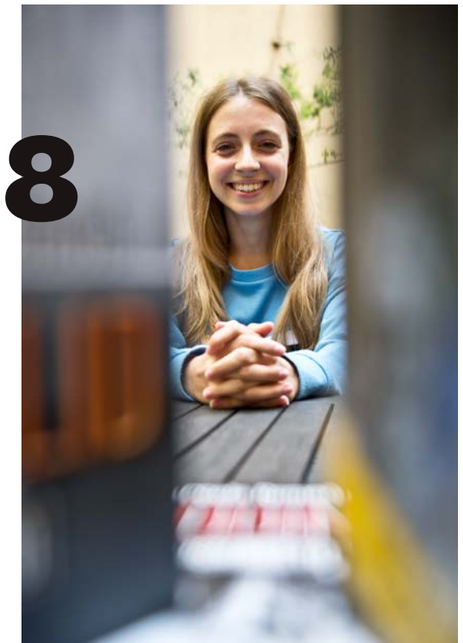


Jaroslav Švelch:

How programmers in the ’80s used games to mock the regime

PCs were almost impossible to get in Czechoslovakia in the ’80s but microcomputers were a different matter. As hobby programming caught on, enthusiasts soon coded their own computer games. Some subtly – and others rather daringly – mocked the communist regime. CU’s Jaroslav Švelch mapped the history in a book published by MIT Press.

STORY BY Jan Velinger PHOTOS BY Vladimír Šigut

Jaroslav Švelch is an assistant professor of media studies at the Faculty of Social Sciences at Charles University and his book is called *Gaming the Iron Curtain*. When we met at the Carolinum, he told me not only about his findings but about how his own foray into computers as a child began:

The first time I saw a microcomputer was as a kid at my dad's work in the 1980s. He worked as a programmer for Solo Sušice, a famous factory that used to produce matches and other wood products and they had machines there including an East German computer called the Robotron.

It was an 8-bit machine that had this black & green screen and you could play a number of basic games on it that were text only but still fascinating and thrilling. Equally thrilling was the fact that you could do your own programming on it. It was clear that there was just so much you could do with the machine.

How common were microcomputers in Czechoslovakia?

They were the most viable option and the most common if anyone had a computer at all. For a reason: excluding big institutional mainframe machines, the first PCs were for business use but they were very, very expensive even in the West and you couldn't get them here. You could program on them, they had text editors, word processing, spreadsheets, but they were just very costly.

By contrast, microcomputers or micros were cheaper versions of the same thing and they were very compact and could be smuggled into the country. They weren't very open in terms of the hardware architecture – they were more of a consumer product – it wasn't that easy to take one part out and replace it with something else, or to modify it or to upgrade. But you could program on them.

The third category was video game consoles which lacked a keyboard and usually you couldn't program your own code and your own games. And these used cartridges instead of floppies – or tapes.

Microcomputers could be hooked up to a TV screen?

Most of the time, yes. That was one reason they were also so popular. They were very versatile, very compact, you didn't need much additional hardware beyond the computer itself. You could take the Sinclair ZX Spectrum, a British 8-bit microcomputer, and hook it up to your TV or to a tape recorder and didn't need a lot of specialised hardware to use it.

Today it's easy to forget casettes were used to store games...

That's right: cassettes were the No. 1 data storage medium in the Soviet bloc for most of the '80s. In the West they began being replaced by 1984 with floppy discs which were much more expensive but which certainly ran faster. But in the Soviet sphere – and in Czechoslovakia – people used cassettes almost until the 1990s.

There was a lag in available hardware, if you got your hands on a computer at all?

Yes, in a manner of speaking. Computers weren't officially imported or only on a very limited scale. People tried to get their hands on them from abroad but that was extremely hard. People had to smuggle them in. Bringing them in legally was not practical as the customs fees were just incredibly high.

To do so, people had to spend a lot of money to be able to get their hands on western currency, then maybe to bribe someone to get a permit to travel to the West. While there, they bought the computer and then officially had to pay customs fees that almost matched the price of the computer! A lot of people opted to just smuggle them in, instead.

The Spectrum was particularly suitable because it was so compact and easy to disguise. One thing that I heard that people did (although it is hard to verify) was to buy a box of chocolates and hide the computer inside. It fit easily, as you can see. Or they would wrap it in sandwich paper and would basically disguise it as food. And presumably it worked. The ZX Spectrum was much smaller than similar machines like the Atari microcomputers or Commodore 64: the size was ideal.

Even though it was hard for people to get their hands on hardware or software... young people, enthusiasts or budding programmers must have been excited by what was going on...

It was an interesting situation. On the one hand, you had the authorities and an official Party line that was very much promoting technology. The scientific-technological revolution was kind of official policy and the government and the Communist Party were aware that computers were the future and that they had to do something in that regard. Programming and general technical skills were very much supported and even in magazines and newspapers you could read about how computers would play an important role even in the future of the socialist economy.

At the same time, it was very hard to get the machines and Czechoslovakia's centrally-planned economy was simply unable to produce anything

The Spectrum was particularly suitable because it was so compact and easy to disguise. One thing that I heard that people did (although it is hard to verify) was to buy a box of chocolates and hide the computer inside. It fit easily, as you can see.

The ZX Spectrum and a homemade joystick made by a Czech hobbyist in the '80s.

like them, they were hard to import. So they were the future but they were almost nowhere to be found and nowhere to be bought.

Did Czechs who got their hands on microcomputers became most active in game programing?

They did all kinds of things. They programmed games, they made homemade versions of some peripheral items, such as joysticks, and they were even able to modify some hardware. It wasn't trivial: you had to know how to do some soldering. Even if we look at the Spectrum I brought with me today, you can see that it has a custom port and there was some soldering inside. Then there are some buttons here that weren't on the original.It was modified and people learned how to do that.

People also had to do their own repairs because obviously they had no access to anything like official servicing. When the keyboard broke, which happened quite often with the Spectrum, they needed to replace the keys – they would have to fix it themselves or build an external keyboard. That was hardware, and in terms of software they did all kinds of things: games or productivity software.

What games from the West were popular? Or copied?

It always depended on the platform and in Czechoslovakia the most popular computer was the Sinclair ZX Spectrum we have been talking about. This was a British machine which was only successful on some markets in the world: it had a big market share in the UK and in Spain, so the games that made it here were usually either British or Spanish. At the same time, the British games were often ports or clones or conversions of American or Japanese games. So the trends had been filtered through several intermediaries before they came to Czechoslovakia. One example of a very popular game was Manic Miner from 1983. The main character was a miner who you guided through a series of caverns to look for treasure.

It was funny and a little surrealist and immensely popular. People did a lot of conversions to other platforms, some even domestically produced such as the Tesla PMD 85. There weren't that many of these machines, some were at schools, and some people did conversions of the game for that and other platforms.

People did all kinds of clones of Manic Miner: games which were very similar but featured different characters or different levels. Up until 1985, people were still modifying and creating new versions of it.

Many people outside the Soviet bloc or sphere of influence had little idea of what life was like behind the Iron Curtain – there is no question the regime was oppressive but at the same time is it possible to say people in the 1980s breathed a little easier? Or to put it another way, was the ground ripe for this kind of creativity in computing?

I would say so. Hobby computing and similar hobbies in fact became popular because of oppression: the thing is, unless you were a member of the Communist Party, you didn't really have substantial career opportunities. You were basically stuck in one place. The way you could find self-fulfilment was either in private life (having a cottage or a garden) or by taking part in hobby groups. Hobby ↪

groups were extremely popular and to an extent they were supported by the state as a kind of continuing education they could sometimes then apply at work. But it didn't always work out that way.

People had a lot of free time and they didn't have that many options. And many of these activities, surprisingly, weren't really regulated and there was no ideological content. People would just work on projects of their own design and there wasn't much oversight.

Czechoslovaks – under an ineffective planned economy – often suffered shortages of some items or long waiting periods or simply couldn't get needed equipment. Were they used to looking for D-I-Y solutions?
It was definitely the spirit of the times. People who became involved with computers, for example, were the same who before had been members of electronics clubs, where they were soldering radios and so on. So yes, many people were used to fixing things on their own.

Your book is called Gaming the Iron Curtain – in what way did programmers here do that and what was the result?
Many of them were mocking the regime: it started with games that made fun of Soviet iconography and Soviet mythology. There were games like Shatokhin – about a major in the Red Army whose mission it is to kill John Rambo. So you had this kind of pastiche, this kind of mashup of the Rambo movies and the Soviet propaganda film Solo Journey (also called The Detached Mission) featuring Major Shatokhin.

In the process, the main character gets humiliated and killed a lot: he falls out of a helicopter, gets burnt to a crisp and all of it was kind of graphically described. So on the one hand the Soviet soldier is the "hero" but he is constantly humiliated by Rambo. And I think this was a very smart way of writing the game. It was very funny and I think it was enjoyed by many as a way of getting back at the regime.

This was a text-based game?
Yes, it was a text adventure. About 50 percent of the games that were made for the Spectrum were text adventures. For many reasons: one was that it was simply easier to program. Graphics and animation were hard to code and to draw. In text adventures, you could actually tell a story much more powerfully than in the action games of that era. The only graphics were a loading screen with the face of the major and the hammer & sickle, for example, and then you started playing. So there were games like that which were cleverly subversive.

Another subversive game from that era featured Indiana Jones on Prague's Wenceslas Square: he gets beaten up shortly after Palach Week in 1989 which was brutally supressed by the secret police. He was a very popular character in text adventures here. In this game he happened to be on the city square when there was a demonstration and he gets beaten up by the police and then has to fight back and defeat various members of the communist police and people's militia and get to the subway and escape to the airport.

It's a very violent game and I think it was a bit of a revenge fantasy. It was written anonymously – we still don't know who the author was – but I imagine it must have been someone who experienced it or someone who was disturbed by what happened. This game allowed you to fight back and – above all – to get revenge on the authorities.

Jaroslav Švelch, Ph.D., was born in Sušice, Czechoslovakia in 1981 and graduated in media studies and linguistics from Charles University. In 2007–2008, he was a visiting PhD student at MIT. He is now an assistant professor of media studies at the Faculty of Social Sciences, Charles University. His latest work is the recent monograph Gaming the Iron Curtain: How Teenagers and Amateurs in Communist Czechoslovakia Claimed the Medium of Computer Games (MIT Press, 2018), in which he traces the hidden histories of home computing and gaming in the former Soviet bloc. In 2017–2019, he was a postdoctoral fellow at the University of Bergen, Norway, working on a project about the history, theory, and reception of monsters in games – which will be the topic of his next book.

In terms of the methodology, you interviewed around 40 people for the book: how did they look back on that era?
Most were pleasantly surprised that someone was interested. It was more than 30 years ago and many people simply moved on. The memory had faded a bit. Some became quite famous and maybe around one-fifth of them are still active in retro-gaming circles. Others simply made some games in the 1980s and forgot about them. But they were pleased that the period was being researched.

We have been talking about microcomputers and programming but neglected to talk about arcade games. I know that these trickled into Czechoslovakia as well.
It was hard to import them, you would have to pay customs fees, and at some point the people bringing in these games figured out that you didn't have to bring in the whole machine but only had to smuggle in the main board and to build the rest locally. One of them, Tomáš Smutný, is well-known and has openly discussed the period. He and others would build these arcade cabinets with carpenters and for the monitors they used Soviet-built TVs that were smuggled in. They would even build their own joysticks. Everything but the board was made locally. It was much cheaper than trying to bring in the whole cabinet from the West.

And everybody got paid…
It was money in the pocket but it was not without risks, either. Smutný was actually arrested by the authorities for unauthorised enterprise which was illegal.

What was the outcome?
The case never went to trial but was dropped and there was expert testimony which was favourable to him – that what he was doing was repairs, not manufacturing. It's an interesting conceptual question, actually, but the expert said it was only repairs and so Smutný was released and was able to spend Christmas with his family.

One follow-up: did they paint the arcade game cabinets to look at all like the originals?
Usually they didn't. It was very bare bones. Wooden planks that weren't embellished.

There is a unique museum/arcade outside Prague where they have a lot of the first or second generation arcade games – Pac-Man 2, The Gauntlet – so in a way the dream lives on.
That's true. There is one at Červený újezd outside Prague that is pretty good. There the thing that is important to note is that collectors brought in a lot of these games later, only after the fall of communism; these were not the games that were around in the 1980s and had been rediscovered.

You know, I was born in the 1980s so my own memories are hazy but it is important to say that as a researcher and author I avoided anything like nostalgia in the book – the point is to be as impartial and objective as possible.

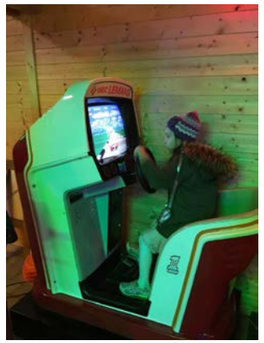
What happened to those that had been brought in?
Most of those arcade cabinets were lost. Arcade games had long become obsolete and for a time they were stored, unused, at Prague's Výstaviště fairgrounds. But the grounds were hit by major floods in 2002 and the games were destroyed. This was before the rise of retro interest in those games.

Speaking of retro, we are kind of in a situation where film and popular books are looking back at the 1980s with a certain amount of nostalgia, whether it is Bumblebee (The Transformers), Ernest Cline's Ready Player One, or the phenomenally successful Stranger Things. Have you registered that wave?
I think it may help sell a few copies of the book (laughs). You know, I was born in the 1980s so my own memories are hazy but it is important to say that as a researcher and author I avoided anything like nostalgia in the book – the point is to be as impartial and objective as possible.

It's great that many people are interested in the period but historians have to be aware of the pitfalls. Especially in cultures that were more peripheral than the US, people start to adopt memories of the past that weren't really theirs.

So young people here might watch Stranger Things today and think that is what the '80s were like… even here! I mean, it is not even accurate of the 1980s in the US – but it is doubly inaccurate for Czechoslovakia. It is certainly the mission of historians to popularise their subject but you also have to point out very real differences and to debunk some of the myths.

Play the games online!




The **Golden** Age of the Arcade

Červený újezd is a village of around 1,400 inhabitants located in the district of Prague-west. Its coat of arms features a silver raven – oddly-enough with a golden ring in its beak – like something out of The Lord of the Rings or some forgotten arcade game where a motley crew of adventurers is tasked with getting it back.

STORY BY Jan Velinger PHOTOS FROM the author's archive

Which is appropriate: as unlikely as it might seem, the village is home to one of the largest arcade game museums in Europe. It will all feel very familiar: if you experienced the Golden Age of Arcade Games in the 1980s, it's as if you never grew up.

The museum is stocked full of early classics such as Ms. Pac-Man, Galaga, and Joust. There is Space Invaders or Zaxxon or Street Fighter II or Frogger. And newer titles like Dance Dance Revolution Extreme (which my son, a fan of street dance, enjoyed). Coming in from the parking lot, a wave of sounds hits you: music, explosive FX, jingles, exclamations of astonishment, and shouts and the impact of landed blows in kung fu.

The owner of the museum, Jan Orna, was nine in 1989 when he played his first real video arcade game: in communist Czechoslovakia arcade cabinets could only be found in trailers or caravans at travelling fairs, the machine circuit boards a part of a grey economy, smuggled into the country and rebuilt. Even so, the experience was unforgettable.

"As a kid I was gamer and I had a ZX Spectrum connected to a B&W television. But the lights and sounds of real arcade games was something else. I fell in love and still love those games today," Orna admits. "Back then it cost a crown or two to play," he continues, "I would gather some change, run to the fair and wait my turn. But what usually happened was that a group of older kids took my coins

In 2004, I bought my first machine as a collector, Atari's Klax. And after that I decided to continue. I felt that these games needed to be saved.

and I could only stand by and watch as *they* played my game. And still I considered myself lucky! Usually, they were better players and I was able to watch them progress to advanced levels I never would have visited myself."

Big game hunter

As an adult, long after the fall of communism, Orna became a collector and decided to hunt down some of the games he had played as a kid.

"In 2004, I bought my first machine as a collector, Atari's Klax – made in 1990. And after that I decided to continue. I felt that these games needed to be saved. They had become obsolete and I felt I had to do something. But after six or seven years of collecting, our entire house was full of arcade cabinets. My brother-in-law's house was full of arcade cabinets. The garage was full of cabinets… and the cars were parked on the street. I came to the conclusion that I would have to sell most of the collection off. But then I decided to open the museum instead."

The site, called ArcadeHry, is now in its ninth year. When he was collecting at his peak, Orna owned about 30 machines. But the museum now houses well over a hundred titles – on two floors.

"It attracts a lot of people, many Czechs, and attracts more and more families as well as present-day gamers who come to see what the older games were like. We also have a lot of female visitors and that is different from when we first opened our doors."

Grail games - past & present

The oldest game in the museum is Pong, which dates back to 1972 and boasts its original cabinet and the serial number 33. That was a huge acquisition says Orna, admitting American colleagues had tried to snag the model but had failed. It is without question a "grail game". And it's not the only one. There are about ten titles that the museum would still like to obtain, but the prices don't always allow it.

"A single classic game is a considerable investment and can cost anywhere between 10,000–50,000 crowns. We try and buy games that are in disrepair for less," Orna says, stressing that he and his team then are usually able to restore them to their original grandeur.

One game on his "most wanted" list? Discs of Tron, which Orna tells me has great sound, atmosphere and graphics. As a collector, he says, you have to set limits and make a choice. Gaming, for him, ends in around the year 2000 – mention newer effects or 3D and he loses interest. He admits a preference for 2D graphics and simpler games visitors can play over the course of an afternoon.

"When I was a kid, I loved these games. I came back to them. I am not sure that kids playing now will feel the same way about something like Minecraft in 20 years. Maybe, maybe not."

The real world

While most new gamers play online and today can use livechat to communicate, the classic arcade remains a personal social experience and something of an "event". Gamers are not alone but spend time together. There is also a major difference between Orna's arcade and those from before. At his venue, you pay an entrance fee and can play any of the games over the course of the day as long as you like. Quarters or crowns or slugs are long gone. And with it? That sinking feeling in the pit of your stomach when you are out of money and are down to a "single life"… yet still have far to go to defeat the dragon or the robot or other big boss.

The day the **Future** arrived

Thirty years ago, on November 17, 1989, riot police in Czechoslovakia brutally cracked down on students who had held a peaceful rally from Albertov to Národní třída in the city centre. That crackdown sparked the beginning of what came to be known as the Velvet Revolution, toppling communist rule in Czechoslovakia.

STORY BY Jan Velinger, Valerie Stupnikova PHOTOS BY René Volfík

This year, tens of thousands of people marked the anniversary by taking part in events across the country; no celebration though would be complete without participants retracing the students' original route from Albertov within the student run Svobodný listopad – part of a broader umbrella event called the Festival of Freedom. Petr Bouška – a member of the H21 democratic initiative, told Forum this year's anniversary was perhaps even more important than in the past:

We wanted to make clear that we are ready to continue the fight for democracy... it's something we need to take care of. We have to keep freedom in our hearts. If we forget to take care of democracy, there is a danger it will vanish. Look at what is going on in the Czech Republic or even in the US: societies are becoming more and more polarised, fewer people now trust in liberal democracy or democratic values. We need to save democracy again.

Many of those who gathered at Albertov on November 17, whether they were students or families or older participants, cited increasing populism and a disregard for democratic institutions as reasons to attend. Not only to honour the past but to send a broader message.

"Democracy was something won 30 years ago," says actress Lenka Krobotová, one of many who took part: "but it should not now be left untended". It's important for children, she added, to learn "what democracy and civic society mean" even today.

Olympic silver medal kayaker Vavřinec Hradilek, who also participated, agrees these days the situation is far from rosy but said he was encouraged by the turnout, saying it was great so many young people were directly involved. Some carried Czech flags or sported period pins with the likeness of late playwright and dissident Václav Havel, who was a driving force in the revolution and was later elected Czechoslovakia's first post-communist president. Julie Mikulová, a first-year student at the Hussite Theological Faculty, described why she was taking part:

It is important we remember and remind ourselves of what happened. I was born in 1998 so I didn't experience these events first-hand. That doesn't mean they aren't important to me: I heard about them at home from my parents and grandparents and I am grateful it was something we discussed a lot. A lot of people are here and a lot of people are talking about it and it's great that the events of not just 30 years but also 80 years ago are not forgotten.

Jakub Machek, a 19-year-old student at the Faculty of Education at Palacký University Olomouc, said he felt over the last few years democracy in the Czech Republic had come increasingly under assault:

I am attending today because it is officially International Students' Day and the Struggle for Freedom and Democracy Day and a state holiday commemorating the events of'39 and '89. In 2019, I will be happy if we will not have to fight against anything similar: I'm talking about the situation in the government and also at Prague Castle. Truth and facts are something that used to be accepted by broader society but are now challenged or manipulated at every turn. It seems to me, there is still plenty to defend against.

Students were not the only ones to retrace the students' route on November 17th; Zdeňka Nikodýmová came out with her sister Jitka Schiff. Neither of the women had taken part in the protests in 1989:

I couldn't take part back then because I was home with my children who were very young. For me this is about commemoration. But it's also more than that: it's a chance to meet some of those who were here in '89, to hear what they experienced and what it was like to have been in the thick of it.

Her sister, Jitka, agrees:

I wasn't in Czechoslovakia at the time of the Velvet Revolution: I had had to escape communism. I was living in Australia, which was very far removed from the events it seemed, at least on the news. I have only been back in this country six years so I wanted to experience the mood here at Albertov. I am extremely grateful for what the students and the whole country achieved back then.

If you'd like to read more about the Velvet Revolution and the legacy of leaders such as Václav Havel and others, please look up our commemorative issue online.

Students organising during the Velvet Revolution, with photos of the first president T. G. Masaryk and dissident leader Václav Havel behind them.

Remembering **November '89**

People with close ties to Charles University share their memories of the Velvet Revolution.

STORY BY Marcela Uhlíková, Kamila Kohoutová, Jitka Jiřičková, Martin Rychlík
PHOTOS BY Přemysl Hněvkovský, Jan Jindra, Jakub Langhammer

17 Faculties on 17 November:
A collection of unique interviews commemorating the 30th anniversary of the Velvet Revolution
Michal Zima (ed.)
Karolinum Press 2019
In Czech, 226 pages

Monika MacDonagh-Pajerová

Today a journalist and teacher
(In 1989, a spokesperson for the students of CU's Faculty of Arts)

On Friday 17 November at 4pm, I arrived trembling at Albertov and found the area already full of people. There were flags everywhere, banners, flowers, and candles. I climbed on some boxes to get to the microphone with the help of my friends and I couldn't believe my eyes. I'd never seen so many people before! I am shortsighted so I was surprised I could make out individual slogans: "We want human rights", "Freedom!", "Jan Palach – Jan Opletal", "Forty years of Communist Party lies is enough!", "Students of all faculties, unite!"

As organisers, we were nervous and enthusiastic. We didn't expect so many people to respond to our call, to overcome their fear and finally come to the same place at the same time, as we had dreamed. At the same time, we recalled "We have to adhere to the conditions of the demonstration permit", so we dragged the crowd up to Vyšehrad, where we laid flowers and candles at the grave of the poet Karel Hynek Mácha. It was already dark. We sang the national anthem. There was a mystical atmosphere at the Slavín cemetery.

But it didn't occur to us to break up, according to the official permit, and like a wild river we flowed from Vyšehrad down to the riverbank. We were joined from the side streets by more people, singing and ringing bells. The tens of thousands were finally there! We'd come under the collective illusion that the regime had already fallen. We were in a euphoria that can't be explained with reason – we were still in occupied Czechoslovakia and Russian tanks and occupying armies were still here.

My friends at the faculty were cheering for me, but they didn't believe the situation could change. Sometimes they helped me with my daughter, Emma, and lent me notes. I was a single mother, which at the time was an uncomfortable situation to be in. At the CU Faculty of Arts, I worked with all my might to handle studies of English and Swedish during the day, to earn money on the side by translating; the merit and social scholarship was 500 crowns. The stress was ubiquitous because of the threat of being expelled from the faculty.

But I'd never regretted even the hard experiences of that time. We wanted to get rid of a hated, humiliating regime, and we succeeded. We wanted freedom, democracy and justice for our country – and we have since managed to do that with mixed success.

Taken from the new book, *17 fakult 17. listopadu (17 Faculties on 17 November)*, published by Karolinum Press. ↪

David Storch

Today a biologist and ecologist working at the Centre for Theoretical Study (In 1989, a student at the CU Faculty of Science)

On the evening of 17 November 1989 I looked out on Národní třída and realised that nothing would be ever be the same. This was different than January's Palach Week. There were people around who had never gone to a demonstration, rural students, teachers from our faculty. Whatever happens now, it won't be the same, I thought to myself. Maybe it'll finally burst. Maybe it'll be worse, but nobody will be able to pretend that everything will just go on as if nothing had happened. My friend and I locked arms and let ourselves be dragged by the crowd, which acted like an animal that was scared to death. Nothing else could be done. I wasn't as afraid of blows from a baton as I was of falling and being trampled. The way out through a lane of thrashing police was a relief in some ways.

Then it went so fast from day to day that we just looked on in amazement. The occupation strike at Viničná 7, where we lived, slept, ate. On Tuesday, 21 November Šimon Pánek (who knew me from events in the field) called me from the coordinating centre saying that it was necessary to fly to Košice and explain to them there what was going on. I got on a plane before dawn, and in Košice two students took me to the university's main hall, where their rector was giving a speech. He was immediately interrupted with the explanation that there was a student in from Prague (thanks to the airplane we were the very first). I talked about the demonstration and tried to explain that they were rightly demanding the cancellation of the military training corps, but that it was necessary to first abolish the Czechoslovak Communist Party's leading role and to hold free elections. It went on like this all day. I also spoke on the square in Košice, and when I had the feeling that things were going in the right direction, I got on the night train and came back. I was a sophomore, I was 19, and I didn't understand how any of this was possible. The feeling of unreality became even stronger when I reported to the strike committee in the morning and was immediately sent to a factory with two classmates to meet with its director general. After three hours of meetings, the leadership accepted all our requests, and we didn't understand how this had happened. The winds of history blew, and while we took an active part in it, it felt more like a swimmer swimming through the rapids.

My friend and I locked arms and let ourselves be dragged by the crowd, which acted like an animal that was scared to death.

Exhausted students camped out at faculties and hoped for a better tomorrow.

The events of November '89 were preceded by unrest on October 28– (Czechoslovak Independence Day) captured here on film by CU's Jakub Langhammer.

Jan Černý

Today a professor of biology and a former candidate for rector (In 1989, a student at the CU Faculty of Science)

(…) The speeches are over and we're heading to the planned march at Vyšehrad. We're trying to outdo each other to see who can think up the best lines, but none of mine make it past the crowd's selection. Next to me, the line is born: "Na Štěpána bez Štěpána" (By the feast of Steven without Štěpán, the Communist leade), and then Radan Haluzík lifts up his keychain and shouts: "Last ringing!" (Editor's note: A tradition on the last day of school). In a moment, tens of thousands of keys begin to jingle. We come to Vyšehrad, singing. It's strange. I'm not at the end, and there are a lot of people around me shouting: "And now to the Castle." Obviously! (…)

We stop. The way to the Castle is blocked by a cordon of police officers. Negotiation takes a while. The way is clear to Národní and it's good to Wenceslas Square as well. We're heading toward the Máj department store, and I'm still looking to see if we'll fill up Národní. We've filled it! We have won! There is no other option! I'm in the tenth row, with Nella Heyrovská, and we stop. More police officers, riot gear, shields, batons. I remember surprisingly young faces. We yell together, we sing, we yell together. We're told to break it up. Our answer is "We have bare hands", "We're not like them" … I think that a lot of people are leaving. We can't go forward much, but we're not going to give up now – we've already won! When we don't react to the call, it's clear that something's going to happen. The "thrashers" come, accompanied by a plainclothes secret policeman who's pointing out who to pull away and beat up. We hold each other's hands. We save most of us. They choose Nella; we hold onto her! But she's shoeless and it's terribly cold, the police wagons are filling up. But the main emotion isn't fear. It's the disillusionment of how easy such a hopeful moment be effectively demolished, a moment connected with the intoxication of victory. But the fear comes soon after that. The dog handlers come in and it's hard to say who's more hysterical – the dogs or the ones who lead them into action. Cars with fence panels drive in and push…

I get a blow on my head and back, a solid hit, and for a moment I don't know what's happening to me. I get off the ground and my head is spinning. The dog handlers and the fence parts are behind me. Ten seconds or more? The path is clear. No one is bothering me. I slowly move down Národní toward the dorms. The police wagons are parked on the sides, maybe full. The police watch me, maybe they saw me as I lay for a while, and they think that I've had enough. I'm not alone. There are more of us. I'm terribly cold and the dorm is so close… On Ostrovní street a Spanish-speaking journalist with a camera stops me, and I give my first interview – immediately in English. We slowly meet in the dorms, wide-eyed, a wound here and there. The feeling of loss, that not even this was successful, they're here again for several years, and this won't even break them. There's no reason to stay in Prague. I get on the last train to Hradec.

I don't remember when I got home, but it was Saturday already. I woke my mom up at home, already showered with a towel around my hips. When my mom saw my back, she asked what had happened. I tell her. Dad wakes up and we turn on Radio Free Europe. Finally there's information. The world knows! "Those bastards, beating our children", I hear by way of saying good night. I go to sleep hopeless. It takes me a long time to find a position where nothing hurts – in my body and my soul.

A Czech Dream-book available in English at last!

This year's 30th anniversary of the Velvet Revolution was a monumental occasion that saw hundreds of commemorative events held around the country. CU's Karolinum Press has published a number of new books about the period. On the eve of the anniversary, editor Mike Baugh discussed two of the most important.

STORY BY Jan Velinger PHOTOS BY Vladimír Šigut

I think it is one of the most important books written under communism and we were very lucky to get the translation rights.

How important was this year's anniversary for Karolinum Press?
A lot of the books we have been publishing now have a lot to do with the revolution and a lot of books in English reflect on life under communism – it was huge and we had a series of events related to the 30th anniversary. There were events planned for the whole month. In short, we had been planning for it all year. There was a huge push for some of the books, like Vaculík's *A Czech Dreambook*, to be published by November and we were very happy the deadline was met.

I want to discuss A Czech Dreambook in just a second, but first to also bring up a second publication: The Velvet Revolution – 30 Years After. What kind of a book is it?
Monika Pajerová, the former student leader, who recently had been working with the documentary filmmaker Olga Sommerová, came up with it. She had the idea to take a real look back over the 30 years. Most of the interviews were done by Sommerová and because of all the historic photographs it comes across almost like a political coffee table book.

But it is much more...
It is and the interviews are remarkable and they are the core: Charter 77 signatory Jan Sokol gives a kind of philosophical overview about what was going on and the world of communism before; Daniel Kroupa takes a similar tack, and Pajerová gives us a glimpse into communist Czechoslovakia through a personal lens. She was picked up I think when she was 17 for teaching English to people who had been interested in fleeing to the West. She was the youngest dissident that the StB had a file on. For readers who didn't grow up under communism, but even those who did, she provides some fascinating insights.

I appreciate that a timeline of the many events was included.
That really is one of my favourite things: the chronology is crucial and shows there was a process that preceded the Velvet Revolution and that continued afterwards. As for the photographs, along with iconic images of Civic Forum, my favourite is from the former Faculty of Journalism (today part of the Faculty of Social Sciences) where you have these students writing stark slogans on protest posters where they say they want to write the truth. They didn't want to write lies. The stark imagery in the B&W photograph is very powerful.

You mentioned Vaculík's A Czech Dreambook and that was published in English as part of the Czech Modern Classics series. I know a lot of people were very much looking forward to it – and for a long time.
I think it is one of the most important books written here under communism and we were very lucky to get the translation rights. It was originally supposed to be published in 1992 but at the time the author took a stand against Random House because the publisher wasn't ready to offer a separate contract to the translator, Gerald Turner. Gerry had been involved from the start and had been discussing the book with Vaculík since the late 1980s. But it took until now for his translation to come out. Gerald is a phenomenal translator and it would have been great if it had come out in the '90s along with works by Hrabal and others, but the 40th anniversary of Vaculík writing it might work even better.

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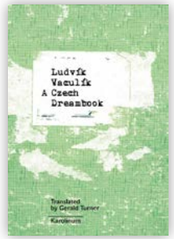
Mike Baugh is an editor at Karolinum Press and an instructor at Charles University's Institute of Translation Studies. A native of San Diego, California, he studied Classical Philology and Czech at the University of Texas, then English and Literary Translation at Queens College in New York. He has been living in Prague on and off since 1999.

About Ludvík Vaculík's A Czech Dreambook

It's 1979 in Communist Czechoslovakia, ten years into the crushing restoration of Stalinist rule and Ludvík Vaculík has writer's block. It has been nearly a decade since he wrote a novel and it was in 1968 that he wrote his anti-regime manifesto, "2000 Words", which the Soviet Union used as a pretext for invading Czechoslovakia. On the advice of a friend, he begins to keep a diary. Fifty-four weeks later, what Vaculík turns out to have written is a unique mixture of diary, dream journal and outright fiction.



A Czech Dreambook
In English, 574 pages
Karolinum Press 2019
Distributed internationally by the University of Chicago Press

You worked on the book as an editor but weren't the first, correct?
Harvard's Jonathan Bolton was the first editor and he wrote an afterward in the new release. He had a huge influence and he and Turner sometimes battled back and forth over stylistic choices, but I think the book is better for that editorial process. My approach, following their phenomenal work, was not to ruin anything (laughs). To make sure general readers would get certain passages. For example, if Vaculík writes "Mr. Václav showed up," it was up to me to gauge whether foreign readers would be lost if they didn't know he was talking about Václav Havel.

How would you describe the book within the canon of Czech literature?
That's a fascinating question: I almost feel like you have to make a separate section for *A Czech Dreambook*. Trying to categorise it is very difficult: is it a novel… is it a diary… is it a roman-á-clef? Is it a dream book, is it a book of feuilletons, as it was described by one reviewer? Gerry bristled at that idea but I don't think it's necessarily wrong, because trying to find a category for this is almost impossible. Not only that, it is a massive work about what happened to Vaculík every day, what happened in his dreams, and then kind of his fantasies, and he kind of changes the truth. You can read it in so many ways: Bolton reads it very politically, Turner more ecologically, which I find fascinating, but it works.

It sounds like there is plenty to discover but that it doesn't reward the reader right away.
It's not an easy read, you have to immerse yourself in it for a few days and then you begin to "get it". But you have to go in understanding that you won't be able to place every single detail. The Swedish publisher wrote to Vaculík hoping he would shed light on some references and his reply was "Nobody is going to get that, leave it!" adding that only one other person might get it who he once had a beer with. So you have to accept that some references are more obscure. But once you do, you get lost in this world and I think it's the best guide to the Normalisation period in Czechoslovakia there is.

"A novel about hope and hopelessness, about ever-present danger, about the strange dreamlike quality of life in a totalitarian system, about the absurdity of present-day 'civilized' living, about losing a home and the disintegration of time and human identity, about love, about nature, about courage, about fear, about death."

Václav Havel, dissident playwright and the first post-Communist president of Czechoslovakia

"Whether they liked it or not, A Czech Dreambook supplied many dissidents with their most intense reading experience of the normalization years."

Jonathan Bolton, Harvard University professor of Slavic languages and literature, in his book *Worlds of Dissent*

Palach Week Demonstration on Wenceslas Square, January 1989. *Photo by Lubomír Kotek.* Wenceslas Square would prove to be one of the main focal points and the site of repeated demonstrations, each more significant than the last, after the Velvet Revolution began in November.

The Velvet Revolution 30 Years After
In English, 144 pages
Karolinum Press 2019
Distributed internationally by the University of Chicago Press

A look inside The Velvet Revolution — 30 Years After

Dissident academics, a student leader and a foreign correspondent are interviewed by Olga Sommerová and Petr Placák in The Velvet Revolution – 30 Years After. The book takes readers through the turbulent days leading up to the revolution, as well as during, and beyond. The photographs here are just a few of many images featured in the book.

March of students. November 17, 1989. *Photo by Pavel Štecha.* The march began at Albertov, not far from the city centre and would end at the National Boulevard.

National Boulevard (Národní třída). November 17, 1989. *Photo by Pavel Štecha.* Police in riot gear are presented with flowers. The same night saw a brutal crackdown against the students which sparked the Velvet Revolution that would topple the communist regime.

Coordination centre of striking students, Monika Pajerová and Martin Mejstřík, at the building of the Theatre Faculty at the Academy of Performing Arts. *Photo by Ota Pajer.* Both Pajerová and Mejstřík were key figures during the Velvet Revolution.

Cardinal František Tomášek, a celebration of the canonisation of St. Agnes of Bohemia, Prague Castle, November 25, 1989. *Photo by Pavel Štecha.* An important and symbolic moment in the days of the revolution.

Václav Havel announces candidacy for Czechoslovak president. *Photo by Alan Pajer.* Havel was one of the most important figures of November '89, with the moral authority to lead the country out of totalitarianism and back to democracy and a free-market economy. He was Czechoslovakia's last president and the Czech Republic's first.

Books Forum 7

Jan Konvalinka:

Excellence in science is crucial

A modern university has to be more than a workshop for humanity. It has to be able to counter demagoguery.

STORY BY **Kamila Kohoutová** PHOTOS BY **Luboš Wišniewski**

The media recently reported that the Czech Republic had lost its status as a country where measles had been eradicated. What are we doing wrong?
An important cause of the disease's spread is an increasing percentage of families that are worried about the side effects of vaccination and choose not to vaccinate their children. I see this as a great failure for us as scientists, fellow doctors, and journalists writing about science and the education system as a whole. Measles is only a small part of the problem. The consequences of the fight against fake news – that we have been losing so far and is particularly evident in politics – are real. It's sad that citizens often decide against their own interests under the influence of lies.

Is it up to modern scientists to fight against fake news?
Definitely. I try to as well. Popularisation is an essential part of scientific work. It may sound like an exaggeration, but I think our survival as the human race depends on it, as does the survival of democracy.

What scientists lack in the fight against disinformation is time: it is nearly impossible to keep up with malicious intent, it seems.
We're really not able to refute the things demagogues make up. The Americans never made it to the Moon, vaccination causes autism, specially magnetised water cures cancer. It takes a second to mention three pieces of nonsense while a well-founded refutation of claims like these can take a scientist half a day. Demagogues can think up 20 such pieces of nonsense in a half hour. Paradoxically, a scientist by comparison can come across as less trustworthy or tedious, using complex terms, while a populist provides supposedly clear answers with confidence. Despite this, scientists have to find time for the fight against demagogues.

But scientists aren't paid to fight disinformation.
I don't like it when scientists complain that they don't have enough money. I realise that money from the state budget could easily go towards building highways and raising peoples' pensions instead of science. It's good that it's going to science, and there should be more of it, but it isn't a matter of course, and we have to convince our fellow citizens. We have to provide something for the money we get from the state budget. Not just medicines, but also better books about Czech history, better teachers in schools, better doctors in hospitals. Society deserves it.

For many scientists, science is the ultimate goal and many don't feel the need to justify their research.
Historically, this has never been the case. With a little simplification, what we call basic research, and state support for science and research started with World War II. Before then, there were very few scientists and science was the privilege of wealthy private scholars or foundations who financed scientists individually. Universities were there to train new teachers and doctors. The concept of large institutions paid for by the state, where people do only research, is a modern one. However, the idea that support for science is self-evident and the feeling there is no need to justify it is exasperating to me. Maybe someone like Jiří Grygar [a well-known Czech astronomer and populariser of science] makes less of an impact in terms of research but he has done more for Czech science than most and his work is extremely beneficial as a whole.

Should a scientist subordinate their interests to societal needs at a given moment?
A scientist shouldn't submit to the demands of society, but companies and institutions that are focused on applied research should. It must not be that the prime minister gives us an assignment and we fulfil it. There are ministerial institutes for that. Both universities and the Academy of Sciences are here to explore how the world works and to seek the principles of existence and nature. Science should answer society's questions but not be made to order. That hinders academic freedom, and what's more, is impractical because you never know in advance what will be useful or not.

Associate Professor Jan Konvalinka teaches at CU's Faculty of Science and serves as the Vice-Rector for Research. He works at the Institute of Organic Chemistry and Biochemistry of the Czech Academy of Sciences, where he concentrates on research into HIV proteins and research into neuropeptides and prostate cancer tumour antigens.

Can you elaborate?
Examples include the late Antonín Holý from the Institute of Organic Chemistry and Biochemistry of the Czech Academy of Sciences, and Jan Svoboda of the Institute of Molecular Genetics of the Czech Academy of Sciences. They weren't looking for a cure for AIDS. Holý was looking for substances that block the growth of DNA that he could use as antibiotics, and Svoboda was studying retroviruses in chickens. For many years, Svoboda's work looked like impractical playing around, science for science's sake that had no real meaning. But then we discovered HIV and everything that Svoboda learned about bird viruses was suddenly applicable to humans. The predictions of the spread of HIV in the 1990s sounded catastrophic. It appeared Africa would end up depopulated and that AIDS posed a great threat to humanity. Today we have very effective medicines thanks to people who worked for decades on what originally seemed like "useless things". We never really know what will make a difference.

What do you say about the idea popular among politicians that the private sector will place orders for graduates from universities according to current needs?
That is utter stupidity. Jan Sokol has a beautiful analogy: his parents fastidiously made sure he learned shorthand. Their idea was that he would never lose his way and would always make a living. But he didn't want to learn it. He trained as a watchmaker and in the end studied philosophy, which provided well for him his entire life. Today nobody is interested in shorthand. Developments move so quickly that no one can predict what we'll need even in a couple of years.

The entire problem also has a political context. Unfortunately, our country has become a low-cost assembly shop and companies based here need a supply of low-paid assembly workers. Schools shouldn't be involved in this in any way. If companies need more craftspeople, they have to pay them well and they will come. It is not the task of education to supply workers to be replaced by robots in 10 years.

Our university's role is not to produce "cheap assemblers", but it placed in the top 300 in international rankings. Why isn't it in the top 100?
Because we're not good enough.

Why not?
I don't like it when people use the previous regime as an excuse, but the damage done by the communists was devastating to Czech science. After the communists, there was severe underfinancing. This is no longer true today. The money that goes to science in our country is on average the same as in OECD countries.

With the money that goes to science, Charles University could be in the top 200 at least. How do we get there?
We have to be more dynamic. We have to have the ambition to seek out the best students, postdocs and professors. We have to attract or retain them and offer them appropriate opportunities. Those who do not have it in them to be Charles University professors, shouldn't be. This system is tough, but only in this way will we pass muster.

Of course, this goes hand in hand with the necessary internationalisation of the university environment.
Charles University has always been an international university. Until the 19th century, the lingua franca was Latin, then German and French. Today it's English, and we should therefore automatically teach as many study programmes as possible in English. In my laboratory, there is a clear rule: if there is a foreigner in the room, we all have to speak English, even if we were only talking about last night's party.

The ERC international grants have recently been a major topic. How are Czech universities doing in gaining them?
There is good news and bad. The bad news is that compared to countries similar in size in Western Europe like Belgium or the Netherlands, we still haven't got many. We have about a tenth of what they have. The better news is that we have the most ERC projects from Central European countries (except Hungary), and the best news is that the trend is moving up.

Why are there so few here?
I think one reason is inertia. Our leading disciplines, such as parasitology and chemistry, were established in the 1960s and 70s. Egyptology has a century-long history. Although it seems that science is very dynamic and changes rapidly, tradition has an extremely important role to play. It takes time for solid roots to take hold and still more for the tree to bear its first fruit.

Isn't the problem also that our best scientists and graduates go abroad?
That is part of it. We have a lot of excellent students and postdocs who go abroad. These people are typically between 27 and 35. Often they choose not to return, and if they do, they don't get ↪

a chance to found their own laboratory. They have to return to their old professor and work in his group. As far as philosophers or researchers in the humanities are concerned, they have to find three more jobs to support their families. They often abandon scientific work completely because they cannot make ends meet.

What should be done to keep people from leaving?
On one hand, it's good that they leave the country. On the other, they should come back. I consider the system where a student defends his bachelor's, master's thesis, dissertation, or is habilitated and gains a professorship – all within the same faculty – to be absurd. For example, in Germany you can't defend your master's thesis at the same school where you completed your bachelor's, and you definitely must not habilitate where you defended your master's thesis. And almost nowhere will you get a professorship in the school where you were habilitated. That's how things should be. And don't try the argument on me that Germany is a bigger country. The Czech Republic is in the European Union. I don't want to hold graduates here. They should go abroad for experience. But the best of them should be given the opportunity to apply for a position at Charles University.

How do you want to achieve this?
The reason Czech science isn't at a higher level is precisely because young scientists don't get a chance to run their own projects, teams and laboratories. We have a system that isn't dynamic enough. Practically no one leaves institutes where they work. Nobody is ever fired and evaluations are only formal. When you eventually get a job, you are offered lousy pay, you grumble, but you are impossible to dislodge and you gradually get to be an associate professor and then you get your professorship, and one day you go into retirement. This is what we want to shake up. We don't want to replace old professors, but we want to change the system from below by supporting those starting out. This is why we established the Primus program.

What is its scope?
We want to capture the best of our young people and offer them above-average resources so that they can prove that they're able to lead their own teams. There's a big difference between being part of an established team and leading your own. We're trying to give a chance to those who have made it abroad to bring to us their experience and build something of their own. Few realise that the hardest thing in science isn't to come up with a solution. The hardest thing is to come up with a problem. The chemist Pavel Jungwirth says: "I'm not looking for answers, I'm looking for questions."

Is the programme tailored for young scientists?
Primus is generous in that a candidate can get up to four million Czech crowns per year [Editor's note: the equivalent of around 172,000 US dollars] and can essentially do with it whatever they want. They can set the salary level, recruit a team, purchase a machine or buy chemicals. Such freedom makes some people nervous. However, with the Primus programme we have managed to set a trend that other research organisations and universities in the country have begun to copy.

More ERC grants are being won

Thus far, mathematicians, biologists and chemists have benefitted the most.

Charles University has so far managed to obtain a dozen prestigious grants from the European Research Council (ERC). Jana Roithová brought two to the Faculty of Science – in the starting and consolidation forms in 2010 and 2015 (in the field of chemistry and the PE4 panel). In 2013, Michal Koucký of the Faculty of Mathematics and Physics was awarded a consolidator (computer science PE6) grant. In the same middle category of ERC grants in 2017, two CU scientists were awarded: mathematician Libor Barto, on the topic of computational complexity (panel PE6), and biologist Vladimír Hampl (LS8), dealing with protozoa and their evolution. The remaining grants are in the starting class intended for budding scientists, given within seven years of receiving a doctorate. The first one was the mathematician Daniel Král (PE1) in 2010, during which time he completed his project at Warwick. After 2015, Michael Bojdys (chemistry PE5), who now works in Germany, dealt with graphene. Physicist Jana Kalbáčová Vejpravová (PE4 Panel) brought her grant to Charles University.

The past three years revealed how the Primus programme has paid off: the last four ERC grant recipients all received Primus support first. In 2017, it was the quantum physicist Jiří Klimeš (PE4), and last year the plant biologist Matyáš Fendrych (LS3) and astrophysicist Ondřej Pejcha (PE9), who returned from Princeton and researches interactions between binary stars. Currently, botanist Filip Kolář (LS8) also excelled: he will use the 50 million Czech crowns he obtained to put together a team and a five-year investigation into the polyploidisation of plant populations (see p. 31 of this issue). A year ago, the world-famous mathematician Jaroslav Nešetřil (the theory of dynamic networks) was awarded a synergy grant together with Hungarian colleagues.

Charles University and the Academy of Sciences are among the most successful institutions in the country. The Czech Republic has so far won (or welcomed) 40 ERC grants, while neighbouring Slovakia has secured only one.

Does anyone who gets a job at Heidelberg, for example, even want to return to Charles University?
Absolutely. And let's not forget that a lot of scientists working in this country are foreigners. Especially in the natural sciences, we have so many well-equipped facilities that they are quite comparable to the West and in many cases are better. It isn't too hard to become an assistant at Oxford University, but to get a professorship there is not that easy. That's why many people still come back and try it with us.

Charles University is trying actively to be an international player. The latest success has been the 4EU+ project, which includes Sorbonne University and universities in Heidelberg, Copenhagen, Milan and Warsaw. What does membership in this alliance represent?
4EU+ increases our university's prestige. It will offer students and teachers greater freedom and opportunities for international cooperation, especially those who have not yet had any. Many colleagues have a lot to offer, but thus far they haven't been able to connect with a foreign facility. 4EU+ offers them new structures and money. Students will then have the opportunity to visit these universities in the short or long-term, not only as part of the established Erasmus programme, but also as part of new frameworks that we are currently preparing. We will also open joint study programmes. The long-term goal is for Charles University students to go to Sorbonne University or to Copenhagen and automatically be able to choose from a portfolio of lectures and seminars.

Indirectly, but I think more importantly, we have to harmonise the ways of leadership and our approach to students. It forces us to adapt to the habits, rules and management techniques they have in France, Italy and Denmark. This change of approach could put us among the top universities.

The newly established Association of Czech Research Universities has a similar task, but on a national level. What does membership bring?
There are many colleges and universities in the Czech Republic. The newly established association has as its goal to bring together those who have research ambitions and want to become research institutions on a European level. Many of my colleagues complain that the level of our students is declining. I hate to say it, but the level of students is not declining, it's that we don't get the best students any more. Twenty years ago we did, but today they often sidestep us in favour of directly studying in Western Europe or the US. And I'm not talking about a handful of people but about several dozen students. If we don't do anything about this, soon it won't be dozens but hundreds. Therefore, the association has as its goal to influence the level of higher education in the Czech Republic in a direction that will suit research-oriented universities. We place emphasis on excellence, international comparison and the evaluation of science.

Popularisation is an essential part of scientific work. It may sound like an exaggeration but our survival depends on it

Isn't the emphasis on science and research exaggerated? What if someone is a better teacher than they are a scientist?
It's up to the head of the department to evaluate this and to fairly compensate everyone. Just as with excellent scientists, exceptional teachers are valuable to the university. Personally, I don't believe in this dichotomy. From my experience, we have excellent scientists who are dazzling, charismatic and inspiring personalities, and then there are those that are not. We must realise that we're not at a lyceum but at a university. Science is not a hindrance to the fact that we teach students here. Science is an integral part of our work and distinguishes university from secondary school.

But not everyone can be a scientist.
No. But the thing that gives the university meaning is to uncover something new. If my colleagues tell me that they don't have time for science because they have to teach, I immediately reply that they should go teach at a secondary school instead. This is Charles University. Science is the university's raison d'être. You don't have to teach how to interpret someone else's texts. That's absolutely useless, especially today, when all the information is available on the internet.

What do you think is the role of today's university teacher?
When I started teaching, I literally had the key to the library. I was the only one who had English textbooks available, or foreign magazines. I knew Nobel laureates and I made unknown things accessible to students. But today? All of the courses at the Massachusetts Institute of Technology can be seen on YouTube. Nobody needs me to pass on generally available information. So what am I here for? I'm a guide for students, someone who'll show and tell them something they won't find on the internet. But that's already very difficult, and to be able to do it, I have to do science myself. Even if I pass on my failures to them, that is important. Interpreting written books is simply inadmissible in 2019.

Filip Kolář, Ph.D., is a biologist and systemic ecologist specializing in plant populations. He graduated in biology from the University of South Bohemia in České Budějovice (2009) and concluded his doctoral studies at the Faculty of Science, Charles University (2014). He worked as a postdoc in Oslo, Norway and subsequently at the University of Innsbruck. His wife is a biologist as well and they have three children.

A star in the field of **botany** clinches an important ERC grant

"This is blue-sky research, but we are aware of its potential overlap," the botanist Filip Kolář said after having received an ERC start-up grant of 50 million Czech crowns.

STORY BY Martin Rychlík PHOTO BY Luboš Wišniewski

Kolář is one of a group of scientists who were able to bring a prestigious grant from the European Research Council (ERC) to the Czech Republic. The team was granted about 50 million crowns for the research of evolutionary genetics of various plant populations.

Where was he when learned the news? "It was a bit odd, actually. I was sitting at a banana plantation in Uganda and I connected to the Internet after quite a long time. We went on field research there and I totally forgot about the grant application. I hadn't been optimistic even about how the grant interview in Brussels had gone; I knew how I should have responded to their questions better the second the door closed behind me," Kolář laughs, recalling the moment.

The Faculty of Science in Prague is where he will conduct his five-year-long research. He is, of course, pleased with the grant, but he soon began to think about how to coordinate and combine the research with his one-year internship at the University of Oslo.

"I plan to build a team step-by-step, starting with two doctoral students and eventually engaging as many as five post-docs. Ideally, I will recruit the team members from all over the world; I believe the ERC 'brand' is quite renowned," says the botanist who intends to employ experts in population genetics and genomics, but also experts in carrying out ecological experiments.

PRIMUS as a "prep"

Kolář, who started to study so-called polyploidization (i.e. gene mutations accompanied by multiplication of chromosome sets) during his doctoral studies with Jan Suda, is a "product" of the "hatchery" of young scientists who were supported by the University internal PRIMUS grant. "PRIMUS was a fundamental pre-stage for me; it is a very open grant that allows you to set up a team, gain leadership experience and, first and foremost, it also requires applying for an ERC," explains Kolář.

Over the past three years, Charles University has won four junior ERC grants by people had previously won the Charles University competition!

And PRIMUS is already bearing fruit. Over the past three years, Charles University has won four junior ERC grants by people who had previously won the Charles University competition! In 2017, it was physicist Jiří Klimeš, and in 2018, astrophysicist Ondřej Pejcha and biologist Matyáš Fendrych.

Kolář benefitted from workshops for those interested in the ERC system, led by Professor Zdeněk Strakoš, from the Faculty of Mathematics and Physics.

Strakoš has been trying to increase the success of Czechs in applying for these EU grants: "For decades, we have not been able to put up a functional national grant system to give our talented scientists independence and prepare them for ERC-type projects based on the idea of solving a difficult issue, rather than just publishing. Thanks to the vision of Vice-Rector Jan Konvalinka and Rector Tomáš Zima's support, Charles University has such a system in PRIMUS," says Zdeněk Strakoš.

On the Wings of the **Desert** Dragon

On site. Professor Miroslav Verner (right) debates with the foreman of Egyptian workers hired for the excavation at Abusir.

For hundreds of years, only the wind and occasional stone thieves visited the sand-covered ruins of the pyramid fields and grave complexes in Abusir. Recently, however, 3D scanners and lasers of the Czech Institute of Egyptology have been paying visit. What technological development has Czech Egyptology undergone over the last hundred years?

STORY BY Kamila Kohoutová PHOTOS FROM The Czech Institute of Egyptology

Egyptologist Miroslav Verner has been working at Czech excavation sites in Egypt since the 1970s. "I have experienced a lot of traditional Egyptologist archaeology and some of its techniques and approaches are still thriving. Working with a hoe, paintbrush, spatula and camera is still absolutely fundamental," he says, describing the means still employed in Abusir today.

Pyramids under the sandy crust

When Miroslav Verner took over responsibility for conducting Czech archaeological work in Egypt, he agreed with the then Vice-Chairman of the Czechoslovak Academy of Sciences, the archaeologist Josef Poulík, that he would start cooperation with geophysicists. "We were one of the first to incorporate geophysical measuring on pyramid fields. We used a geomagnetic and electric resistance method that helped us to map the overall situation at the then new concession, the large archaeological site, including the southern part of the Abusir burial ground and reaching as far as the northern limits of Saqqara," he points out. Thanks to these technologies, Czech Egyptologists have located the main grouping of monuments and have determined their basic character. "We have clarified where non-royal mastabas and where royal pyramids could be, and – as it turned out later – we also located huge shaft grave complexes."

According to Verner, the popular opinion that a pyramid rises high and is clearly identifiable from a distance is only true in some cases. "Especially smaller pyramids were devastated by stone thieves for centuries, until the pyramids eventually disappeared under huge layers of wind-blown sand." At first glance, the desert surface is monotonous to the untrained eye: an endless, sandy, undulating plain, on which the remains of crumbling limestone are scattered, with red granite or basalt and shards of ceramics here and there. In such an environment, it is difficult to navigate, so it is good to combine the methods of traditional prospection, i.e. surface archaeological surveys, with modern tech, Verner explains.

Since their first archaeological research in Egypt, Czech Egyptologists have also been cooperating with surveyors who, using geodetic and photogrammetric methods, documented important research in Nubia in the 1960s. Since the 1970s, they have regularly participated in expeditions to Abusir, where the geodetic network necessary for the creation of an archaeological map has been gradually built, and as a result, the Abusir pyramid field was identified and examined. In 2001, surveyor and cartographer Vladimír Brůna left for his first archaeological expedition to Egypt. He continued in the work of his colleagues and since then, he has been gradually extending the documentation methods. You will most often meet him on the site using geodetic total station, a 3D laser scanner or a camera, or flying a kite.

The basic documentation method remains the oldest and simplest, when the archaeologist himself describes his research using surveying tools such as a tape measure, plumb bob, folding rule or millimetre paper.

Via satellite, wearing house slippers

Documentation methods are an inseparable part of archaeological field research. There are many ways of displaying and converting the actual state of research into analogue or digital form. In the last quarter of a century, new information geotechnologies made a significant impact and the field research has moved towards a comprehensive digitization of archaeological findings. The basic documentation method, however, remains the oldest and simplest, when the archaeologist himself describes his research using surveying tools such as a tape measure, plumb bob, folding rule or millimetre paper. The subjective view of the archaeologist plays an important role in this process, putting his skills, experience and knowledge into the documenting process.

This, however, does not mean that Czech Egyptology has been lagging behind in the use of modern documentary methods in recent years. The above mentioned geodetic total station is commonplace, by means of which the spatial position of detailed points is measured; their database forms the basis for the creation of maps and plans of archaeological research. The methods of remote sensing, 3D laser scanning, photogrammetry, GPS mapping and others are also used. "Modern geotechnology gives us many possibilities and ways of documenting the archaeological site and found artefacts. The view from above is very important for archaeologists: they are able to see the spatial structure of the objects studied. And the 3D model of a tomb, vessel or burial chamber provides a different point of view," Vladimír Brůna says and adds "By using various techniques, we simply collect spatial data, which we then process to create new, more detailed and objective outputs."

As one of the first, Czech Egyptologists ordered satellite photography in 2003 at Abusir, together with some other important sites with a total area of 64 square kilometres. "Methods of remote sens- ↪

The view from above is very important for archaeologists: they are able to see the spatial structure of the objects studied. And a 3D model of a tomb, vessel or burial chamber provides a different point of view.

Interdisciplinary skills: as an experienced surveyor, Vladimír Brůna (left) contributes to the creation of the satellite atlas of pyramids with CU's Vice-Rector Miroslav Bárta, the fresh recipient of the prestigious Česká hlava (Czech Head – or brain) award.

ing have been used in archaeology since the early twentieth century. Today, we can easily buy satellite data, which is a great advantage, and regularly update the satellite image database of our concession in Abusir," the surveyor says.

The satellite image resolution is very high and the smallest unit – a pixel – displays less than one square meter of landscape. Vladimír Brůna and his colleagues from the Czech Institute of Egyptology are thus able to explore large areas in great detail, while at home – wearing house slippers, so to speak. "We first interpret the images visually – based on our experience and knowledge, we recognize individual structures, objects and phenomena. Spectral reflectance plays a big role, by means of which we are able to distinguish various objects. For example, the higher content of limestone in sand or clay structure has a different reflectance than sand, which in turn shows differences in moisture or texture. In addition to interpretation, we also use digital image processing and, using a combination of these methods, render individual objects and phenomena in the GIS environment."

Often, though, even more detailed images of the archaeological site are needed, and since aerial photographs are difficult to obtain in Egypt, scientists use an unconventional tool: a tethered kite (in Czech, "drak" refers to both a kite and a dragon; hence the "dragon" in the headline) that carries a camera in order to obtain higher resolution images. In recent years, drone photography has also expanded, but since it is not possible to fly one's own drone over an archaeological site in Egypt, the Czech expedition hired a specialized Egyptian company which shot all the major parts of the site. "The bird's eye view gives us an objective picture of the spatial structure and links between individual objects and also perfectly complements the historical site maps," Brůna notes, adding that the data collected at the beginning of September are now being processed and the outputs for Egyptologists are being prepared for further analysis.

Unique Mapping of Underground Premises

However, Vladimír Brůna does not only map objects that are located on the surface; the vast majority of them are hidden underground. Using geodetic methods and 3D laser scanning, he creates their three-dimensional models and interconnects them. "With the 3D model of a shaft, burial chamber and other surface and underground objects, we can continue to work, see their spatial structure, and the relationships between the objects; this allows us to measure distances, volumes and create views and cross-sections," Brůna explains.

Under the hands of this new kind of surveyors – the geo-ITs – beautiful ancient worlds emerge, despite being buried under tons of sand. The sand makes their work more difficult indeed. As Brůna acknowledges, they often have to improvise: "We work in extreme conditions, not only affected by high temperature, humidity, dust and wind, but also pressured by time. Especially in a situation where there is a danger of collapse of the ceiling or wall underground, an instant survey is necessary. Therefore, I have to think through each step very carefully in advance – my work must be effective and accurate. There is no second chance in these situations."

Helping children with **type 1** diabetes

STORY BY Lucie Kettnerová PHOTOS BY Luboš Wišniewski

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They treat paediatric patients with type 1 diabetes, growth disorders or pubescent development: the team at the Paediatric Endocrinology and Diabetology Clinic of the Second Medical Faculty and Motol University Hospital strives to ensure that these children enjoy just as rich and long a life as their healthy peers.

No one gets **a warranty** for a healthy child

When he first joined the hospital in the 1980s, paediatrician Jan Lebl had to cope with several patient deaths a week. Today such deaths are rare and many children are able to live high quality lives despite serious health issues.

Paediatrics is the most beautiful field of clinical medicine, according to Jan Lebl. "When I meet with students who come to us in their third year to take a course in clinical propaedutics for the first time, I tell them that children are the nicest patients. What's more, in paediatrics today things almost always turns out well, in contrast with adult medicine, where mortality is by definition 100%", he says, explaining his decision to dedicate himself to children.

When he joined the hospital in 1980 after graduating, the situation was very different. During his first 10 years there, he always got the same question from his parents when he got home: "Did any children die on you again?" The fact that a young patient died during nearly every shift from leukaemia, cystic fibrosis or even "only" asthma, was a sad reality. "Sometimes I think that some parents don't appreciate it and feel like they've got a warranty card that they can redeem for a healthy child. They feel that if their child is not healthy, they bring them into the equivalent of a factory repair shop and the health care system is obliged to repair them. We're glad when it turns out well, but it's not always possible", Lebl says.

We don't treat obesity

Professor Lebl has especially connected his professional life with the field of paediatric endocrinology, which deals with the diagnostics and treatment of the endocrine glands. In the Czech Republic, diabetology is somewhat detached from the field because the largest group of children has diabetes, a disease that requires extremely focused attention and care.

> Sometimes I think that some parents don't appreciate it and feel like they've got a warranty card that they can redeem for a healthy child.

In addition, paediatric oncology deals with things like disorders of the thyroid, adrenal glands, the parathyroid glands, which control the management of calcium, the gonads and the pancreas, which produces insulin and other hormones. He is also focused on the regulation of growth in children, and at Motol he currently cares for around 700 children with this problem. "Growth hormone is our helper. It doesn't help everyone, but it does help many children," Professor Lebl says. Through systematic research, experts are recognising mechanisms that govern growth, so that growth hormone is becoming just another stone in the mosaic. It can also induce or inhibit adolescence if it is premature.

Patients battling with excessive weight also come into the endocrinological clinic. "But we avoid obesity a bit. I agree with the opinion of American doctors, who have the greatest experience with the problem, and who say that no health care system is so rich that it can provide individualised care for the obese. The issue of today's obesity epidemic is a question of a certain stage in the development of a society, one that is in the context of individual characteristics. If there is enough food for everyone at all times of the day, then it depends on how every individual is set up to regulate their eating behaviour and metabolism", Lebl says, admitting that he is not an advocate of individualised obesity treatment. "There's nothing wrong with it, but methodically there's essentially not a lot that can be done about it."

Treatment available to all

As a rule, the children who end up at the Motol University Hospital are the ones with the cases that are most difficult to diagnose or the most difficult to treat. In the Czech Republic, therefore, Motol is usually the last facility patients are sent to, as doctors elsewhere don't know what to do with them. The reason is not only the renowned expertise of the faculty, but also the large, well-coordinated teams that Motol has managed to assemble. One of these is the endocrinology team.

It had to fight hard for its prestigious position. "In its first professional phase I tried as much as possible for us to quickly reach same level as the developed world. For children with diabetes, the greatest challenge after 1989 was to ensure that they got access to the same blood glucose meters as in developed European countries, that they regularly checked their blood sugar level on test strips, that they could be treated with repeated injections of insulin, or even that they were able to use insulin pumps. In Czechoslovakia in the 1980s, parents had to boil their children's urine at home and add Benedict's reagent to find out if it had sugar in it, and had to drip urine onto the white powder of Lestradet's reagent to find out if acetone was present. It was a very inaccurate and late examination of their condition, and it was insufficient for determining the right doses of insulin," Lebl recalls. According to Lebl, the first phase was busy yet tremendously fulfilling. Moments such as when 2,000 Czech children were able to receive new glucometers – thanks to Olga Havlová's Committee of Good Will foundation, which he will never forget. Related to this was the need to create a new theory of nutrition: together with accurate insulin dosage, it was necessary to find a balance between food intake and insulin.

Similarly, growth hormone came to the former Czechoslovakia with a delay. "After the General Health Insurance Company (VZP) was founded, we managed to get a budget to purchase growth hormone, which is quite expensive, and to set up a system of treatment that has since then moved to the level of the developed world," he says, describing another crucial success.

In the next phase of the field's development, it was necessary to look for new ways of detecting the roots of diseases. Humans have around 21,000 genes, of which several hundred are related to paediatric endocrinology. "Since the late 1990s, we began to recognise individual genetic disorders in our patients. Along with Štěpánka Pruhová, my first and most successful postgraduate student, we focussed on various types of genetically conditioned diabetes, as well as some disorders related to paediatric endocrinology. Today, we can build on this phase in many ways with our research," Professor Lebl says.

Nowadays Jan Lebl is aware that Czech endocrinology has crossed European borders and can also make a difference further abroad. "We are fortunate to be part of the rich and developed part of the world, and that our children with diabetes have a chance at a high-quality life. All of us - patients included – should realise this is not a given, that elsewhere in the world doctors fight every day to help children with diabetes survive. Our responsibility now is to help less fortunate parts of the world so that quality treatments can also be made available there."

Professor Jan Lebl graduated from CU's Faculty of Paediatrics in Prague in 1980. For the next 17 years he worked at Motol University Hospital, and in 1997 he took over as the had of the Clinic of Children and Adolescents at CU's Third Faculty of Medicine and at the University Hospital Vinohrady. In 2006, he returned to Motol as the head of the Paediatric Clinic of the Second Medical Faculty of Charles University and Motol University Hospital.

A **cure** for diabetes is not on the horizon yet

Almost a hundred years ago, a diagnosis of diabetes mellitus was a death sentence. The discovery of insulin, however, was a breakthrough: for the first time, it was possible to successfully treat the fatal disease. In his research, paediatric diabetologist Zdeněk Šumník examines risk factors that lead to the development of type 1 diabetes.

Can it be predicted whether a child will get diabetes?
I'll answer in a slightly roundabout way. Type 1 diabetes is one of the autoimmune diseases where genetic and environmental factors contribute approximately equally to its onset. We know with a fair amount of detail that genes increase the chance of getting sick and the risk they bring, and we are able to make a kind of genetic prediction. The problem is that the estimate is still relatively inaccurate, because even with the combination of the highest-risk genes, "only" one in five will get sick.

On the other hand, we still know relatively little about external environmental factors and their role in the diabetogenic process. This is due, among other things, to the fact that in the shortest case, a clinical manifestation of diabetes with a typical rise in blood glucose takes place several months after the onset of the autoimmune process. However, this is measured in years or decades. According to the current thinking, environmental factors are responsible for the primary activation of the immune response, which – after a certain time – leads to the destruction of beta cells on the islets of Langerhans. It's not yet clear whether the preclinical phase of the disease occurs autonomously without additional external impulses or in certain waves of attenuation and reactivation.

This implies that in order to reasonably estimate the lifelong risk of developing type 1 diabetes, we would need to carry out a robust long-term study starting in infancy. With a little luck, they could answer the question of the primary trigger of autoimmune inflammation in the islets of Langerhans. If we were able to identify such a factor, it would theoretically be possible to eliminate or at least supress its actuation for at-risk populations. Some common viruses seem to be the most promising in this regard, even if vaccination against them with the goal of diabetes prevention thus far is something that's off in the distant future. In addition, the preclinical phase of type 1 diabetes begins relatively early, most often by the age of five, which further complicates the technical implementation of studies and possible preventive measures.

If you perform an examination on a child, what information do you share with the parents?
On the basis of a combination of genetic parameters and screening for specific antibodies, we can say with approximately an 80% probability whether diabetes will develop in the next five years. This sounds rather convincing, but it makes sense to perform this examination only in at-risk populations, which means for close relatives of people with diabetes. It cannot be recommended at the level of the entire population due to the still relatively low incidence of type 1 diabetes among children.

If you know that the risk of the disease is high, are you able to prevent its outbreak or at least delay it?
Unfortunately, we don't have such an option at this time, and therefore it doesn't seem rational to expand the diabetes prediction programme beyond clinical trials. A drug with the generic name of teplizumab - an autoantibody acting against one type of lymphocyte – represents a new hope for children in the preclinical period of type 1 diabetes. Only in the case of this drug has it recently been proven that it slows the progression toward clinical diabetes in children by an average of two years. This is a very big breakthrough. Two years without insulin with normal blood glucose values is definitely worth it. We will begin testing this very promising drug in the Czech Republic in the fall. But this doesn't change the fact that at present we can only advise families to monitor the clinical signs of diabetes, which has little to do with real prevention.

Professor Zdeněk Šumník is the head physician at the Paediatric Diabetes Centre of the Paediatric Clinic of the Second Faculty of Medicine and Motol University Hospital. His research interests include the detection of risk factors for the onset of type 1 diabetes and the use of modern technologies for its therapy.

Can't the outbreak of the disease be influenced by an inappropriate diet?
I always wonder in this context whether we truly know what an appropriate diet for our children is, but that would be a slightly different discussion. Of course, in general, the need for insulin depends on body mass index; type 1 diabetes actually breaks out earlier in obese children than in thin children, but we cannot specifically intervene in diet.

Preventive screening in small children may not make sense if you have nothing to offer them yet.
There is no population screening in the Czech Republic, but some states in Germany and Sweden have already gone down this path. They decided to screen children between ages three and five for the presence of autoantibodies and basic risk genes. Nevertheless, this is an initiative at the cutting edge of clinical research – monitoring alone certainly will not improve the health or prognosis of these children. Pharmacoeconomic studies have clearly shown the lack of effectiveness of mass screening for type 1 diabetes, which is why in our environment I do not now consider it rational to talk about it seriously. It would of course be a different situation if effective preventive measures were available – then we would try to find children in the preclinical phase in the child population and enable them to extend their lifetimes without diabetes.

Is there a chance that in the next 10 to 20 years scientists will make a major discovery that will lead to a complete cure of diabetes, so that diabetics will not have to rely on insulin injections their entire lives?
Of course, hope exists. Twenty years is a very long time, but at this point I personally would count myself among the sceptics of a so-called complete cure for type 1 diabetes. Insulin is a hormone necessary for survival, and if it is absent, as is the case with type 1 diabetes, it should ideally be administered to the body in amounts that are as close to the physiological norm possible. One possibility is to create an artificial pancreas using a combination of a continuous blood glucose monitor, insulin pumps and an algorithm that would connect the two devices. In the last few years, research in this field has been truly unprecedented, and the first prototypes have been gradually getting to patients.

However, if you are thinking of constructing fully functional replacement beta cells, that's a much longer road ahead. Despite some success in efforts to reprogram other cells to beta cells, they still haven't managed to achieve an adequate capacity of insulin production capable of fully replacing one's own tissue. Another problem is the increased risk of reactivation of the immune system after the implantation of these cells, and their limited sensitivity to rapid changes in blood sugar levels. I don't see much light at the end of this tunnel, but of course I'd be glad to be wrong.

Are there proposals for treatment solutions that appear at international conferences that you consider too futuristic?
One of these is so-called smart insulin, which would be absorbed from a subcutaneous depot on the basis of current blood glucose. Insulin is naturally produced in the pancreas, gets into the portal vein, can act very quickly in the liver first, then is spread throughout the body in the blood. Insulin applied by pen or pump into the subcutaneous tissue, as is common today, cannot match this sophisticated system in its effectiveness; insulin simply does not belong in subcutaneous tissue. According to the smart insulin creators, a change in the structure of the insulin molecule would be caused by its reactivity to the surrounding glucose concentration. The rate of absorption would increase or decrease as needed. A patient would thus inject insulin, which would then take care of the rest itself. But that seems too futuristic to me.

Not every form of diabetes is **the same**

Dividing diabetes into type 1 and type 2 is relatively common. "But few people know that other types exist, including monogenic diabetes, which is caused by carrying a mutation of a certain gene," explains Štěpánka Průhová, who is involved in research into this hereditary disease.

There are approximately one million diabetics in the Czech Republic. The vast majority of them face type 2 diabetes in adulthood and many fewer, type 1, which is inherited polygenically. But less than 5 percent of patients have a somewhat different disease, one that is autosomally inherited, so patients hand it down in families and it is caused by a pathogenic variant in one of the genes. It is called monogenic diabetes mellitus.

"If diabetes occurs in a young person, whether a child or an adult under the age of 40, who is thin and has negative autoantibodies, it can be assumed that it's not type 1 diabetes. If they're not obese, it's not likely to be type 2 diabetes either. In these cases, we begin to address whether their parents or grandparents were treated for diabetes. If it is shown that there have been several generations in the family where diabetes has manifested itself early, the patient is indicated for genetic examination," says Associate Professor Štěpánka Průhová, describing cases where doctors consider the genetically dependent variant of diabetes.

If monogenic diabetes is detected in patients, a different treatment can be applied than in type 1 and type 2 diabetes. However, the procedure chosen depends especially on the genetic background detected and extent of the disease. Glucokinase diabetes is a mild variant of the disease. "While the patient meets the criteria of diabetes according to the Diabetes Society and should start treatment according to current guidelines, these people have been found to have a disorder that has been present since birth, and will continue until old age. Fortunately, these patients tend not to develop the chronic diabetes complications we're most concerned about. Therefore, there's no need to start treatment because slightly elevated blood glucose fluctuates only minimally and does not increase over time, as we know with other types of diabetes. Children with this diagnosis can play sports, don't have to inject insulin, and don't even have to adhere to a strict diet. They only have to slightly reduce their intake of fast sugars in food, such as giving up sweetened soft drinks. It tends to be very good news for parents, which is why we call this variant 'good diabetes'", Associate Professor Průhová explains.

But hereditary forms of diabetes can be significantly worse. If a patient has another type of disease (such as changes in the HNF genes) and at the same time does not cooperate properly with doctors and does not take their medication, there is a high risk of complications and a need to apply intensive treatment, sometimes including insulin. For cooperating patients, it is possible to try treatment with oral antidiabetics, specifically sulfonylurea derivatives, which they often respond to better than if they were to receive insulin. According to studies, up to 70 % of people with MODY (maturity onset diabetes of the young) – as this type of diabetes is also called on the basis of clinical observation – can replace insulin treatment by treatment with tablets, which most patients welcome, especially children.

Doctors today mainly focus on improving the diagnosis of the disease.

We can't fix genes

Doctors today mainly focus on improving the diagnosis of the disease. As Associate Professor Průhová states, thanks to next generation sequencing methods it is possible to analyse multiple genes in one examination. "That's why we've developed a panel of hereditary diabetes genes so that we can investigate all the genes that are known in relation to diabetes at once."

But experts have thus far not been able to repair mutated genes. "If I were to work from other model diseases where certain vectors can be inserted or a specific area of a gene can be repaired, it would potentially be possible. But the responsible genes work throughout the body, and so far I can't imagine a way we'd be able to repair them all. The question is also whether it makes sense at all for less severe forms of the disease," Štěpánká Průhová says, admitting that development in the treatment of diabetes is directed toward the majority types rather than to rare cases. "But patients with MODY also benefit from this because we can choose the medicine that's the most suitable for them. Sometimes we use drugs designed for something else and find out that they work beautifully, especially for some of these other types of diabetes. A perfect knowledge of the etiology of diabetes helps tremendously."

Knowledge of genetics is also useful elsewhere

Associate Professor Štěpánká Průhová is very active in the field of scientific research. Aside from being in charge of 120 paediatric patients with type 1 diabetes at Motol Hospital, she is involved in several research projects. She uses her knowledge of genetics in paediatric endocrinology as well, where she deals with growth disorders and uses genetic research to figure out what causes a given problem. "There are two major projects underway at the moment that are tasked with finding out how genetic causes influence body height in specific families. We are investigating what makes a person shorter or taller, and what subsequently influences their growth during childhood and adolescence," she explains.

Associate Professor Štěpánka Průhová chose hereditary forms of diabetes and their causes as the topic of her postgraduate study at the Third Faculty of Medicine. In addition to her care for diabetic patients at the Paediatric Clinic of the Second Faculty of Medicine and Motol University Hospital, she works in the Laboratory of Molecular Genetics, where she performs molecular genetics diagnostics of MODY diabetes and some forms of neonatal diabetes. She is the vice-dean for doctoral studies and foreign affairs at the Second Faculty of Medicine at Charles University.

Parents want solutions **now**

"I don't know of more motivated patients than the parents of a diabetic child," says Lenka Petruželková. To improve the quality of life for their children, they created an open source system providing automatic insulin delivery. Although it has not passed any official certification and its use has not been certified, Lenka Petruželková nevertheless decided to help the families and now they are working together on official testing.

What is life like for parents of young diabetics?
Very difficult. When you have a small child with diabetes, you wake up every night, sometimes several times, both to feed and to inject so that the compensation is the best it can be – the quality of life suffers. You either withdraw from normal activities and the child has excellent blood glucose levels, or you lead a normal life, but with worse levels. Luckily, continual monitoring sensors are available, and these have greatly improved the quality of life for patients and their loved ones.

How do these sensors work?
The patient has a tiny probe installed with an enzyme, and it continually senses the current level of sugar. The reading is not from the blood but from the subcutaneous skin, which correlates well with blood glucose levels. The sensor sends data to a receiver, which is at the moment a smartphone, which we all have. It clearly shows not only the current blood glucose level but also its trend – whether it's going up or down. As a result, you know what to expect in the near future and how to prepare for fluctuations. If you have low blood glucose and the arrows are pointing downward, you can eat in time to avoid hypoglycaemia. Everyone is looking forward to when they are able to connect the sensor to an insulin pump that physiologically mimics the pancreas better than an insulin pen. Unfortunately, at this time families control the pump according to a doctor's instructions.

There's nothing like this on the market yet?
There's only a single product available in the world but it's not available in the Czech Republic yet. That's why a parent association named "We are not waiting" was started. It has some clever people in it who themselves created and are gradually improving an algorithm that can work with the sensor and switch off the pump according to blood glucose levels. It can send a bolus [Editor's note: a single dose of insulin provided before food] or otherwise respond. It works like a closed loop.

Does the parent then need to manually operate the pump?
They don't have to. Everything is controlled via the mobile app. You connect the app with a transmitter that detects the level of glucose and communicates with the insulin pump. Every five minutes a new blood glucose reading is performed and the algorithm calculates what is likely to develop over the next few minutes and how much insulin needs to be increased or decreased to get as close as possible to the optimal blood glucose reading. This command is sent to the insulin pump via Bluetooth, and the pump itself executes it. Only the oversight function remains with the parents.

So then the control doesn't take place via the insulin pump?
No. And imagine that you're a 17 year old girl, you have a dress and you have to pull out a pump somewhere quickly… At that moment, you're only interested in being discreet. Then the main advantages of having it controlled by a smartphone or smart watch start to become clear. Teenage patients are an extraordinarily difficult group for us, because at that age they're dealing with personal issues. Compensation isn't important for them.

What prevents the system you've described from being adopted on a mass scale?
The problem is the open source program's lack of certification. We cannot officially recommend it without this certification and proof of its safety.

Wouldn't it be simpler to test the system to prove its safety?
We're already trying to do that. In cooperation with the engineer Miloš Kozák, the father of one of our patients, who turned this procedure into a user-friendly and simple mobile application, we tested the algorithm in a pilot study that showed very promising results. After all, doctors tend to be very sceptical of patients' ideas, but here it turned out that the system works and that it's worth it to listen to patients.

Our goal is to adapt the algorithm into an official form so that we can gain the approval of the State Institute for Drug Control to conduct a prospective study in a home environment to prove the system's safety and effectiveness. Then an official product can be made that would be easily available for all patients.

What made you take on this difficult task?
I think all patients should be entitled to the same approach, and I can't accept the fact that although a closed circuit pump has existed in the USA for three years now, it still has not reached us. So I support any other product that would increase competition on the market and force companies to innovate faster and bring the latest available technologies to our market immediately.

I had two options – to close my eyes and pretend that the patients' solution did not exist – or to get familiar with it and find out if it worked. I chose the second option. The driving force for me is motivated parents who want the best for their children and who go for the best possible results.

How long can it take to get all the necessary stamps of approval? For child patients, every month can certainly play a role.
We quietly hope that we'll be able to have launched the study this fall, because we have everything prepared. We even got a grant from the Technology Agency of the Czech Republic. We also have to get the approval of all the international companies whose sensors and pumps we're using. The study will last for nine months, and then we will have certification. However, it will be beneficial to verify that the system is effective and safe.

There are around one million patients in the Czech Republic with diabetes. That still isn't an interesting target group for companies?
Although this figure may seem high, it's a negligible number in terms of the worldwide number of diabetics. In the Czech Republic, we are at the mercy of the big global players.

Lenka Petruželková, Ph.D., is a graduate of the First Faculty of Medicine at Charles University. She works at the Department of Paediatrics at the Second Faculty of Medicine and Motol University Hospital. She is one of the founding members of the international GOOD NEWS group, focusing on the treatment of type 1 diabetes in children. She is the head of the ArtificialPancreas4ALL project.

Foundation offers a world of **possibilities** to young scientists

Thanks to the Experientia Foundation, talented young scientists in the field of organic, bioorganic and medicinal chemistry can now spend a year on an international study stay or internship at a prestigious university abroad. Eva Bednářová and Rafael Navrátil, graduates of the Faculty of Science at Charles University, received the grant this year.

STORY BY Marcela Uhlíková PHOTOS BY The Experientia Foundation

Rafael Navrátil

Thanks to a scholarship worth 1,270,000 Czech crowns, he will spend a year at the Scripps Research Institute in San Diego, California. He chose the location because it meant he will be able to work in a team led by Professor Phil Baran, one of the leading figures in contemporary organic chemistry. Grant evaluators were impressed by Navrátil's project of developing new methods and reactions in organic synthesis.

The CU graduate studied chemical processes and reactions at the molecular level using mass spectrometry and ion spectroscopy. Among other things, these methods make it possible to study the mechanisms of organic reactions or highly reactive molecules, of which little is known. He worked on both of these topics. Specifically, his work dealt with fluorescent dyes and their temperature-dependent properties, iron complexes mimicking enzyme reactivity, light-responsive molecular switches or light-activated models of antiviral drugs. "I solved many projects in cooperation with other chemists who wanted to learn more about the molecules and reactions. My results explaining the properties and reactivity of the studied compounds proved valuable to them," Rafael Navrátil says.

The Path to the Grant

According to the young scientist, having a good idea for a research project is essential. That required an overview of projects other chemists around the world are working on, and to look for areas where there might be room for new discoveries. "I had had an idea for a project for some time. It took about six weeks to work it into a final written proposal and to process everything else related to the preparation of the grant application," Navrátil explains. Luckily, he didn't find getting a grant too difficult. The foundation requires relatively few documents, making the application itself easier than with some grant schemes. As for other competitors, everything was confidential: only the jury examining all applications knew all the details.

Science, the Czech Way

"I don't think it is easy to do top-level science in our country comparable to world standards. Many scientific teams in the Czech Republic are still working on topics that are not up-to-date," the scientist says. Innovative thinking, ideas, insight and a global view of science is what he lacks the most. "A lot depends on the respective scientific team leaders," the grant-holder admits: "Young scientists with experience from abroad who know exactly what to work on and who want to set up their own scientific teams should get more encouragement. "The conditions improved thanks to the emergence of the Experientia Foundation start-up grant; however, that grant is only for beginner scientists in the field of organic, bioorganic and medicinal chemistry. In addition, the problem many young scientists face is not only having to raise funds, but also gaining suitable laboratory space.

Rafael Navrátil graduated from the Institute of Organic Chemistry at the University of Chemistry and Technology in Prague; he is now a PhD student at the Department of Organic Chemistry, Faculty of Science, CU. He has also completed a research internship within the framework of a doctoral program, the Erasmus+ program at the Radboud Universiteit in Nijmegen, the Netherlands.

Eva Bednářová

A scholarship worth 1,165,000 crowns will allow her a one-year internship at Columbia University, New York. Bednářová opted for this school because it is one of the most prestigious in the world and she hoped to join the team of Professor Tomislav Rovis, in whose research Bednářová is interested. She is the first woman in the seven-year history of the Experientia Foundation to receive a scholarship.

Eva Bednářová wants to continue working on the development of a new method of preparation of chemotherapeutics acting directly on the area of application, i.e. in the place of affliction. The problem of commonly-used cancer drugs is their low specificity and side effects. "Our idea is to deliver a non-toxic drug precursor to the very spot of the affected tissue, where it will be transformed into an active substance using a non-invasive method, in our case a photo-redox catalysed cyclization reaction," Bednářová says. It is the use of this method that could reduce or eliminate the commonly observed side effects of the drug, which often limit its usability.

The Path to the Grant

Agreeing with her colleague, Rafael, the young scientist regards the administrative process of applying for the Experientia Foundation grant as very straight-forward, as opposed to applications for competing grant agencies: all that was necessary was to write a roughly four-page description of the project, to submit a CV, to get a letter of recommendation from the supervisor, an invitation letter from the receiving person from a foreign university and to determine the amount of the grant requested. "The most time-consuming process is designing the project itself and finding a suitable institution to carry it out," Bednářová admits. To encourage other young scientists who are considering applying, she adds: "I was assured that if the project was ambitious enough, well written and performed at a top workplace, the chances of approval were excellent."

Science, the Czech Way

According to Bednářová, the competition among scientists in the Czech Republic is not as tough as in the countries of Western Europe and the USA and the success rate of submitted grant applications is higher. On the other hand, these benefits are often offset by a high administrative burden and a low financial remuneration of scientists. "However, I cannot compare the situation in the Czech Republic to other countries yet because I have only limited information from abroad," she concludes.

Eva Bednářová, Ph.D. After graduating from the Department of Organic Chemistry at the Faculty of Science, CU, Eva Bednářová earned her doctorate in organic chemistry within the Cotutelle programme at the Faculty of Science of Charles University and the Institut des Biomolécules Max Mousseron at the Université de Montpellier in France. She is now a researcher at that department.

CU Med student: **Writing** gave me a broader perspective

There aren't many authors who publish their first book while still at high school, but Marcela Remeňová, now a first-year at Charles University, did exactly that. In fact, she wrote the first three books in a continuing fantasy/sci-fi series called Eight Worlds. We caught up with her at the start of her first semester at the Second Faculty of Medicine to discuss her writing – and more.

STORY BY Jan Velinger PHOTO BY Vladimír Šigut

How did you balance your time between writing and high school?
Time management on the first two books wasn't that hard: the writing wasn't as difficult. The third book in the series was a little trickier because I faced high school leaving exams, my schoolwork itself was harder and then I very much wanted to get accepted at university. Sometimes I really had to work at it because I wasn't satisfied and I felt I could do better.

Do you have to be tough on yourself to be successful in the arts – whether writing or anything else?
The older I am the more critical I have become: things don't always come easily but if you are overly critical it can hurt the process. Sometimes it can be too much and can slow down your writing. You have to be careful not to overdo it, or it can work negatively against you.

What do you "do" when you write? Do you prepare for writing sessions?
Today I mostly know what I have to do, so the main thing is just to sit down and get started. There is no avoiding that! Sometimes, music helps me get in a certain mood before writing. Being in a good environment is obviously important. You need to know that no one is going to interrupt. The most important thing to do is just write. I tell myself nobody else is going to do it for me.

You began writing stories as a little girl – how did you get the idea?
I am an only child and when I was a kid I was always playing pretend games, where I imagined many characters that I talked to. Some of them were eventually the basis for some of the characters in *Eight Worlds – First Acquaintance*, some came later: Lea, the main protagonist, for example, wasn't a part of those early games. She joined the story only when I began the first book.

When you decided that you wanted to write a novel, how much did you map out in advance? I've heard about different approaches: Stephen King, for example, gives his characters a lot of room – he doesn't try to lock the whole story in, in advance, and they sometimes surprise him. At least, that's the gist from some of his lectures online.
I had some of the story thought through but not, for example, the ending. I knew which direction the first book needed to go and what the second might be about, but it's true that a lot was still missing. At the beginning of the book, Lea has lost her memory and when I began writing I didn't want to focus on the reason why. Not right away.

But of course it eventually became more important. In terms of plotting, I didn't take many notes ahead of the first book but that has now changed: by the time I got to the third book in the series, there were many more characters and plotlines. I had to take stock in where my characters were and where they were going. My notes are a lot more detailed – including what happens in individual chapters.

Working with different characters, can be tricky, can't it? Each has different traits and their own voice…
I find that part very refreshing. I really like changing perspectives: otherwise, it gets tiring to write from just one point of view.

Your story is part science fiction/fantasy: what attracted you to the genre?
The fact that you can come up with anything. That everything is possible within the world you create. I wanted to have a supernatural element and the genre allows that.

Do you settle in advance on internal rules you don't break?
In terms of the books, the laws of physics, for example, are the same and are respected. What is different are skills that some of the characters, such as Lea's parents (from a different world than our own) have. That said, I didn't set limits per se. The reason? Even we as human beings don't know fully know what we are capable of and this is similar. The characters can't travel back in time or anything but know how to use certain fighting skills or to use their mind over matter.

I guess you are a fan of science fiction yourself?
I was, but to be honest, I haven't been reading much lately. This year there was just so much to do with finishing high school and getting accepted at university. I just didn't have the time.

Marcela Remeňová was born in Prague in 1999 and studied at Jan Neruda High School. Writing has been her passion since childhood; she says it helped her see the world from many different points of view.

You were accepted at the Second Faculty of Medicine.
That's right. I am just at the start and I expect it will be very hard, but I hope to become a doctor one day. I am not yet sure which area I would like to specialise in because there are so many options. At the moment I like the idea of becoming an obstetrician. I need to learn more about it.

What about research in medicine? Is that something you might also consider?
I am pretty much open to everything but I will see how things go. Right now I am happy to be studying the first semester and getting to know fellow classmates and seeing what it's like.

A whole new chapter.
Yes and very exciting. I am looking forward to it.

It has been 60 years since the Czech chemist and inventor Jaroslav Heyrovský was awarded the Nobel Prize in Chemistry. His main area of work was in polarography. Associate Professor Jiří Barek discusses Heyrovský's success and invaluable contribution.

STORY BY Marcela Uhlíková
PHOTOS BY Luboš Wišniewski, Czech Academy of Sciences

How Heyrovský won the **Nobel Prize**

You were 10 when Professor Heyrovský received the Nobel Prize in Chemistry for his work in polarography. How important is the method – dropping mercury electrode electrolysis – for you as a chemist?
I am one of the vanishing generation of scientists very well aware that our own results were possible only because we were standing on the shoulders of giants like Professor Heyrovský. I was fortunate that I gained a love for polarography from amazing personalities from the Prague school of polarography beginning with the work of Heyrovský himself. I am talking about scientists who worked either in his Institute of Physical Chemistry at the Academy of Sciences (now bearing his name), in our Department of Analytical Chemistry, or in our UNESCO Laboratory of Environmental Electrochemistry.

And although the dropping mercury electrode has been replaced in laboratories by new electrode materials as electroanalytical methods evolve, it is still an amazing tool for studying the properties and transformations of new drugs, chemical carcinogens, pesticides, nanomaterials, biomolecules and many other substances important for human health and environmental protection. It is necessary to realize that new electrode materials and electroanalytical methods would not have been with us without the pioneering work of Professor Heyrovský. The methods and experimental procedures of scientific research introduced by Heyrovský are still in use in various nanotechnologies, biochemistry and other natural and medical sciences.

Professor Jiří Barek is an electroanalytical chemist at the Department of Analytical Chemistry, Faculty of Science, CU. He focuses on the development of new electrochemical sensors and detectors for tracking trace amounts of biologically active organic compounds.

Heyrovský published his first article about his discoveries in this field in *Chemické listy* (Journal of Chemistry) in 1922. Why did the award come so late – in 1959?
For perspective, Professor Heyrovsky was nominated 18 times: 14 times for chemistry, once for physics and three times for physiology and medicine. Usually Nobel Prizes in this field are not awarded the first time. There is considerable competition in this field, which is all the more reason to appreciate and commemorate this award.

It is sometimes the case that the exact date of scientific discoveries leading to Nobel Prizes are hard to pinpoint; was that the case here?
It's wasn't the case with the discovery of polarography. As it happens, we know the exact date of its birth. Heyrovský came up with the idea that it would be interesting to measure the current passing through mercury dripping into the solution under observation on February 9th, 1922. Because he lived in happier times – when scientists did not have to spend most of their time writing reports and filling in grant applications – he simply borrowed a mirror galvanometer from the Faculty of Mathematics and Physics and, in the afternoon, measured the dependence of this current on the inserted potential. Later, this dependence came to be known as a polarogram.

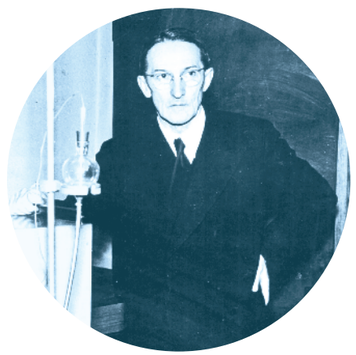
He published the measured dependencies in Journal of Chemistry in less than four months.

Even during his studies, Heyrovský is said to have been very talented. Is there a chance that we will see similar such success in the future?
It's possible. That said, I belong to the minority who think that the main mission of universities is not to educate a "select few" who will then go abroad as soon as possible for better working conditions and better chances for various awards, but to educate really good professionals within Czech society. And in my opinion, a pyramid can only be as high as the width of its base. So if we want to think in this direction, we must do everything possible to inspire the most talented young people to study the natural, medical and technical sciences.

As for chemistry, I would definitely start by improving the quality of chemistry teaching at primary and secondary schools, restoring the importance and position of Czech secondary schools focused on chemistry, once considered world-class in their fields. And maybe I would consider limiting the "planning role" of our grant agencies. I am a little worried that today Professor Heyrovský would not even get a grant for measuring mercury dripping into various solutions, although it led to the discovery of polarography. Just as it would be difficult for Alexander Fleming to get a grant based upon a promise to forget to wash a bowl to discover penicillin.

I think that a lot more effort should be taken to make science attractive for young people. I have seen children's excitement and interest when my colleagues show them beautiful chemical experiments, and later wonder what put out the light by the time these children begin to think about what they want to study later on.

In your opinion, what were Jaroslav Heyrovský's greatest qualities and skills?
He had the ability to distinguish the essential from the non-essential, which allowed him to see the amazing benefits of the dropping mercury electrode despite the complications of current oscillations caused by the dripping. He had the ability to explain and promote the results of his research in an amazing way, and to convince the international scientific community of the practical usability and fascinating possibilities of the polarographic method he developed, thereby ensuring its wide practical application. He did his amazing research not only with his head and hands but with his heart. He was skilled in creating and leading a large research team. He was also extraordinary in the way he was committed to his work. Professor Heyrovsky loved his dropping mercury electrode and he was rewarded for his love with beautiful polarogram curves.



Professor Jaroslav Heyrovský (1890–1967) After studying chemistry, physics and mathematics at the Faculty of Arts (an independent faculty of natural science did not exist at that time), Heyrovský continued his physical chemistry studies at University College London. In December 1959 he was awarded the Nobel Prize in Stockholm for the development of polarography.

Caring for the **Infant Jesus** of Prague

Several Spanish women pray with heads bowed on the kneeler's bench. Behind them, a group of Japanese tourists seeks spirituality through their phone displays, young couples on the wooden benches ask for God's intercession, and Czech secondary school students wind their way through it all. CU doctoral student Pavel Pola, the prior of the Church of Our Lady Victorious, guardian of the famous Infant Jesus of Prague, is used to the bustling crowds.

STORY BY Lucie Kettnerová PHOTOS BY Luboš Wišniewski, Martin Špelda, Jorge Royan

You belong to the order of the barefoot Carmelites, but nobody is walking around the church barefoot. What's going on?
I like to joke that we made a compromise with the shoe-wearing community – we wear shoes during the day and take them off at night. But to set things straight about the name. "Barefoot" was a period term for the reform council, whose members walked in sandals. Full shoes were a luxury in the Middle Ages, while the poor wore sandals. Today we can wear any shoes we want.

You studied at the Catholic Theological Faculty. Was that your first choice?
It wasn't. I first started at the First Faculty of Medicine, where I spent three years. Then I re-evaluated my life's direction, because I was tempted by theology and the priesthood, and I also discovered the Carmelite Order, which I joined.

How did your parents take the news that they weren't going to have a doctor in the family but a priest?
My parents are both engineers, but my grandfathers were doctors and everyone was kind of counting on me becoming a doctor. A dentist, specifically. I changed my decision more or less without warning and quickly, so it took them a while to deal with it, but I think they've come to terms with it. My former classmates told me: "You're not going to heal bodies, but souls."

Did you set out on a clergyman's path right after school?
During my studies, I had already gone to Italy as part of the order for a year long novitiate, which is a form of spiritual preparation. I was ordained after completing theology, but then I prepared for spiritual service abroad for some time. It was in France that I discovered for myself the character of Thérèse of Lisieux, whom I have studied for a long time.

This saint is not very well known in the Czech Republic. What is her story?
Thérèse of Lisieux was a barefoot Carmelite who lived at the end of the 19th century in France. She ↪

died very young, at the age of 24, and became world famous due to her writings, although they were few. Nobody even knew she was writing anything. It wouldn't have taken much and her work would have remained forgotten in the convent archive.

What was it about her personality that spoke to you?
That's a difficult question. I feel like the more I study her, the less I understand it myself. Thérèse for me is a beautiful woman, and at the same time her life was very ordinary: it could be described in five sentences.

She had four older sisters, all of whom joined the convent. She did so at 15, which was quite unusual, but she didn't do anything extraordinary there and died of tuberculosis nine years later. When one of her sisters was supposed to create a report for the surrounding convents, she wondered what to write about her. She was nice, but that's all there was to say about her. But a year after Thérèse's death, her sisters published her writings, which immediately sold out. Since then, half a billion copies have been published in 100 translations.

What does she write about in her works?
She describes a strong personal experience, her spiritual journey she had set out on and which was not easy. For a year and a half of her life, when she knew she was sick, she experienced a deep spiritual crisis. She almost lost faith, began to doubt everything, but gave no outward signs of this and fought with it on her own. I think it's precisely this that is very inspiring – despite living through a kind of darkness, she lived on and would not be discouraged. She was a master of courage and trust. I also want to study St. Thérèse's work in my dissertation at the Protestant Theological Faculty.

As a Catholic priest, why did you choose the Protestant faculty?
When I was putting together the topic, I happened to meet to Professor Ivana Noble. I was inspired by her attitude, how she approached the topic, so we agreed that she would lead my work. But I also have a consultant at the Catholic Faculty.

The Infant Jesus of Prague is really very unique, attracting tourists who come to admire the beautiful early Baroque, pilgrims who want to pray here, and local people as well.

Does anyone have a problem that a Catholic is going to the Protestants?
Someone of course could have a problem with that. I see it more as an expansion of one's horizons. I feel firmly anchored in my community and tradition, so for me "otherness" is not threatening but rather enriching. Moreover, the topic of ecumenism seems to be fundamentally important.

People do their doctorate when they want to focus on a scientific career. Logically the question then arises as to what use it has for a priest.
When I was preparing the edition of Thérèse's writings and their annotation, I enjoyed studying the literature on it and thought I would like to continue. At the same time, I see my studies as a good platform that will push me to develop intellectually.

How long have you worked in the Church of the Infant Jesus of Prague?
I first entered the monastery in Slaný. Within our order there is a practice that the clergy sometimes moves from monastery to monastery. In the Czech Republic, we only have two monasteries, Prague and Slaný, so aside from being abroad, I was first in Slaný and now I've been in Prague five years, of which two of those years have been in the post of prior. But the decision came from above. My boss gave the order and I moved.

Does a candidate for prior have to have an election campaign like politicians do?
I wouldn't call it a campaign. Our province is tiny. It has only 70 brothers, of which 10 are Czechs and 60 are Italians. I think that the pre-election contest was carried out here in a brotherly spirit. But I can imagine that it may not go so smoothly in some places.

How do Carmelites live today?
For our order, the key value is contemplative prayer or meditation. So within the daily schedule we devote two hours to silent meditation and then we have additional prayers as other orders do. Of course the rest of your lifestyle has to adapt to this, because to sit or kneel somewhere for an hour requires a person to be well-rested, for example. At the same time, we don't live in seclusion; we try to be out among people, to pass on our values and maybe even try to invite them over.

Our daily routine looks like this: We meet at 6 am in silent prayer, then we pray in classical prayer, breviary and then each of us has our own work. Either here in the church, which requires a lot of care because it's the most-visited church in Prague, or we prepare programmes for schools or for local people, organise lectures and so on. Before lunch, we gather for prayer, have lunch together, and in the evening we have another hour of meditation, evening praise, have dinner together and maybe an informal programme. We finish the day at 9 pm with our last common prayer.

Your church is quite atypical. Elsewhere there's an almost sacred silence, people whisper and keep their mobile phones hidden in their pockets. Here there's quite a lot of noise, groups of tourists come here with guides and everyone's taking pictures or filming the Infant Jesus.
The Infant Jesus of Prague is really very unique. The statue attracts tourists who come to admire the beautiful pure early Baroque, pilgrims who want to pray here, and local people as well. It all blends together. Of course it can be disruptive sometimes, but at the same time it provides great opportunities to reach people and give them a certain message.

Don't the faithful complain?
Sometimes, yes. We try to quiet visitors when the noise exceeds a certain limit. We were able to negotiate with the guides that they would make their comments in front of the church and then go into the church in silence. The church isn't an exhibition hall where guided tours should happen, but it is a place of silence and personal reflection.

Online you offer a fairly action-packed programme for children with elements of experiential education. That doesn't tend to be that common in churches.
We've prepared programmes for schools for more than three years. Schools were interested in coming for a tour, mainly before Christmas or at the end of the school year, so we took it a bit more actively and created an experience programme. We started with fourth and fifth graders; the programme is for the whole morning and during that time children go into the monastery, tower, crypt and sacristy. But it's not just a classic tour. Children have the opportunity to experience something, to get to know the place, to get to know Christianity, and also to talk with a monk. They can ask him whatever they want, which for many of them is a great experience. Over time, we expanded the programme to include both younger and older children.

What else do you offer the general public?
Our space is very limited because the education ministry has its headquarters in the original monastery; only the vicarage remains for us. For instance, due to popular demand we added Thursday meditations. I think it belongs to the place and to our order. It's a silent meditation with a short introduction. After it's over, participants have the possibility to reflect or to discuss with us.

Are the participants mostly Christians, or are there also people who Tomáš Halík calls the "somethingists" - people who believe in something supernatural, but not God?

This form of prayer is also acceptable for people who have not joined the Church or who do not identify themselves as believers. The offer hung on our bulletin board for a long time, and people were asking at the time if it was all right that they don't attend church. But they evidently do come in because they read it here. I believe that a meeting is beneficial for everyone because it leads the meditator to live more truly in their faith or their search, however that may be. It represents a journey in depth, one whose conditions don't require you to tell us where where you belong and what you practice. The starting positions may vary.

But we try to invite people to the church who would not come to a classic religious programme. That's why we created the regular evening lectures called Man in Dialogue. As I mentioned, we hold it right in the church due to space limitations, which can also be an advantage, as it turns out. The lectures have a different atmosphere. People lecture differently and react differently to the message. Once a month we open the church to various topics. But they're spiritual because if it relates to life or man, it relates to God as well. ↪

CU graduate Pavel Pola is a priest, a barefoot Carmelite and, for the past two years has been the prior of the Church of Our Lady Victorious in Prague's Malá Strana. Since 2008, he has studied the life of St. Thérèse of Lisieux; he is the author of the introduction and notes for a new edition of Story of a Soul. He graduated from the Catholic Theological Faculty and is now a doctoral student at the Evangelical Theological Faculty.

Does your order also engage in missionary activities?
In Prague there's a kind of missionary PR – we present the missions we are connected with and also support financially. I think it's a nice connection between the Czech Republic and the Central African Republic, where the order operates. The Czech Republic is the geographic heart of Europe, and the Central African Republic is the same for Africa. The mission opens up another dimension of life. You can either shut yourself away in your own pond, or you can realise that there's someone else out there who might be worse off. The connection of pilgrimage sites with the missionary dimension thus serves as a call for a certain kind of solidarity.

Who is the assistance going to in Africa?
There are five monasteries active in the country. The brothers came from Italy almost 50 years ago. Each of these spiritual centres has a slightly different focus. Some concentrate on education or supporting agriculture, others on spiritual service in the area. Assistance takes the form of both financial and personal involvement, when we arrange trips for volunteers. Brothers from the Czech Republic also go to the Central African Republic. I myself have visited the country four times.

The church has not only a modern website, but you can also be found on the social networks, including Facebook and LinkedIn. So you don't consider new media bad?
We are also trying to be active on these platforms because people today are active there and spend a lot of time online. Of course it has its limitations and, I would say, risks as well. But it is also a space where important dialogue can take place and people learn a lot of interesting things about the real world. I certainly wouldn't condemn social networks indiscriminately. Even mainstream media can create a certain illusion of life.

Do you have time for any activities outside the walls of the monastery?
For almost 15 years, I've been working in a 50-member group of volunteers working with children and youth. My task is to provide them with spiritual support. I also work in psychotherapy. Now I also work as a therapist for priests and clergy. Unfortunately, I don't have much time for anything else.

If you found the time, what would be the direction you'd like to put your effort and energy into?
I'd like to help people find new ways to deepen their spiritual development. Meditation is difficult for many young people. To sit for half an hour and remain silent requires a superhuman effort from them. I consider it a challenge to arrange this for them, because for me, meditation is something essential to my existence. It's something I couldn't imagine my life without. So I'd also like to encourage others to discover what it can offer.

Can a Carmelite indulge in any worldly pleasures? For example, they organise football matches at the Hussite faculty.
I'm not one for football, but I used to play volleyball and I liked to ski in the winter. Among worldly pleasures, I like to cook and make good coffee. I have my own pizza oven, which I got when I was ordained into the priesthood.

I also play music. I used to play the piano and organ, and today I play the zither. And I like to listen to music. I love the Collegium 1704 ensemble, which interprets baroque music in a classical way. A musical perspective is, I think, a certain way of perceiving the world.

Clothes according to the calendar

The Infant Jesus, as a priest at the altar, dresses in garments of the colour of the liturgical period, which are set according to the Church's calendar. Four basic colours are generally used.

White

The colour of glory, purity and holiness – for celebrations, Easter and Christmas

Red

The colour of blood and fire – for Holy Week, the Pentecost holidays and the holidays of the Holy Cross

Purple

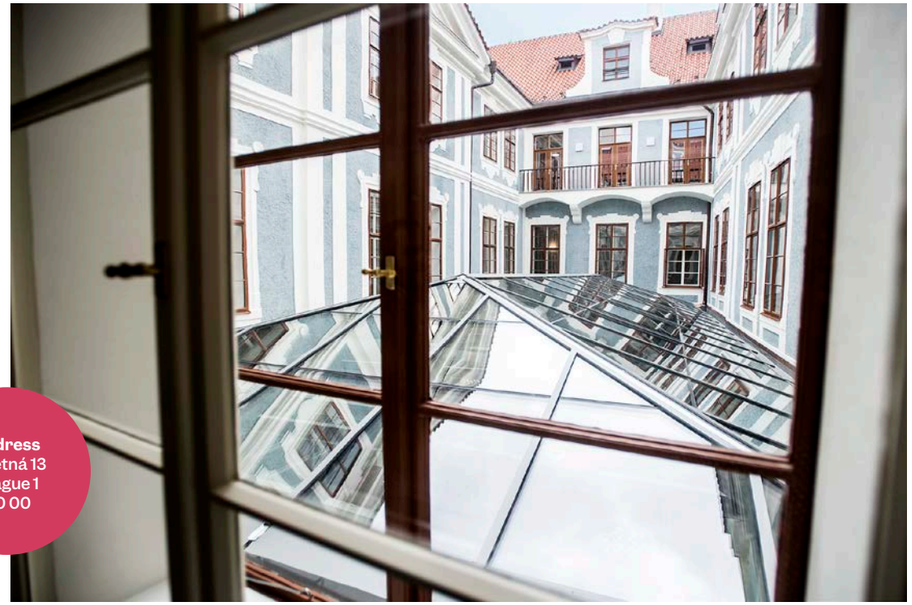
The colour of repentance – for Lent and the Advent periodní

Green

The colour of life and hope – for the liturgical interim periods (the most common colour)

Classrooms instead of casinos

PHOTOS BY **René Volfík**



Address
Celetná 13
Prague 1
110 00

Celetná has always been among the Old Town's most important streets and was the site of Romanesque courtyards dating back to the 11th century. Under the reign of Charles IV, during the High Middle Ages, they became the site of two new Gothic buildings, preserved to this day in the form of original window frames with tracery. The palace received a Baroque makeover around 1756 at the behest of Kryštof, Count Cavriani and the architects Anselmo Martino Lurago and František Ignác Preé. The palace under construction was then acquired by his relative Jan Josef, Count Carretto-Cavriani di Millesimo.

For some time this palace served as a centre for gambling, a kind of casino for the nobility. The entrance to the palace features the coat of arms of the Carretto di Millesimo family – the original can be found in the Lapidarium of the National Museum. Charles University has owned the palace since 1990 and it was reopened in September 2019 after extensive reconstruction.

Professor Jan Royt
Vice-Rector for Creative and Editorial Activities

July saw the return of the International Summer School of Experimental Surgery held under the auspices of the Faculty of Medicine in Pilsen, Charles University. For the sixth time, medical students were able to gain experience in the operating room. Thirty-three students from 19 universities from 15 countries took part.

1/7

The Summer School of Experimental Surgery

Life at CU

Noc vědců or Night of Scientists – a single day event popularising science – was held for the 14th time at museums, institutes, tech centres and universities across the country. This year, Charles University was an active participant, inviting members of the public to visit four school facilities.

27/9

Night of Scientists comes to CU

Jan Palach Memorial opens

9/10

The National Museum opened the Jan Palach Memorial in honour of the young Faculty of Arts student who protested against the Soviet-led invasion of Czechoslovakia by self-immolation in January 1969. The house Palach grew up in, located in the village of Všetaty, was converted into the memorial and features a multimedia exhibition.

21/10

4EU+ Alliance meets in Paris

The rectors of six universities – which are part of the prestigious 4EU+ Alliance – met at Sorbonne University in Paris to confirm further extensive cooperation. Charles University Rector Tomáš Zima (last on the right) outlined the importance of meeting face to face, to discuss possibilities and the tasking of a team responsible for applying for key international grants such as Horizon 2020.

The Cup is ours!

31/10

Charles University's hockey team won the highly-anticipated Battle on Ice in the late hours of October 31st - downing the Prague School of Economics' team by a score of 4 : 0. The prestigious one-day tournament traditionally pits the talents of four school teams against each other. CU Rector Tomáš Zima (right) lifts the trophy with the team captain as he and fans celebrate the team's success.

Doctor Honoris Causa

Professor Manfred Oeming, a renowned theologist from Heidelberg University in Germany, received the prestigious Dr.h.c. title at the Carolinum. Oeming is a world-class scholar in Biblical studies and hermeneutics and for more than 20 years contributed significantly to good relations with the Protestant Theological Faculty.

11/11

Three former prime ministers took part in a debate with students at Charles University as part of a series of special events leading up to the 30th anniversary of the Velvet Revolution. Vladimír Špidla, Jiří Paroubek, and Petr Nečas (from left to right) – all of whom led Czech governments from 2002 onwards – discussed the many changes the country had undergone since the fall of communism. Petr Nečas suggested that despite some mistakes during the transformation period back to democracy, the country had unquestionably moved forward and was in a far better place today than 30 years ago.

13/11

Former PMs took part in debate as part of November '89 week

17/11

Remembrance and Velvet celebrations

This year Czechs marked the 80th anniversary of the death of student Jan Opletal and the execution of nine others (eight student leaders and a professor) by the Nazis in 1939. More than 1,200 people were sent to the Sachsenhausen concentration camp. Charles University honoured their memory in ceremonies at the Hlávkova dormitory and other key sites.

The evening saw numerous celebrations marking the fall of communism 30 years ago, including a free concert by Czech performers (pictured: Tomáš Klus).

Amélie de Montchalin (in the middle), France's Minister of State for European Affairs, debated with CU's Rector Tomáš Zima and also Jan Konvalinka (pictured), vice-rector for research.

French minister outlines challenges facing EU

STORY BY Valerie Stupnikova, Jan Velinger PHOTO BY Martin Pinkas

The year 1989 – with the fall of one communist regime after another in Europe – was of monumental significance. The reverberations were far-reaching and opened the way for freedom for millions and a return to democracy in countries behind the Iron Curtain for decades. The EU took in its first members of the Warsaw Pact, significantly expanding its membership. Problems unforeseen – the annexation of Ukraine, Great Britain's withdrawal from the EU – have since come to the fore. It was these challenges ahead that were the focus of a visit by France's Minister of State for European Affairs Amélie de Montchalin at Charles University on November 30.

The minister gave a lecture at the heart of the university, the Carolinum, entitled "30 Years After 1989 – Can Europe keep its promise of peace, prosperity and freedom?". Rector Tomáš Zima, the Vice-Rector for Research Jan Konvalinka, and the Vice-Rector for Quality of Education Radka Wildová were the top university representatives present.

During her lecture, Minister de Montchalin emphasized the importance of preserving European identity. She pointed out that over the last 30 years Europe had taken great steps forward and voiced the opinion that "Europeans needed to remember who they were"; she stated that not only diplomats and politicians had to hold discussions but that the broader public also needed to take part. Additionally, the minister stressed the importance of opportunities for every European citizen.

The lecture at the Carolinum was followed by questions from students. Topics such as Brexit (which the minister made clear would introduce enormous changes in the values and ties between the EU countries), and the sovereignty of Ukraine (with one of the major goals being the demilitarization of the country) loomed large. The future of EU enlargement was also discussed and the minister stressed that countries that wanted to be members of the EU should be in convergence with Europe. Key aspects include development in the economic, social, educational spheres. Cited as a positive example, was the Little Schengen project in the Western Balkans.

One of the students who helped with the organization of the lecture, Lenka Stolářiková, shared her impressions afterwards, saying attendees were able to ask questions on topics they found interesting. She said they could shape their own opinions and identities building on the ideas presented in the discussion and added it was beneficial for students to attend such events to get a "better understanding" of key issues and some of the decisions being made.

All the best in **2020** from all of us at Forum Magazine!

Here are some of the many events we will be following in the new year:

17/1

The 50th anniversary of the death of Milada Paulová, the first female full professor in the history of Charles University

19/2

The 100th anniversary of the reinstatement of the name "Charles University"

10/5

Thirty years since the three theological faculties joined the university

1/6

Thirty years since the founding of the Faculty of Social Sciences

24/6

One hundred years since the Faculty of Science received full statute

30/6

The opening of a major exhibition at the National Museum highlighting the work of Czech Egyptologists

1/8

Twenty years since the founding of the Faculty of Humanities

27/10

Seventy-five years since the founding of the Faculty of Medicine in Plzeň (Pilsen)

15/11

The 350th anniversary of the death of the famous Czech thinker Jan Amos Komenský (Comenius) in 1670

About 50 percent of the games that were made for the ZX Spectrum were text adventures. You could tell a story much more powerfully than in the action games of the era. The only graphics were a loading screen, maybe with a hammer & sickle and then you started playing. Many games were subversive – and funny.

Jaroslav Švelch:
How programmers in the ’80s used games to mock the regime / 4