

MAGAZINE

of Heinrich Heine University Düsseldorf



**A wealth of
expertise**
Political consulting at
Heinrich Heine University



ECONOMICS

Digital currency –
The Bitcoin boom

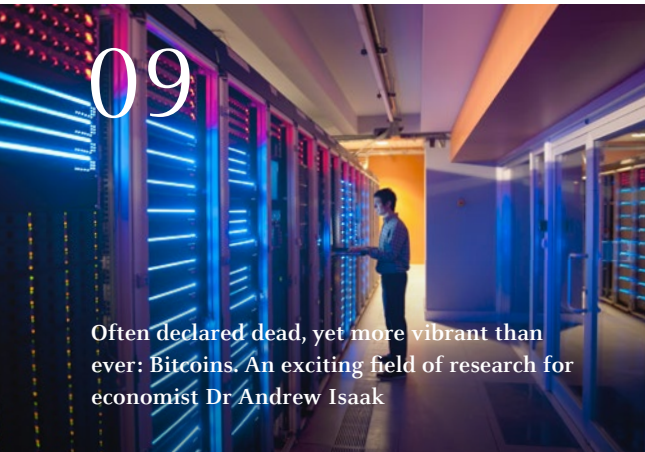
GERMAN STUDIES

Paris or
Positano?

NATURAL SCIENCES

Sustainable
agriculture

hhu.



Often declared dead, yet more vibrant than ever: Bitcoins. An exciting field of research for economist Dr Andrew Isaak

PHOTO: ISTOCKPHOTO – BARANQZEMIR

03 EDITORIAL

Title

04 **A wealth of expertise**
Political consulting at
Heinrich Heine University

Faculties

**FACULTY OF BUSINESS
ADMINISTRATION AND ECONOMICS**

09 The Bitcoin boom

MEDICAL FACULTY

12 High undiagnosed infection rate

FACULTY OF ARTS AND HUMANITIES

14 Paris or Positano? Travel in the early years
of the Federal Republic of Germany

**FACULTY OF MATHEMATICS AND
NATURAL SCIENCES**

18 More sustainable agriculture with perennial crops

FACULTY OF LAW

23 Taking on the big platforms



Legal notice

PUBLISHER

Communications Office of
HHU Düsseldorf in cooperation
with the Office of the Vice-President
for International Relations and
the International Office,
Universitätsstraße 1, 40225 Düsseldorf

EDITORIAL TEAM

Dr Arne Claussen, Susanne Dopheide,
Carolin Grape, Achim Zolke

EDITOR-IN-CHIEF

Dr Victoria Meinschäfer

PHOTOGRAPHY

Christoph Kawan, Susanne Kurz,
Ivo Mayr

LAYOUT AND TYPESETTING

vista – Digital Brand Content Design
www.studiovista.de

TRANSLATION

Annika Becker, Robin Lea Black,
Denise Dewey-Muno, W. Sam Stallard

CONTACT

“Magazine of Heinrich Heine University
Düsseldorf”,
Heinrich Heine University Düsseldorf,
Universitätsstraße 1, 40225 Düsseldorf

prorektor.international-wisskomm@hhu.de

Editorial



Dear reader,

The past few months have shown us that you cannot fight a pandemic effectively without being advised by scientists. Without science-based expertise political decisions run the risk of having severe and unexpected consequences. Hardly ever before has the role of experts been this crucial and visible and at the same time been perceived so critically as during the coronavirus pandemic. In this respect, it is probably not a bad moment to pause and reflect on the general role of science communication, its potential and limitations. What are the chances and what are the risks when scientists climb down from their ivory towers, something that both society and politicians have been demanding? This HHU Magazine aims to answer these questions.

However, in this issue science communication is not only reflected upon but also actively advanced by presenting to you, our readers, results of our research at Heinrich Heine University, e.g. of the Covid-19 medical research which is running at full speed at HHU, too. This issue also features insightful reports about the "bitcoin boom", about taming the big internet platforms and about sustainable agriculture. You will also find an article about travelling in the early years of the Federal Republic of Germany with the lovely title 'Paris or Positano?'. Especially in times when due to the pandemic the road to our dream destinations is blocked, an article about the travel culture during the early years of the German Federal Republic is particularly illuminating because it clearly shows that travelling is much more than simply a change of location. International exchange and a journey to a foreign country are also always a search for identity that not only helps us to learn a lot about other cultures but also, and perhaps even more so, about ourselves.

Hoping that instructive travelling without restrictions will be part of our lives again soon, I wish you the very best.

Kind regards,

Professor Dr Stefan Marschall
Vice President for International Relations and Science Communication

A wealth of expertise



Heinrich Heine University's researchers make their know-how available across myriad and highly diverse fields in politics and media

BY VICTORIA MEINSCHÄFER

“Science no longer sits in an ivory tower, it sits in a lighthouse,” said President Professor Dr Anja Steinbeck in the media outlet “Steingart’s morning briefing” in September 2020. The Corona crisis that is still ongoing today has significantly changed the perception and reputation of science and scientific policy consultation, but - as if she had guessed - Heinrich Heine University has been strengthening science communication for quite some time. Since 2019, the Rectorate has made the topic its mission – and this not only includes dialogue with society but also scientific policy consultation, the exchange with decision-makers.

Professor Dr Stefan Marschall is responsible for this field as Vice President for International Relations and Science Communication. He aims to enhance the awareness of HHU among those with political responsibility. At the beginning of his term of office, he and his team first conducted a survey to find out what forms of policy consultation are already even in place at HHU. “That was extremely diverse and very different in the faculties,” says Marschall. “In the Faculty of Arts and Humanities, it tends to be presence in the media, whereas the economists and lawyers partially maintain a close exchange with players in the political system. In contrast, the physicians and natural scientists have their very own channels; here, policy advice is mostly provided by the professional scientific societies.” Findings from the survey and the Rectorate’s objectives derived from this were incorporated into the strategy paper “Advisory Science Communication at HHU” that was published in July 2020. This also explains the quality criteria for advisory science communication, such as scientific integrity, independence, and the disclosure of databases and methodologies, and it states: “Based on our broad-scale and comprehensive understanding of transfer, we

see it as our responsibility to spread scientific findings and methods beyond the exchange in teaching and the professional public into social debates in an independent and factually-oriented manner and to pass on orientation know-how.”

Create awareness

The strategy phase, which characterised the Vice President’s business activities during the first few months, has been completed, and now Marschall and his consultant Dr Nadja Wilker are specifically looking for research scientists who want to get involved in policy consultation. “We are canvassing early-career researchers, too. First of all, the objective is to create a new awareness of the possibilities and opportunities that also arise for researchers from the exchange,” is how Wilker describes this.

Marschall sees one of the university’s jobs in clearly underscoring its expertise and providing it when needed. He believes the fact that this does not yet happen more frequently is due to both sides: “Firstly, politicians do not always ask for the knowledge available here, or did not do so regularly before the Corona crisis, and

“Social media opens up great opportunities for dialogue with society.”

Professor Dr Anja Steinbeck — President

secondly, many scientists are also often not aware that their expertise is highly relevant outside of the scientific system, too. But what holds true for almost all spheres of society: the university can contribute to the evidence-based decision-making processes through scientific input and thus also do its part in ensuring that more rational decisions are taken.”

Scientific system

Advising policymakers also translates into disappointment, namely for both sides: Often, the experts' answers are not as clear-cut as policymakers, but even more so as the public and some media would like them to be. “In my view, one reason for this is that the public sometimes lacks insight into how the scientific system works,” says Steinbeck. “As a rule, disputing, revoking and revising scientific theories and findings doesn't

take place in the public spotlight, so it can hardly be surprising when citizens react to this with irritation.” Especially because many scientists by now no longer wait for the final publication of their paper, but they also make preliminary results known directly via Twitter, YouTube or science blogs. “Social media opens up great opportunities for dialogue with society,” is the President's opinion, “but the downside is that results are presented in abridged form and contextualisation is sometimes insufficient.”

Social media serves as a gateway

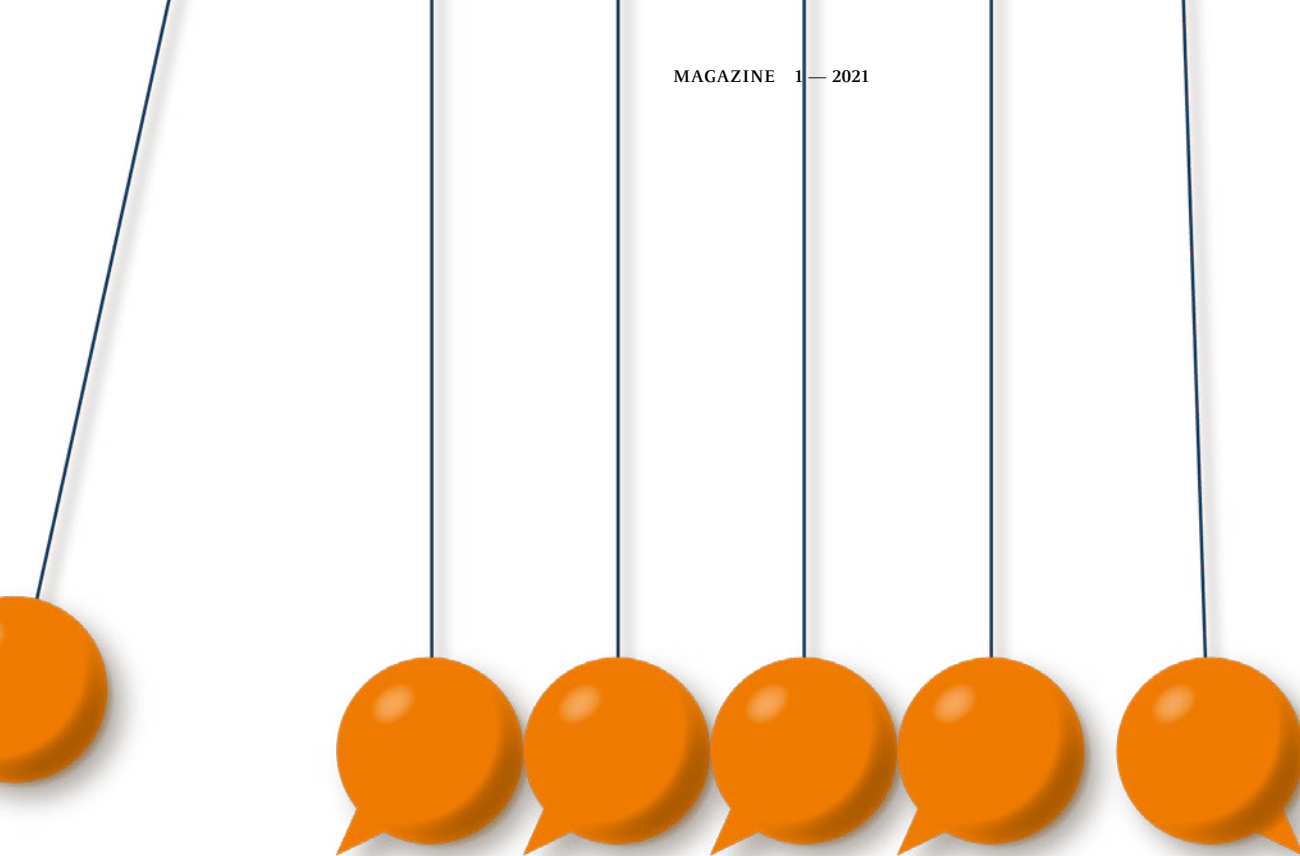
(Social) media is often a gateway to scientific policy consultation. “Ever since I have been active on Twitter, demand has increased significantly,” says, for example, the lawyer, Professor Dr Rupprecht Podszun, and economists like Professor Dr Jens Südekum or Professor Dr Justus Haucap also frequently capture the interest of the public and politicians to an equal degree through posts in social media. “If the media report on their research, politicians take note of this, too. In my view, this is then also an – indirect – form of policy consultation,” says Marschall.

It is also very important for the scientists to always reflectively deal with their role as consultants. “First of all, you should not foster any illusions that you can now help to co-shape everything,” is Marschall's description. “The power to shape the future quite clearly lies with the politicians.” He himself has been active in political consulting on a very regular basis for many years; last year,



PHOTO: SUSANNE KURZ

Since 2019, the Rectorate headed by President Professor Dr Anja Steinbeck has made science communication its mission.



for example, he attended hearings in the state parliaments (Landtag) of Thuringia and Schleswig-Holstein. “The question was how to strengthen the parliament in a crisis situation,” says Marschall, detailing his job. The parties represented in the state parliament (Landtag) or German parliament (Bundestag) usually nominate experts who are then invited. In addition, the lawyers have close contacts with the departments where draft bills are prepared, so that inquiries are frequent here. As a rule, ten to twenty experts are asked for their opinion in such a case. The experts requested then submit their opinions – and ...? “You don’t know what happens to them, how they are processed internally, how exactly that is done – that’s a black-box for me, too,” says Marschall. “I give my input to the best of my knowledge and belief, but I’m not driven by interests and I’m not a member of any party.”

“In policy consultation, however, one’s own research interests can also definitely play a role, for example, if what can be researched in the own field of research comes up against legal limits or is discussed rather controversially in society,” says Wilker. One example is molecular plant science research and therefore the HHU Excellence Cluster CEPLAS. In addition to numerous one-on-one meetings between CEPLAS scientists and political representatives as well as the compilation of information letters and materials, the cluster thus regularly organises topic-related parliamentary breakfasts in Berlin. There, various aspects and fields of action regarding plant science research are presented and dis-

cussed together with the politicians who were invited within the framework of a breakfast during the week’s sessions. “To this end, we invite members of parliament from the Committee for Education, Research and Technology Assessment and the Committee on Food and Agriculture, inform them about upcoming topics and clarify the scientific backgrounds,” explains Dr Céline Hönl, CEPLAS’s executive coordinator. In the process,

Use for basic scientific research

CEPLAS speaker Professor Dr Weber and his colleagues do not only advise on new developments in plant science research, but they also advocate for scientific research at the same time. For plant science research in particular, there are only a few funding opportunities – in comparison with medicine, for example. Interest on the political side is great: CEPLAS scientists are often invited to expert discussions and to participate as panelists at the political level due to their expertise. In this way, they can contribute to a fact-based approach even with regard to controversial, emotionally charged topics such as genetic engineering.

HHU also aims to create a similar form of policy consultation for other topics: Together with Marschall, Wilker has developed a consultation format for the state parliament in which members of parliament meet with scientists from various disciplines. What is import-

ant here is that the various scientific perspectives complement each other, for example that physicians do not only deal with the health issue, but that the economic point of view is included, too. This was the case at the last meeting in this format in February, when the use of artificial intelligence to combat a pandemic was explained under the title “Core Focus on Corona.” In addition to virologist Professor Dr Jörg Timm and bioinformatician Professor Dr Alexander Dilthey, communication scientist Professor Dr Frank Marcinkowski was also present. Marschall described this offer as “part of our scientific obligation to provide information”. Around twenty participants (including the President of the state parliament, André Kuper) leveraged the forum to ask experts questions, who not only reported on basic information, but also on studies that are now under way.

When is policy consultation successful and how can such a success be measured? “Output can be measured, outcome cannot,” says Vice President Marschall. The result, for example in the form of concrete political decisions, i.e., the outcome of policy consultation, only becomes apparent belatedly, if at all. One way to measure scientific consultancy service is currently being analysed by the “transfer barometer” of the German Donor’s Association for Sciences and Humanities (“Stifterverband für die Deutsche Wissenschaft”). HHU has been selected here as the pilot university Germany-wide for the quality assurance of knowledge transfer into society; the transfer barometer is intended to make knowl-

“The power to shape the future quite clearly lies with the politicians.”

Professor Dr Stefan Marschall — Vice President

edge transfer measurable and tangible for the very first time. The objective is to design a modular system with key performance indicators for recording successes and achievements in knowledge and technology transfer for

Transfer barometer

different transfer profiles and to subsequently test it. The project has been underway since summer 2020, and first results are expected to be available in the third quarter of this year. Economics has a different measurement system: Here, the F.A.Z. newspaper’s Economists’ Ranking analyses who is heard in politics and the media. Last year, for example, Professor Dr Jens Südekum was the most influential economist in North Rhine-Westphalia; politicians and employees in ministries often called him a particularly prominent advisor. The Director of the Düsseldorf Institute for Competition Economics (DICE), Professor Dr Justus Haucap, is similarly well-known and highly sought after.

“Can anyone who wants advice also get consultation from members of the university? “In the case of government institutions or courts, for example, this is unquestionably good and right, but it’s a different matter when you enter into competition among political parties,” says Marschall, “You very clearly cannot favour any party and you should definitely ask yourself beforehand for whom you are delivering the expertise and what the client wants to do with the findings.”

For Vice President Stefan Marschall, media reports on research are also an - indirect - form of policy consultation.



PHOTO IVO MAYR

The Bitcoin boom

From digital currency to
ultra-speculative investment



BY CAROLIN GRAPE

Cryptocurrencies: often declared dead, yet now more vibrant than ever. The media world is fascinated with Bitcoin and its derivatives like Ethereum and Ripple, reporting on the hype as prices soar, then focusing on the fallout when they crash back down.

The year 2021 started out with extreme volatility for Bitcoin, the original and still highest-profile cryptocurrency, which peaked at an exchange rate of over 41,000 US dollars in January before plummeting 20% within just a few hours, only to gain another 20% in early February on a tweet by Tesla boss Elon Musk.

The original virtual currency has apparently become a speculative asset of interest not only to private investors but increasingly to big-name firms as well – like PayPal, Visa and Mastercard alongside mutual funds, banks and other institutional investors – lending Bitcoin legitimacy. The overall number of Bitcoins is artificially limited to 21 million units, amplifying price rises beyond what they otherwise would be when buying demand surges, like it recently has. And with interest rates stuck at very low levels, investors are increasingly looking to ‘crypto’ as an alternative for money they used to store elsewhere.

Confidence building

Dr Andrew Isaak, a postdoc at the Chair of Entrepreneurship and Finance at HHU Düsseldorf, is researching cryptocurrencies as part of the Mancho Graduate School for the “Competitiveness of Young Enterprises”, exploring the fundamental issue of confidence-building in these new and controversial digital markets. “It’s a highly complex subject,” says Isaak, “as cryptocurrency markets, such as bitcoin trading, involve considerable risk and have been linked on multiple occasions to illegal activities like drug trafficking, corruption and money laundering. On the other hand however, they create substantial opportunities, such as allowing the development of new business models. And that requires investor confidence in the markets. Yet there has been only limited research into the factors that influence such trust-building and acceptance. Our knowledge about how people use and trade cryptocurrencies is still inadequate.” Dr Isaak and a colleague had thus organised a discussion on campus at the Haus der Universität open to all interested members

“There is currently no suitable overarching legal/regulatory framework.”

Dr Andrew Isaak — of the Chair of Entrepreneurship and Finance

of the public – in line with the University’s identity as an engaged ‘people’s university’. But then the pandemic happened, so the event on Cryptocurrency Trust and Usage was postponed until further notice.

How cryptocurrencies work

“Bitcoin is the oldest and most widely known digital currency. It was created during the 2008 financial crisis as an alternative to the monetary system in its present form, in which central banks can create an unlimited amount of money and anonymity vis-à-vis banks and regulators is limited. The currency is created via cryptographically encrypted computer code. The salient characteristics of Bitcoin are its decentralized mode of organisation and the use of “blockchain” database technology, in which blocks of transaction data are cryptographically linked into chains. “These two features in combination afford a high degree of anonymity for Bitcoin users as well as greater transaction efficiency, with potentially faster transfer speeds and lower transaction costs than with conventional payment transactions,” Dr Isaak explains.

The blockchain is an encrypted database stored decentrally at the same time on all computers within the network. The “chain” is formed by an unlimited amount of data blocks in which all information and transactions are permanently and publicly stored in the network. Any alteration of these blocks cannot go unnoticed. Special encryption is utilised ensuring that content is easy to read but hard to manipulate (“immutable”). In typical blockchains, the transactions conducted are public information, but the identities of the currency owners and transaction recipients are not.

“That’s what makes it such an innovative general purpose technology,” Dr Isaak elaborates, “It is inspiring new digital business models, and is already being successfully used by start-ups to cut out the middleman, for faster supply chain monitoring and controlling and for data authenticity verification.”

The rise of digitization means increasing electricity consumption, and bitcoins take a lot of energy to generate. Transactions are encrypted via all computers in the Bitcoin network. “Miners” all around the world confirm the correctness of transactions and save them within a block of the

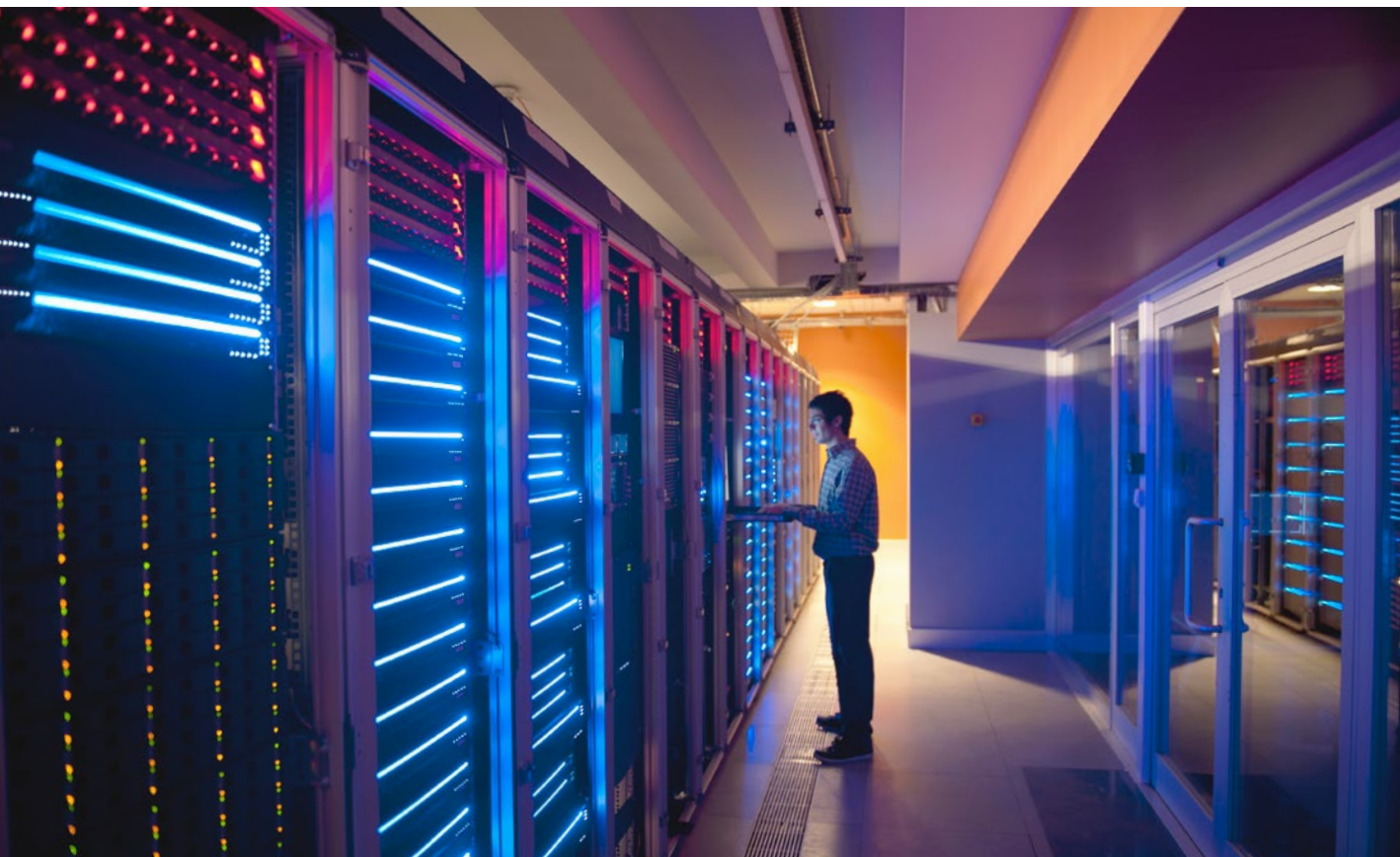


PHOTO ISTOCKPHOTO - BARANQZDEMIK

New bitcoins can only be created by a host of computers arrayed as huge “mining farms” that run calculations around the clock to solve one math puzzle after another.

chain. This requires solving highly complex and computationally intensive ‘puzzles’ or calculations. As Isaak explains, the ‘mining’ process by which bitcoins are created requires enormous computing power. Entire warehouses of fully linked computers known as ‘bitcoin farms’ consume vast amounts of power, which not only drains resources but also generates major CO2 emissions polluting the environment. According to a recent study by the University of Cambridge,

Bitcoin the power guzzler

these huge server farms consume more power in a year than the Netherlands – a country with a population exceeding 17 million. And this consumption is only rising, as investing in additional technology is becoming more attractive for miners as the price of bitcoin rises. The calculation problems become more difficult as the number of computers in the network increases, requiring more technology in turn to solve, and so the phenomenon feeds on itself.

While blockchain technology is secure, cryptocurrencies are not, at this time at any rate, entirely ‘safe’. Along with certain advantages anonymity brings with it its own security issues, as cryptocurrencies are highly attractive to criminals for conducting illegal transactions. Cyberattacks and hacking are constant threats, affecting private investors and trading platforms alike. Dr Isaak continues: “There is currently no suitable overarching legal/regulatory framework. So it would be beneficial to form non-profit international organisations tasked with establishing standards for this undefined area.” The steps he advocates to promote consumer confidence in cryptocurrencies include designing innovative investment vehicles that allow risk diversification and further elimination of tax havens.

As an expert in the field, he also finds it dubious that a famous individual like Tesla CEO Elon Musk is allowed to make statements on social media that distort the cryptocurrency market in which he himself holds a major interest, regardless of the credit he deserves for recognising the market potential of this innovative technology. As Dr Isaak reminds us, “that used to be called insider trading.”



High undiagnosed infection rate

A study has revealed that SARS-CoV-2 infection frequently goes undetected

BY SUSANNE DOPHEIDE

Heinrich Heine University, the Düsseldorf University Hospital and the city of Düsseldorf as state capital of North-Rhine-Westfalia have carried out an epidemiological study on the spread of antibodies against the SARS-CoV-2 coronavirus. The finding: much of Düsseldorf's younger population and many fire and rescue service staff have had Covid-19 infection that went undetected.

The three entities joined forces in November 2020 to study the spread of antibodies against the SARS-CoV-2 coronavirus in specific segments of the population of Düsseldorf. The study allows documenting previously undiagnosed as well as diagnosed Covid-19 infection, affording greater accuracy regarding the infection rate by shedding light on the formerly unknown extent of infection within the population.

The findings from the SERODUS Studies I & II confirm that there has been a high number of undiagnosed infection in both of the Düsseldorf study populations, underscoring the importance of focused protection and testing strategies. The epidemiological study director is Professor Nico Dragano of the Institute for Medical Sociology, who points out: "The studies have enabled us to get closer to the actual number of people who have survived infection with the SARS-CoV-2 virus, who in some cases had no symptoms and were totally unaware." His colleague Professor Jörg Timm of the Institute of Virology notes: "Similar studies throughout Germany have in-

licated comparable rates of undiagnosed infection. Our findings confirm the figures measured as well.”

The younger demographic of age 18 – 30, which has the highest reported incidence of Covid-19 infection among all age groups in Düsseldorf, were the subject of the SERODUS I study arm. All across Germany, the infection rate among young people is very high, thus more information is needed if optimal protection is to be afforded this age group in the pandemic. In the study population of over 2,000, reactive SARS-CoV-2 antibodies were found in 3.1 percent of the individuals tested. Only 43.1 percent of individuals who tested positive for antibodies were aware of having been infected with SARS-CoV-2. Therefore, for every known case there were 1.3 undetected and therefore unreported cases in the study population, more frequently among men.

Younger people a key target group

It was noteworthy how many undetected, undiagnosed cases there were among study participants who said they had considered getting PCR tested but then did not after all. The study indicates that prevention efforts among younger people are critical for containing the pandemic. “It is highly important for us to get an overview of actual infection numbers so we can gauge how many people have produced antibodies against the coronavirus. The study results can be used as a basis for modifying protective measures,” says Dr. Klaus Göbels, Director of the Düsseldorf Public Health Administration, who headed the study entitled ‘Public Health’.

Professor Nico Dragano recommends that possibilities for getting tested should be promoted in target-group-appropriate ways with a low psychological threshold, and that prevention efforts should be generally more geared towards the needs of young people. The findings also reveal that even among younger people with a high known infection rate, only a small percentage have developed antibodies against SARS-CoV-2 – a fact relevant regarding the current vaccination strategy. As Professor Friedrich Böge of the Central Laboratory at University Hospital Düsseldorf (UKD) commented: “Immunisation through vaccination is thus necessary, and vaccinating the 18 – 30 age group on an accelerated schedule should be considered.”

“Immunisation through vaccination is thus necessary, and vaccinating the 18 – 30 age group on an accelerated schedule should be considered.”

Dr Friedrich Böge of the Central Laboratory at Düsseldorf University Hospital

Fire and rescue service staff are among those exposed to high infection risk due to a limited ability to adequately protect themselves on duty, because deployment situations are often unpredictable, involving unexpected direct contact with third parties. The SERODUS II study was thus conducted on more than 700 staff of the Düsseldorf Fire Brigade, German Red Cross and the Johanniter and Malteser first responder organisations. Having a seroprevalence (antibody frequency) of 4.4 percent, this specific occupational group is subject to greater exposure than the general population. Only 41.2 percent of individuals in this group who tested positive for antibodies were known to have had Covid-19. Thus for every known case in this group there have been 1.4 undetected cases.

Reducing the high number of undiagnosed cases

The overall study establishes that increased testing is a successful strategy for containing the pandemic nationwide throughout Germany. More testing is essential to lower the high rate of undiagnosed cases, which accelerates spreading of the virus, especially among mobile population groups and individuals with unavoidable third-party contact.

Further information and the concluding report are available on the website of University Hospital Düsseldorf at www.uniklinik-duesseldorf.de/serodus



PHOTOS PICTURE ALLIANCE - SEBALD

Paris or Positano?

In the early years of the Bonn Republic,
travel constituted far more than just a holiday



PHOTOS PICTURE ALLIANCE - ANHEAS

BY VICTORIA MEINSCHÄFER

The small city of Bonn, which suddenly became the seat of the government of the Federal Republic of Germany in 1949, was often mocked as a provincial backwater. However, according to Prof Dr Gertrude Cepl-Kaufmann and Dr Jasmin Grande from the Institut Moderne im Rheinland, this was precisely what helped to broaden perspectives. With its parochialism, the federal republic that had left the cultural sovereignty with the federal states from the outset at the same time offered an openness to international exchanges and insights into other countries. After the war defeat, the search for identity led many intellectuals to France or Italy. But Paris or Positano were far more than mere holiday destinations though. Rather, they stood for two different discourses, lifestyles and interpretations.

In the last winter semester, the Institut Moderne im Rheinland private research institute affiliated with Heinrich Heine University and the Bonn Republic research group explored the German sense of home (Heimat) and places of longing in the Bonn Republic during a lecture series of the same name. Politically, Europe was one such place of longing – and France and Italy in particular: “Positano is one place of longing during the German economic miracle, and Paris or St. Tropez the other,” explains Prof Dr Gertrude Cepl-Kaufmann. “These two places are by no means interchangeable, but instead signify the adherence to different cultures of remembrance,” Grande adds.

During the Adenauer era, France remained Germany’s sworn enemy in the public consciousness. “This was not an insult, but simply rather the reality,” tells Cepl-Kaufmann. For the young generation seeking a connection to the latest philosophical discourses, France was also more though, namely the land of existentialism. And Paris was the city that promised intellectual orientation. Indeed, it had already become an established place in the consciousness of the discourse community by the mid-1950s. “The connection to Paris was something nat-

ural. And the Parisians in turn had a connection to St. Tropez. This was the outpost that shaped the attitude to life and the way of living,” Cepl-Kaufmann explains. St. Tropez was also home to the cultural instances that communicated the theories of existentialism and, unlike in Germany, forged a link between intellectual debate and culture that was also perceived by the masses. The singer Juliette Greco and writer Françoise Sagan conveyed an attitude to life in which the focus was no longer on the search for meaning but rather on describing the loss of meaning itself. The visitors from the Federal

Connecting to the discourse

Republic sought to connect with the current international intellectual discourse while also invoking a tradition, for Paris had held the interpretive sovereignty since the nineteenth century. The decision for Paris or St. Tropez was more than just the search for a hotspot of philosophy though. Particularly for those hailing from the Rhineland, France had also always been the place where contradictions like the occupation of the Rhineland and cultural encounters, enmity and personal friendship

One final drink on the beach promenade before heading back to Westphalia.

Holidaymakers stop off at a lake in Austria on their way south.

“The connection to Paris was something natural. And the Parisians in turn had a connection to St. Tropez. This was the outpost that shaped the attitude to life and the way of living.”

Prof Dr Gertrude Cepl-Kaufmann — Institut Moderne im Rheinland

converged. This was on the one hand due to the close proximity (after all, even in the 1950s, Paris was just a short car journey away) and, on the other hand, further facilitated by the political rapprochement between

Longing for antiquity

Adenauer and de Gaulle after the war. While a trip to Paris and St. Tropez was a search for new intellectual possibilities, Italy was often associated with an (unspoken) longing for antiquity, for traditions that reached

back far further. Rome was certainly perceived as an occidental place that combined the classical and romantic ideals, where fascist policies were at the same time present in the not-too-distant past. “Italy was a complex situation, standing for an affinity for National Socialist Germany that by all means still lingered as well as for the country in which Goethe had lived,” says Grande. Cepl-Kaufmann explains: “People approached each other in national identities more than was the case in France.”

Nonchalance, a zest for life and a new image of women

Despite this, the southern Italian town of Positano twice became a place of longing for Germans: artists (especially those of the avant-garde “Young Rhineland”) and intellectuals first discovered this almost uninhabited “porous” town that perched high above the sea in the 1920s. Around half of the town’s inhabitants had emigrated to America in the mid-nineteenth century, hence Walter Benjamin, Siegfried Krakauer and Theodor W. Adorno discovered a ghost town here in which “the porous became visible as a symbol of time”, says Cepl-Kaufmann. It formed a compelling contrast to Capri that lies directly opposite, where the jet set of the 1920s celebrated almost non-stop parties and Friedrich Alfried Krupp owned a villa and commissioned his very own sensational road. Positano of the 1950s was an entirely different place. An essay by John Steinbeck for Harper’s Bazaar led Americans to discover the town. The place was then radiantly beautiful and stood for nonchalance, a zest for life and a new image of women. It was here that Hildegard Knef made the scandalous film ‘Die Sünderin’ [‘The Sinner’] and local resident Elizabeth Taylor countered the Nazis’ stuffy perception of women and mothers with a new image. Hollywood discovered Positano and that meant not only Italian dolce vita for the visiting Germans, but also international flair and a glimpse of the American jet set.

Cepl-Kaufmann believes that “landscapes have their own grandeur and make their own statement”. Or, as the artist Richard Seewald wrote in the 1920s, “landscapes have their moment in which they reveal their inherent idea”. The fluid topography of the Rhineland, the city shaped by the river, the provisional measures that prevailed for so long – this all enabled the openness that characterised the time and the Bonn Republic. Incidentally, the French correspondent of the Frankfurter Allgemeine Zeitung daily national newspaper Paul Medina actually already wrote of a “Bonn Republic” back in 1949.



In a tavern, 1955

PHOTO PICTURE ALLIANCE – ULLSTEIN BILD



PHOTO PICTURE ALLIANCE - ULLSTEIN BILD

Exploring Rome in August 1957

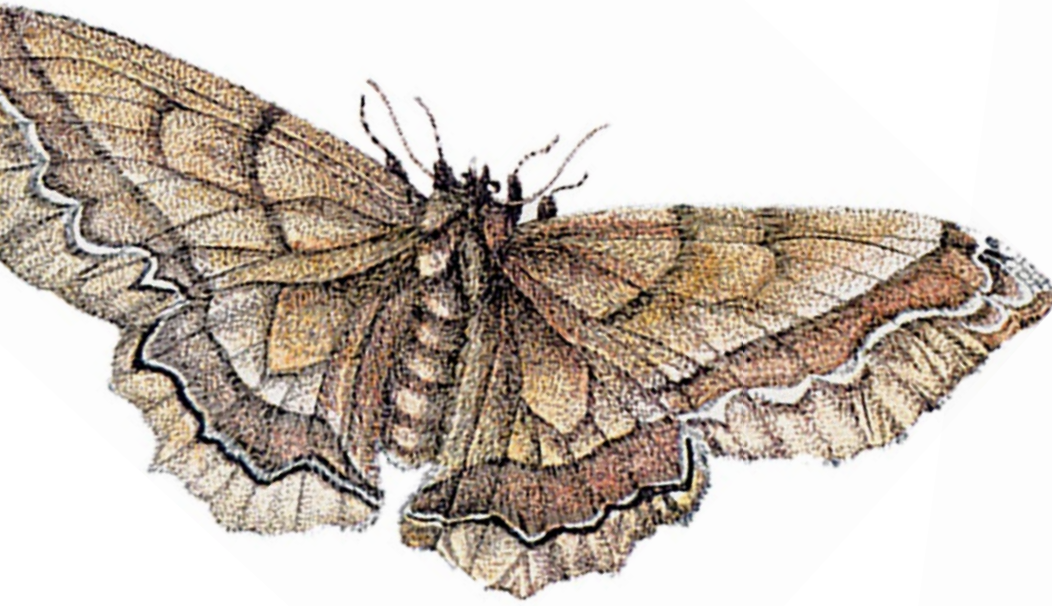
Cultural authorities such as Jean-Paul Sartre and Simone de Beauvoir drew the Germans of the Bonn Republic to Paris (*bottom*).



PHOTO ULLSTEIN BILD - ROGER VIOLETTE/JACK NISBERG

“Italy was a complex situation, standing for an affinity for National Socialist Germany that by all means still lingered as well as for the country in which Goethe had lived.”

Dr Jasmin Grande — Institut Moderne im Rheinland



ERC Consolidator Grant for
Prof Dr Maria von Korff Schmising

More sustainable agriculture with perennial crops





BY ARNE CLAUSSEN

All major cereal crops planted today are annuals. Their yield has been optimised through thousands of years of selection and breeding. Yet they harbour clear disadvantages, especially in light of today's dwindling resources and changing climate. Prof Dr von Korff Schmising is researching perennial relatives of barley at HHU, as the cultivation of perennial cereals is considerably more sustainable.

Annual crops such as wheat, rice, barley and maize form the cornerstones of the global food supply. Annual crops only live for one season and fields must be ploughed, the seeds sown and fertilised, and pesticides applied every year anew. At the end of the growing season, the plants transfer most of their resources into the seeds, while the rest of the plant dies.

“This has the advantage for us that we can harvest a large proportion of the resources produced by the plant during the season with the grains,” explains Prof Dr Maria von Korff Schmising from the Institute of Plant Genetics at HHU. “In contrast, perennial plants live over many seasons and store some of their resources in their vegetative parts to survive the winter and resprout the following year.”

Respecting the resource balance

So, are annual grains the first choice for agriculture because the maximum possible yield can be drawn from them? “It’s not that simple,” von Korff Schmising responds. “We must look at the overall resource balance and the pros and cons of the different forms of agriculture for the environment. If all factors – so, the use of agricultural machinery and fertilisers, pesticides and any necessary watering – are taken into account, the cultivation of annuals may require more energy (resources) than is ultimately yielded in the form of grains.” In fact, today’s agriculture is not sustainable, but rather consumes resources and causes damage that is not taken into account in the comparison. This includes the water use, loss of biodiversity and eutrophication, and soil erosion.

To cultivate annual cereals, the soil must be ploughed every year so that the new seeds can sprout and take root. This harms the soil ecology as the agricultural machinery compacts the soil. Herbicides are sprayed as the delicate young plants cannot compete with the weeds. The plants need to be fertilised to ensure sufficient nutrients are provided in the upper layers of the soil. With climate change and drier and hotter springs watering may be unavoidable to ensure sufficient yields. The agricultural industry has adapted all aspects to this way of farming – the seeds, agricultural machinery, herbicides, pesticides and fertilisers.

With perennial cereals, many of these steps are no longer necessary after the first year. Resources can therefore be saved and greenhouse gas emissions reduced. It, for example, means fewer fertilisers to pollute the groundwater: perennial crops develop deep complex root systems that allow them to better access water and nutrient resources in deeper soils. Established perennial plants can compete better with weeds and



Prof Dr Maria von Korff Schmising in a phytochamber for cultivating barley plants.



PHOTO CHRISTOPH KAWAN



“Today’s wheat, barley and rice varieties are the products of 10,000 years of selection and a good 100 years of crossbreeding”

Prof Dr Maria von Korff Schmising — Biologist

therefore fewer herbicides are needed. All this is not least beneficial to the biodiversity, which suffers enormously during conventional agriculture.

Complex root systems

“Erosion control is a decisive factor,” emphasises Prof Dr von Korff Schmising. This is because a complex root system that is as wide as it is deep and interwoven with the roots of neighbouring plants holds the soil far better than the short roots of annual plants. What’s more, land does not lie fallow for a large part of the year like it does when annual crops are grown. Soil erosion caused by rain and winds is a huge problem, especially in Africa and the USA where large quantities of fertile agricultural soil erode every year.

But if perennial grains offer so many advantages over annual crops, why didn’t we begin cultivating these on a large scale a long time ago? “Today’s wheat, barley and rice varieties are the products of 10,000 years of selection and a good 100 years of breeding and this has given rise to particularly high-yielding and hardy plants that are perfectly attuned to the current agronomic practices.”

The research into perennial grains and their optimisation has only just begun; “it will take us some time to catch up”. By way of comparison: the Land Institute, a non-profit research institution based in Salina, Kansas, has been developing perennial wheat and rice since the early 1980s. In 2019, it launched the first commercial varieties, a rice variety known as PR23 (jointly with the Yunnan Academy of Agricultural Sciences) and a wheat variety called Kernza. These produce similar yields to annual varieties and can be harvested twice a year. Both

Barley

... and many other modern-day cereal crops such as wheat were domesticated around 10,000 years ago in an area spanning modern-day Iraq, Syria, Lebanon, Israel and Jordan known as the Fertile Crescent. The farmers selected particularly advantageous, high-yielding or resistant plants. For more than 100 years, these parent lines have also deliberately been crossed. Wild barley has the brittle rachis trait, which means that the plants discard their grains when ripe. Crops were selected that did not afford this disadvantageous characteristic (after all, the grains should be on the stalk when the crops are harvested) and specifically cultivated by farmers very early on. The cereal varieties that prevailed through these selections are all annuals, perhaps because their annual cycle allows the more rapid alteration of these plants.

“The Land Institute has shown that it is possible to breed perennial cereal varieties that can compete with annual varieties.”

Prof Dr Maria von Korff Schmising — Biologist

cereals survive in the soil by forming rhizomes from which very strong new shoots regrow every season.

More competitive

“The Land Institute has shown that it is possible to breed perennial cereal varieties that can compete with annual varieties. The agricultural industry has little interest in this, though, as these varieties are less lucrative for them; after all, the farmers then no longer need to buy new seeds every year,” von Korff Schmising points out. With an anticipated life span of five years, breeding companies would sell just one fifth of the seeds. Herbicides are mainly needed in the first year and fewer agricultural machines are required for ploughing, spraying and fertilising.

Agricultural companies do not invest into research on perennial crops, hence public or non-profit organisations

must do so instead. Prof Dr von Korff Schmising plays decisive role in this: “In our PERLIFE project for which we will now receive an ERC Consolidator Grant, we wish to use barley and its perennial relatives to identify the gene variants that determine whether the plants are annual or perennial and what influence these have on growth and reproduction.” The European Research Council will finance the project with around two million euros over five years. This will fund one postdoctoral researcher, three doctoral researchers and one technical assistant.

The aim is to create a pool of relevant genetic variants that will be introduced into annual barley varieties currently used so as to combine the advantages of high-yielding modern varieties with perenniality. “We do not want to reintroduce the undesirable brittle rachis trait that our ancestors selected against.” The research team at HHU will use various modern biotechnological methods to achieve this. During marker-assisted backcrossing, the desired genes are marked and can be traced in crosses and already selected in young seedlings. Genome editing methods such as CRISPR-Cas9 are even more efficient. “This technique involves introducing the gene variants from the perennial grasses into the barley in a far more targeted way than through crossing.” On the one hand, crosses between species are difficult and not very fertile, and on the other hand, after the cross, the suitable ones have to be selected from a large number of offspring, which is very time-consuming.

CONTACT

Prof Dr Maria von Korff Schmising
Institute of Plant Genetics
maria.korff.schmising@hhu.de



Taking On the Big Platforms



BY CAROLIN GRAPE

Competition lawyer Rupprecht Podszun is taking aim at digital platforms: social media, online marketplaces and other web portals.

Online platforms are key drivers of the digital transformation, bringing innovation that has delivered great utility for consumers. They facilitate cross-border commerce, opening up a wide range of business opportunities for companies and contractors. But the market is dominated by just a handful of American ‘big tech’ players – principally Google, Amazon, Facebook and Apple – creating a highly concerning situation for many people regarding competition and consumer interests. Others, meanwhile, object to these corporations’ role in allowing incitement and the dissemination of hate speech, thus calls for accountability and greater regulation are being heard.

As Director of the Institute for Competition Law, Professor Rupprecht Podszun is dedicated to the principles of free and fair competition, and his research efforts are focused in this area. His stance is clear: “Digital platforms have made extraordinary contributions, but the power they have acquired is threatening free competition. Today’s competition laws, including the co-called e-Commerce Directive, date back to the pre-Facebook era, and thus urgently require updating so as to properly regulate the so-called “gatekeepers”. Dr Podszun, who has advised federal legislators of the German Bundestag on competition law reform, explains how the 10th amendment to the Competition Act (GWB) “made Germany the first country to enact far-reaching rules aimed specifically at curbing unfair business practices on the part of digital players.”

The ‘network effect’ is the phenomenon primarily behind the rapid rise of internet platforms and their accumulation of economic might. It is a type of snowball effect occurring once a platform attracts many users, thereby attracting more. “That’s how WhatsApp got big, for example – there’s no reason to switch to a different messaging app that nobody else is using. The more people got on WhatsApp, the greater the draw WhatsApp has for others, making other messenger apps more and more unattractive,” Dr Podszun explains.

Free competition in jeopardy

Personal data are the critical profit-making resource in this business model, which are comprehensively analysed and leveraged via sophisticated algorithms and artificial intelligence. Competing providers are bought out while a range of lock-in features are implemented to

“Digital platforms have made extraordinary contributions, but the power they have acquired is threatening free competition.”

Professor Rupprecht Podszun — Solicitor

make switching to a different platform more difficult, further concentrating market clout with a few players. As power accumulates, companies enjoy more and more sway over the market, so that, as Podszun notes, “in time, competition is largely eliminated.”

Network effect concentrating power

The hotel booking market, now dominated by Booking.com, is a prime example of increasing concentration of power due to the network effect. Competing portals have been eclipsed. “Hotels have incredible marketing reach nowadays, but this comes at the price of a certain dependency. A hotel that doesn’t appear high on the list of search engine results, like the first 10 hits, has little chance of getting customers.” Studies have shown that hits on the second page of search results garner less than one percent of clicks. Yet it is largely impossible to find out the criteria applied to determine search result rankings. Do the first 10 - 15 hotels shown best match the specific search criteria, or the typical criteria entered by a large number of users? Or then again, do the hotel organisations that pay the platform the most commission get to appear at the top? “It is in any case clear that commissions do play a major role in the rankings,”

Podszun observes, “as these platforms function as intermediaries, like brokers for products and services in the various markets.”

In the case of Booking.com, the platform serves as an agent for consumers looking for accommodations on the one hand, but is also paid to send business to hotels – creating a conflict of interest. An economically rational intermediary in this position will naturally favour the side from which the most profit is derived. “But now the situation has reached the point that neither side holds much influence of the intermediary. For Booking.com has the power to structure search results in whatever manner is optimal for Booking.com rather than for customers or the hotels. There need to be clear rules here,” says the competition expert, who advocates greater stricter regulation of B2C intermediaries.

Dramatic dependency

In addition to strangled competition, Podszun has also observed increasing dependency on the part of users, whose choices are often heavily guided by the intermediary. “More and more, our economy is one in which decisions are being taken for us. Take ‘smart home’ consumers for example, who use Google software to automatically lower their blinds or turn on the heat via mobile phone. Analysing the data, the software notices if there is an error with the heating system or a pending

“More and more,
our economy
is one in which
decisions are
being taken for us.”

Professor Rupprecht Podszun — Solicitor

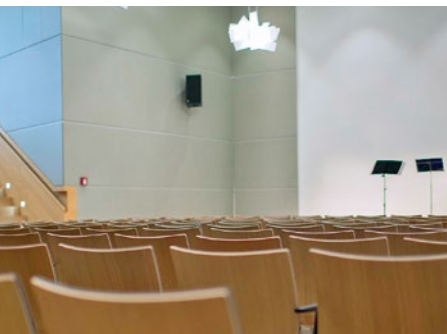
breakdown. Now obviously, in the future you won’t be the one anymore to choose what heating technician firm gets the call in such case! For the maintenance provider has to be one able to access to the control software, which will likely narrow the choices down to contractors utilised by the software operator. You may even get a notification like this: “Our technicians will be coming to service your heater on Thursday at 6pm – your Google calendar indicates you have a time slot then.

A convenience for consumers, to be sure, who don’t have to worry about anything, but then the choice is taken out of their hands. So there may be a better technician, but the provider cheapest for Google will be sent out. As Podszun points out, “independent heating contractors will stop trying to advertise their services and be concerned solely with getting into the provider network.” Such conveniences will impinge more and more upon individual choice, in some cases eliminating choice entirely. “I want to make my own decisions rather than being a ‘datafied’ object controlled by Amazon, Google or Apple,” Podszun declares, who believes more open-

Greater powers for antitrust regulators

ness is essential. In particular, the interfaces of systems run by platform providers should allow competition among service technicians, affording consumers choice. The right to access such system data must be regulated and data portability must be ensured, so that customers are able to take their data with them if they wish to use a different platform.

Some Dr. Podszun’s ideas have been taken up in the latest antitrust laws enacted, which provide for heightened supervision, procedural legal reforms and tighter restrictions on digital gatekeepers. A new Section 19a gives the Bundeskartellamt (Federal Cartel Office) expanded powers to act against Google and other powerful corporations in what Podszun sees as breakthrough legislation, observing: “The steps taken by German lawmakers reflect a greater effort underway worldwide to take on the platform giants.” And already Podszun and his team are looking ahead to the next battleground: the Digital Markets Act for regulating digital platforms on the EU level.



University House

University House was placed at the disposal of Heinrich Heine University by the van Meeteren Foundation. Its purpose is to provide information and advice as well as foster an exchange between science, culture and education. In the framework of a large spectrum of events, the University offers local citizens the possibility to experience cutting-edge research and research findings and shares university life with the city.

Further information, programme, bookings:

University House
Schadowplatz 14
40212 Düsseldorf

Tel. +49 211 81-10345
hdu@hhu.de

hdu.hhu.de

Director: Professor Dr Georg Pretzler **Deputy Director / Programme Development:** Dr Christoph auf der Horst **Event Planning and Support:** Angelika Kumpernas M. A., Susanne van Putten