University of Basel

UNI NOVA

University of Basel Research Magazine — N°131 / May 2018

Dossier

Urban and country living.

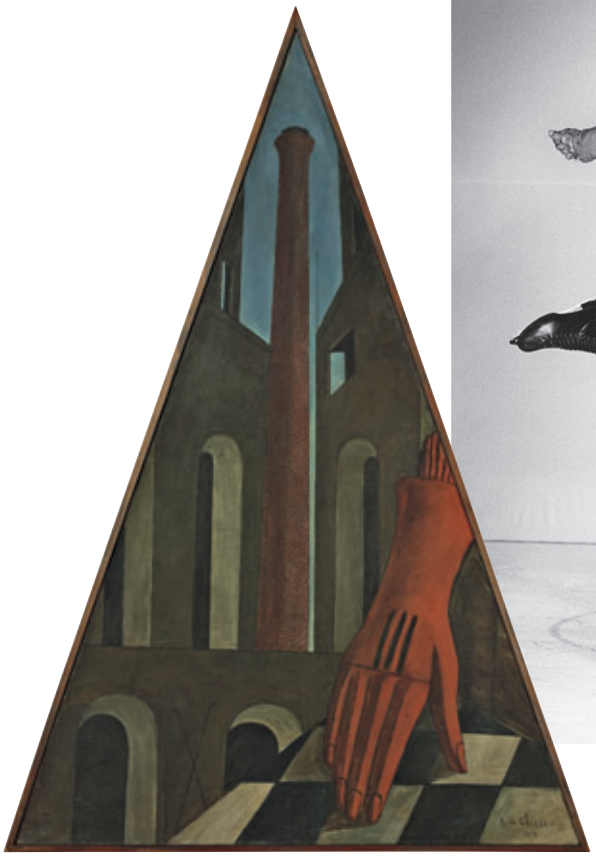
In conversation
Law and reality.

Debate
Will hard currency become obsolete?

Album
Identifying new plant extracts.

Essay
When others exclude us.

kunstmuseum basel



BASEL SHORT STORIES

FROM ERASMUS TO IRIS VON ROTEN

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Team

Contributors to this issue

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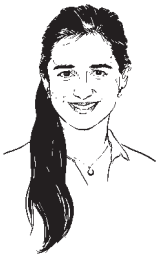
2 

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1 Manuel Herz is an architect and professor of architectural, urban and territorial design at the University of Basel. In his thematic introduction to this issue of UNI NOVA, he describes new forms of urbanization citing examples from Basel and Switzerland as well as cities in Africa. Pages 16–17

2 Beatrice Hofmann-Wiggenhauser has produced a list of place and field names in Northwestern Switzerland for our dossier, which are connected with certain social situations or interactions. As a postdoctoral research associate in linguistics at the University of Basel, she is currently working on the Solothurn place name and field name book. Pages 14–31

3, 4 Matthias Hamburger and Olivier Potterat from the Department of Pharmaceutical Sciences are working to identify plant extracts as an alternative to copper for use in organic agriculture. We've documented the individual steps of their research project in this issue's Album. Pages 38–47

Living and working together.

Is it still possible to distinguish between life in the city and life in the countryside? Unlike in previous centuries, people in many parts of the world no longer live in clearly demarcated areas, but mainly in agglomerations. Here, between homes, industrial buildings, warehouses and highways, the differences between heavily built-up city centers and sparsely populated rural areas have begun to disappear. There are more people living in high-rise apartments on the outskirts than within the former city walls. Increasingly, people are living and working in different places. More and more people move between city centers and suburbs on a daily basis, commuting in one direction or the other. The two are becoming less distinct.

In the dossier for this issue, we look at questions relating to how people live together, with a particular focus on examples from the Basel region. How was the area settled? What path did economic development take? How do we shape our social relationships, both among ourselves and as compared with neighbors and newcomers? Are there new forms of co-existence? What is the situation in local neighborhoods? We profile researchers and academic projects that are grappling with these questions, covering subjects such as urban studies, history, geography, sociology and cultural studies. The dossier looks at earlier periods as well as at current and future developments.

We hope that you will find it illuminating!

Christoph Dieffenbacher
Editorial team, UNI NOVA

Inheritance law touches on sensitive issues: Roland Fankhauser in conversation, page 8

Modern societies are increasingly becoming agglomerations – city and countryside are no longer essentially different.

Cover photo
Chiara from Bretzwil is a passionate longboarder and surfer in her free time – here between Arboldswil and Titterten, shortly after sunrise, spotted by photographer Florian Moritz.

Dossier

Urban and country living.

The organic farming industry has to move away from using copper – testing plant-derived alternatives, page 38

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ExoMars 2020

Mission to Mars.

Is there life on Mars? In 2020, the European Space Agency (ESA) will send a rover into space to look for signs of life on the surface of the red planet. The rover will also carry a camera that can take close-up color images of rocks, sediment, and drill core samples in high resolution. In Witterswil in the canton of Solothurn, geographer Nikolaus Kuhn and his research team have constructed an artificial Mars landscape for intensive camera tests – for example, how far away from the surface does the camera need to be, and how long does it take to photograph the surface of a rock in detail? The camera, which is being developed and built in Switzerland, will then be optimized to ensure that it can provide as many new insights as possible into current and past life on Mars. ■

bit.ly/uninova-mars

Long-term experiment in Hölstein

Climate change in the forest.

Over the next 20 years, an experiment unique throughout Europe will take place in Hölstein in the Canton of Basel-Landschaft. To understand the impact of increasing aridity on the forests of Central Europe, plant scientists from Basel will simulate declining rainfall in an area of forest.

Half of the 1-hectare test area will be covered by a canopy, which will catch around 50% of the rain that falls; the other half will serve as a control area. This will enable the researchers to clarify which native tree species are particularly sensitive to water shortages. A 50-meter crane has already been assembled in the middle of the forest to allow the scientists to conduct experiments in the treetops. The canopy will be installed in 2019. ■

bit.ly/uninova-wald

Höflinger photo archive

The Basel middle class and photography.

Early photography in Basel is closely linked with the Höflinger photographic dynasty: From the mid-19th century, the studio produced images for visiting cards and other purposes that now form one of Switzerland's most extensive photo collections. Women worked for the family business as receptionists, retouchers, or – like Maria Höflinger-Willimann, pictured here – as models for the company catalog.

In her dissertation in media studies, Esther Stutz examines portrait shots from this era and questions the relationship between the middle class, photography and perception. She detects a desire for the visual that was, however, connected with a deliberately modest portrayal of the self. "Basel's middle classes did not present their luxury to the world; they were a little more restrained," she explains. "It wasn't the done thing to show off your money." ■

bit.ly/uninova-foto

"The law must not deny reality."

Interview: Urs Hafner Photo: Basile Bornand

An overhaul of the 100-year-old inheritance law is long overdue, not least because the structure of families has changed. The Swiss Federal Council has presented its draft bill for reform. This has not been thought through sufficiently, according to professor of law Roland Fankhauser. He would like to see the Federal Council display more courage.

UNI NOVA: Professor Fankhauser, the Declaration of Human Rights states that all human beings are born equal. Some of them, however, inherit a fortune while others receive nothing. Is that just?

ROLAND FANKHAUSER: One of the fundamentals of constitutional law is that all human beings are treated equally before the law. The extent to which the distribution of material goods among them is just, ultimately, is a political matter. The fact is that the way inheritance works tends to perpetuate the current distribution of wealth: approximately 10% of heirs inherit 75% of the sum total of all that is inherited. Through the inheritance laws, legislators do, however, ensure that the concentration of wealth does not become feudal in nature; that is to say, they ensure that what is inherited does not become concentrated in the hands of too few.

UNI NOVA: So inheritance law impinges the area of private ownership structures?

FANKHAUSER: Yes, it does. The law, including inheritance law, is intended to create the basis for peaceful relations within society and to prevent disputes about family inheritances. For this reason, lawmakers limit the freedom of the testator, the person who has died, to distribute their wealth entirely as they see fit. There has, however, been little research into whether the law is actually able to achieve this goal of peaceful succession.

UNI NOVA: The traditionally bourgeois-dominated state is engaging in a division of wealth?

FANKHAUSER: In a sense, it is. Legislators distinguish between "testate" and "intestate" succession. In the former case, a will exists, in the latter there is none. How often a will is actually drawn up, we do not know. The freedom of the testator is restricted through certain statutory entitlements: the children, a surviving spouse or registered partner, and also parents are all guaranteed a certain share of the inheritance. The deceased is not permitted to leave these parties empty-handed. And the more distant the relationship between the testator and the heir – for example a favorite nephew or an unrelated but admired artist – the higher the rate of inheritance tax. In this way, a proportion of the wealth is returned to the greater society.

UNI NOVA: Why is that the case?

FANKHAUSER: Lawmakers favor and promote the transfer of assets within the family and protect these rights.

UNI NOVA: The existing inheritance laws are being revised for the first time in over 100 years. Given the various new family structures which now exist, this seems long overdue. Following a motion to reform, the Federal Council has now presented a draft bill that aims to take better account of social realities. Partners who were not actually married to the deceased and step-children will no longer go empty-handed. What do you think of this plan?

FANKHAUSER: The draft addresses some sensible technical details and introduces new legal instruments, but overall it has not been thought out sufficiently well and it does not fully consider the possible consequences.

UNI NOVA: During the consultation process, the Swiss People's Party rejected the proposed revisions because it claimed these would weaken the traditional family. The Social Democratic Party, on the other hand, welcomed it because it took patchwork families into account. Are you socio-politically conservative?

FANKHAUSER: My political standpoint is not relevant here; it's more a matter of my insights as a legal scholar. The law must be open to social change such as the current pluralization of lifestyles and family structures. It must not deny reality. The standard model of the nuclear family, which some political circles consider to be the ideal – heterosexual parents, mar-

“The law, including inheritance law, is intended to create the basis for peaceful relations within society.”

Roland Fankhauser, Professor of Civil Law and Civil Procedure Law

ried for life and with two children – is becoming increasingly rare in reality. Evidently, more and more people are now living in more complex constellations. The Federal Council's proposed revisions are, however, a somewhat timid response to these changes. Their proposal is to give the testator more freedom and more leeway, on the one hand, and reduce the statutory share, on the other. When drawing up his will, the testator can then take into account his de facto partner, with whom he cohabits, and her children.

UNI NOVA: And what if the deceased has not written a will? Does the partner inherit nothing?

FANKHAUSER: As I see it, that is exactly where the problem lies. The proposed reform does not go far enough because the unmarried partner is taken into account only in cases where the testator has made dispositions, but not if the unmarried partner has no position as a statutory heir. The revisions stipulate that a partner who inherits nothing can bring a claim against the heirs, but this must happen within three months of the death. I don't imagine that a lawsuit while people are still mourning will contribute to peaceful relations among the bereaved. Forcing those in grieving into the role of a plaintiff seems inappropriate to me. And procedural problems may also arise that have not been clarified even in the slightest.

UNI NOVA: So the revised inheritance law fails in its aim to ensure peaceful succession of wealth within society?

FANKHAUSER: In terms of the cohabiting partner, that is true. The reform fails to grant such partners a legal right to inherit. I find this astounding given that legislators have been much braver in other areas, for example with regard to joint custody of children and child support. Maybe in the future they will also make changes to accommodate the now widely accepted same-sex marriage. And as regards the purported increased freedom for the testator being proposed by the Federal Council, I would say that it sounds good. But, after all, who would be against more freedom? The question is whether this freedom will actually be taken advantage of? We don't know. At the moment, it's mere speculation because we don't have the research. And furthermore, greater freedom for the testator increases the danger of the "dictatorship of the cold hand".

UNI NOVA: The cold hand belonging, I assume, to the deceased?

FANKHAUSER: Yes, indeed. If the testator has more freedom, he is better able to direct the succession of his wealth, which means there will be fewer limits set to arbitrary decisions. He can determine the fate of his wealth well beyond the time of his death; that is what is known as the "dictatorship of the cold hand". This possibility is also unlikely to contribute positively to achieving the aims of inheritance law to support peaceful relations. The fewer the statutory shares, the greater the risk of unequal treatment and consequently of dispute among the legal heirs.

UNI NOVA: So why has the Federal Council presented such a half-baked proposal?

FANKHAUSER: Codified law is often the result of a compromise between different views and clashing interests. Politics always influences the law no matter whether we legal scholars like it or not. Compromise is not, however, any guarantee of non-contradictory and consistent legislation. Rumor has it that a deal between the left and the right will lead to further reform: In return for improvements to the situation of the cohabiting partner, the inheritance of family businesses will be privileged. The owner of a company will be able to write ownership over to any person he considers suitable. Other heirs who are entitled to a statutory share will, in such cases, have no claim to compensation.

UNI NOVA: That means the person who inherits the company doesn't have to give up anything?

Inheritance law reform

Inheritance law deals with delicate issues: death, ownership and family. It regulates the transfer of an estate from a deceased person, the testator, to other individuals, the heirs. Legal scholars have long seen the current inheritance law as rather a "problem child", as law professor Jean Nicolas Druey put it. The law has existed since 1912, since the introduction of the Swiss Civil Code. Authorized through a motion by the former Zurich state councilor Felix Gutzwiller, the Federal Council is now adapting the law to the realities of a changed society. The draft bill has met with much skepticism in expert legal circles.

FANKHAUSER: Not nothing, but maybe even less if, for example, the company is valued lower. But is this special inheritance right justified? We have no empirical data on this. In overall economic terms, is it actually damaging for a firm to pass to a non-family member following the death of its owner? Is the new regulation in the interests of society as a whole? We don't know. And there is also the question of why property owners, for example, do not receive the same privileged treatment.

UNI NOVA: It seems that legal scholars are often still in the dark …

FANKHAUSER: Assured knowledge of the legal circumstances, as we say, is indeed lacking in many areas. And it is difficult to obtain. Sadly, legal scholars are seldom schooled in empirical legal research. Such research requires considerable time, time which we nowadays seldom have. The same is true of reflection. This would also require much long and careful discussion. Such discussions were once conducted by expert committees. Lawmakers no longer wish to do this; they now conduct only selective bilateral discussions with chosen experts.

UNI NOVA: I suppose, the Federal Office of Justice would argue that the group dynamics among professors complicates matters.

FANKHAUSER: And maybe the Federal Office would be right – and yet it is short-term thinking. Academics look at things from many different angles, and not predictably along political lines. They reflect, and reason, weigh up their arguments against each other. Of course, this is very time consuming but in the end it can produce well-founded solutions. That doesn't suit politicians, who want to exercise their influence early and see quick results.

UNI NOVA: So reform of the inheritance law is not over.

FANKHAUSER: Consultations in the Federal Council will lead to a number of further revisions but the new law will still not be free of contradictions. And it will continue to give us legal scholars plenty to think about. ■

Roland Fankhauser
is Professor of Civil Law and Civil Procedure Law at the University of Basel. His research focuses on marriage and divorce law, family and inheritance law, as well as civil procedure law.

Ophthalmology research, strategy and new master's programs.

Study programs

New master's programs.

The University of Basel will be offering three new study programs from fall semester 2018. The Master's in Biomedical Engineering explains how technical tools and methods can be applied to medical diagnostics and treatment. The new Master's in Cultural Techniques focuses on practices that help to create culture through the specific use of symbols and technical artefacts. Meanwhile, the interdisciplinary "Changing Societies: Migration – Conflicts – Resources" study program examines the variety and complexity of social change from anthropological, politological, and sociological perspectives. ■

Life Sciences

Partnership for ophthalmology institute.

The University of Basel has founded a new research institution together with Novartis and University Hospital Basel. The Institute of Molecular and Clinical Ophthalmology Basel (IOB) aims to improve understanding of eye diseases and develop new treatments, linking basic research with clinical application in a structured manner.

The new institute is set to receive CHF 200 million over the next ten years, half from Novartis and half from the other founding partners along with the Canton of Basel-Stadt. Basel-Stadt has already granted CHF 12.5 million for 2018 to 2021. The IOB is set to create 135 new jobs in total; the University Council has already approved four IOB professorships for recruitment. ■

The IOB brings together researchers and clinicians to fight visual disorders and loss of vision.
iob.ch

Strategy 2030

Process launched.

The University Council has begun a strategic process that will create a basis for developing the university's finances and content in the future. Four subgroups – research, teaching, collaborations, and other topics – will develop the content of Strategy 2030. These groups report to a project management team, who in turn report to the project board. The project will be led by President Professor Andrea Schenker-Wicki and the project board will be run by Dr. Beat Oberlin, the new Vice President of the University Council. The schedule is tight – by the end of 2018, the new strategy is expected to reach a stage that will allow a consultation process to be initiated in early 2019 and Strategy 2030 to be approved by the University Council in August 2019. ■

Business and Economics

Research into innovative finance.

Fintech, blockchain, and digital banking – the Center for Innovative Finance (CIF), the new research unit in the Faculty of Business and Economics, will focus on new technologies and developments in the financial industry. The CIF will be boosted by an assistant professorship focusing on blockchain technology, which will receive funding of CHF 1.3 million over five years from Credit Suisse Asset Management. The professorship is dedicated to researching new technologies based on blockchain. It will investigate the use and potential applications of these technologies in financial markets and industry, and look at how these technological innovations could affect society. ■

Urban and country living.

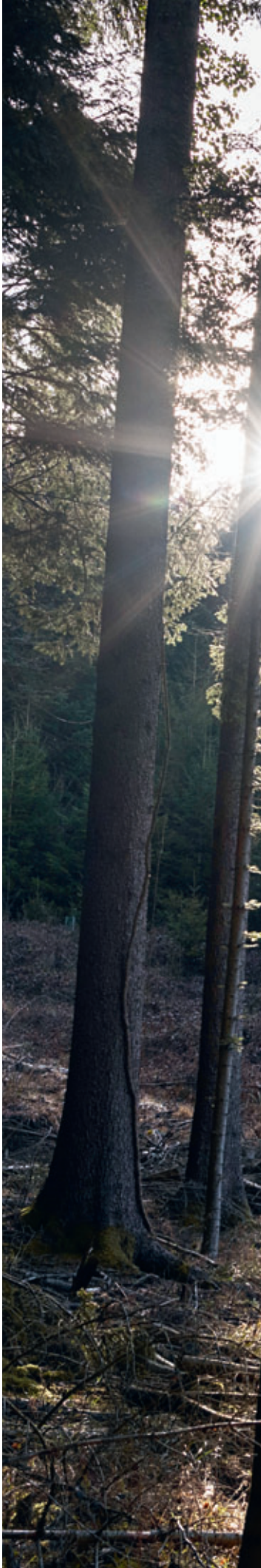
Photos: Christian Flierl

Peaceful living and working in a green environment, hustle and bustle in the center? Rolling landscapes, urban rush? Harmony there, stress here. Such contrasts barely apply anymore since the borders between cities and their surrounding areas grow more transparent. Social structures have changed, and in many places agglomerations – transition zones – now dominate.

Page 20
Historians investigate spatial developments and social life in cities.

Page 23
New housing structures enable ideals such as democratic decision-making and self-administration to become reality.

Page 32
Encounters with people from bordering countries is part of everyday life in the Basel region.



Hanslefels, Blauen, Canton of Basel-Landschaft
Older documented evidence contained other variations of the name for this rock ledge: “handelfelß” and “Handlenfels”. It would appear that a legal trade or dispute relating to or indeed over this rock ledge was instrumental in its naming. It was not until the 19th century, however, that the name was changed to “Hansle”, which comes from the name Hans.

More on page 19

On urban and rural life.

Text: Manuel Herz

Even as the borders between urban and rural areas become more permeable, we remain a long way from worldwide complete urbanization.

If we take a look at Matthäus Merian's famous 1615 map of Basel, we will see something seemingly familiar: A densely built-up town surrounded by a wall. Beyond are areas with a rural topography shaped by farming. The separation of urban and rural areas, which is so noticeable in Merian's engraving, continues to this day to dominate how we view cities: We associate urban areas with bustling activity and a lifestyle characterized by interchange, transformation, development and diversity; whereas we regard rural areas as synonymous with sparse population, constancy and tradition, as well as agricultural production.

Taking a closer look at the engraving, however, we recognize that this opposition is not so clear cut. The city is not completely built up. There are various areas that have not been built on and even some that are used for agriculture, for instance between the Aeschenvorstadt and St.-Alban-Vorstadt neighborhoods. By contrast, the fields outside the city walls have highly regular, predominantly rectangular shapes that appear to be the result of deliberate design. In other words, we can identify urban elements in the rural area and vice versa.

Mutual dependence

In present-day Switzerland, as in other parts of the world, these categories are becoming blurred. With urban and rural areas dependent on each other, thinking of them as polar opposites no longer helps to make sense of built reality: Villages and small towns that used to have a strong agricultural bent have developed into logistics hubs. While Switzerland's alpine region is hardly built up at all, it is laced with a tight network of infrastructures such as roads, rail tracks, power lines, cell towers, broadcasting installations and water pipes. An extensive transportation network means that the nearest town is typically no more than a few minutes away. It is no longer accurate to consider these areas as fundamentally different "lifeworlds". Conversely, we are seeing activities introduced in cities that we associate with the countryside. Urban farming is one example. Urban and rural areas have reached an extremely high degree of interconnection.

The binary contrast of urban versus rural is problematic not only because it does not explain built reality or the interconnection between cities and the countryside; it can also lead to other dualist perceptions and judgments. If this view is adopted and cities are conceived of as places of progress and modernity, there is a tendency not only to treat them as separate from rural areas but also, implicitly, to see them as separate from cities outside the Western world. The urban – rural dichotomy is thus linked to a distinction between the supposedly modern cities of the West, which are considered the norm, and supposedly underdeveloped cities in the rest of the world, which are then deemed to deviate from the norm and suffer from a development shortfall.

New forms of urbanization

The African continent is one region that could lead us to question these binary categories. In recent years, African rural areas, for instance in Kenya, have undergone rapid change thanks to the establishment of extensive infrastructures, with new irrigation systems installed alongside the introduction of harvesting and silo technologies. This mechanized agriculture dovetails with the international goods and commodity trade, which supplies wheat and rice to China, for instance. In the north of the country, along with a railroad line between Nairobi and Mombasa, a multimodal infrastructure corridor is being built that will comprise a highway, railroad line, oil pipeline, and fiber optic cable. In parallel, new towns are planned to be built along the routes in areas that have so far not experienced this form of urbanization.

Kenyan villages are being equipped with cell phone towers, and the African continent in general is considered to be leading the world in the development of micropayment technologies as well as the use of telephone-based transfers and cashless payments. This has brought a brisk

trade to cities such as Nairobi, Abidjan, Lagos or Dakar, allowing people in distant villages to exchange goods and services more quickly and reliably than in many other parts of the world.

Thanks to their creativity, resource use, urban culture, and sense of community, and in stark contrast to the portrayed backwardness, cities of the Global South often usher in developments that are later echoed by the West. These are cities that can teach us new forms of urban life. The new transportation systems introduced in Kenya and other African countries have enabled, among other things, a new kind of periodic migration, with people moving to cities for a few months in order to sell goods from the villages before returning to their villages and repeating the cycle. Here, too, the distinction between what is urban and what is rural is becoming increasingly fluid.

Cities and globalization

This is not to say that cities have become indistinguishable from the countryside – although some scholars, for instance American urban theorist Neil Brenner, talk about urbanization affecting every region of the world at every level. What we can say is that urban cultures, flows of goods, economies, planning practices and infrastructures are highly likely to occur in places that are less densely built up than a typical city. Nor does questioning dualist notions imply a prediction that globalization will lead to all cities becoming more and more alike.

It is frequently claimed and indeed taken for granted that owing to the global reach of international brands and the proliferation of "non-places" such as shopping malls, airports, international chain hotels, and theme parks, our cities are becoming more and more interchangeable. Although all these influences do exist, I claim that, on the contrary, globalization is causing cities to continually differentiate themselves.

Thriving trade centers

Let me illustrate this with an example: Near downtown Nairobi, the neighborhood of Eastleigh has been developing, where, since the early 1990s, Somali refugees have established trading centers and shopping malls. Thanks to their global connections, Somali diasporas in Dubai, Hong Kong, Minneapolis and London are able to import goods to Nairobi at lower cost than Kenyans could. As a result, not only has Eastleigh been transformed into a trading hub that attracts buyers from all over Kenya and even neighboring Uganda and Tanzania, but an entirely unique typology of shopping centers has emerged, whose architecture is geared toward the financial situation of Somali refugees.

These malls are vibrant places that radiate an extraordinarily rich urban culture throughout all three dimensions. While the factors that led to the urban transformation of Eastleigh – refugees, international flows of goods, and a United Nations presence, to name but a few – are a sign and result of globalization, Eastleigh's markets and urban culture are unique and could have evolved in this way only in Nairobi. As well as highlighting the fascinating lifeworlds that cities like Nairobi have to offer, this translates into an academic duty to investigate and try to understand them, taking them just as seriously as cities in other parts of the world. And it reveals the conscious or unconscious prescience inherent in Matthäus Merian's city map. ■

Manuel Herz
is an architect and Professor of Architectural, Urban and Territorial Design at the University of Basel's Division of Urban Studies. His research focuses on the relationship between land-use planning and state power in, among other places, refugee camps in Africa. His architectural projects have won several international awards.

Matthäus Merian, view of the city from a bird's eye perspective from the northeast, 1615/1617: famous depiction of the Basel in the Middle Ages.

Totengässli, Basel
Documented evidence of this name has existed since the 13th century. The name refers to an old, winding path on what was then an undeveloped hillside connecting St. Peter's Church and the settlement in the valley below. In former times, the deceased were carried from the valley below up the path to St. Peter's church graveyard.

Linguistics

Field names – ancient, but still alive.

Text: Christoph Dieffenbacher

We can learn a great deal about both the settlement history of a region and the development of the language from the field names recorded on maps, for instance, or in archival documents: names like Spitzbühl, Lätteloch, Hüngeler and Huebacker. Often these names are still familiar to some, but many people do not know where they come from. For several years, researchers at the University of Basel have been busy collecting local place names in Northwestern Switzerland and providing a scholarly analysis of their meaning. This involves compiling data from archives, talking to village chroniclers and exploring the countryside on field trips with local informants, during which the precise location of those field names that are still known – as well as the names of settlements, streets, bodies of water and mountains – is established and their local pronunciation is recorded. The data are then fed into a database, to be published at a later date.

The name books for the cantons of Basel-Stadt (2016) and Baselland (2017), consisting of several volumes and containing tens of thousands of individual names, are already complete and can be accessed in book form. Each of these projects was affiliated to the Department of German Language and Literature at the University of Basel, which is now also the base for the researchers working on the Solothurn place name and field name book. Their fourth volume, Die Flur- und Siedlungsnamen der Amtei Thal-Gäu (The Names of Fields and Settlements in the Electoral District of Thal-Gäu), with around 9,000 names, was published last winter. The remaining two volumes are due to appear by 2022.

The photos in this issue's dossier are related to certain "telling" field names in Northwestern Switzerland, which can be traced back to a particular social situation or a conflict. ■

namenbuch-solothurn.ch
ortsnamen.ch

Basel, its population and the city walls.

Historians are investigating how the spatial development of Basel since the Middle Ages has affected social life in the city and vice versa.

Text: Jörg Becher

There is a widely held belief that "Basel marches to the beat of a different drum." Due to its frontier location, it is said, this historic settlement on the borders of Switzerland, Germany and France has never really fitted in within the Swiss Confederation, unlike Zurich and Berne. As a center of the pharmaceutical industry and a Mecca for art lovers, the city region now has connections all around the globe. Yet at the same time, Basel is seen as exuding the comfortable charm of a small town, while its residents are said to think primarily in local terms, with an occasional tendency toward navel-gazing. Where does this blend of cosmopolitanism and provincialism come from? And what does the city's historical development have to do with it?

From the High Middle Ages until the middle of the 19th century, Basel was surrounded by city walls. Following the earthquake of 1356, these were rebuilt and extended, as a highly visible marker of the distinction between the city and the surrounding countryside. The city was subject to a different legal regime from the area beyond the fortifications. Even inside the walls, there were different legal jurisdictions such as Kleinbasel, which was founded as a separate town and did not merge with its big sister across the river until 1392. Special courts continued to exist in Kleinbasel into the early modern period to administer its local laws.

Farming in the suburbs

Suburbs like St Johann and St Alban also had their own justice systems to deal with minor disputes and offenses. Unlike the city center, these suburbs retained an agricultural character for quite some time. According to Professor Susanna Burghartz, a historian who specializes in the early modern period, "there were orchards and vegetable gardens there, as well as vineyards. Small farm animals were also kept." For example, we have records of a lawsuit in St Alban in which a swineherd was accused of not looking after the animals in his charge properly. "Or a livestock farmer may have put his dung heap in the wrong place. These were sorts of conflicts that were happening at the time," Burghartz observes.

The city walls always had a symbolic as well as a protective function, as they separated a space that both imposed obligations on its residents and offered them legal privileges from an underprivileged, but less strictly regulated, area. In this sense, the stone ramparts always exercised a powerful influence over the lives of those within their bounds, too.

Thus, residents were not able simply to leave the city. On Sundays, in particular, you could not do anything without a pass. The idea behind this was that citizens should go to church before indulging in other pleasures, if necessary. In villages around the city such as Allschwil and Kleinhüningen, dancing and prostitution played an important role, as so-called "women's houses" – that is, brothels – had been banned within the city walls since the Reformation.

Citizens with privileges

The period following the Reformation saw not just the imposition of stricter moral standards, but also a noticeable tightening up of the rules on naturalization. "Because citizens did not want to share their privileges, no more new citizens were created in the

18th century, which led to a significant short-time decline in the population," Burghartz explains. Although the national borders were already customs borders, there was no real passport control. According to Professor Martin Lengwiler, who specializes in modern history, "Up to World War I, the laws governing 'small-scale cross-border traffic' were very liberal. It was similar to the situation today, where you can get to southern Baden or neighboring parts of Alsace relatively quickly, and often without having to show ID."

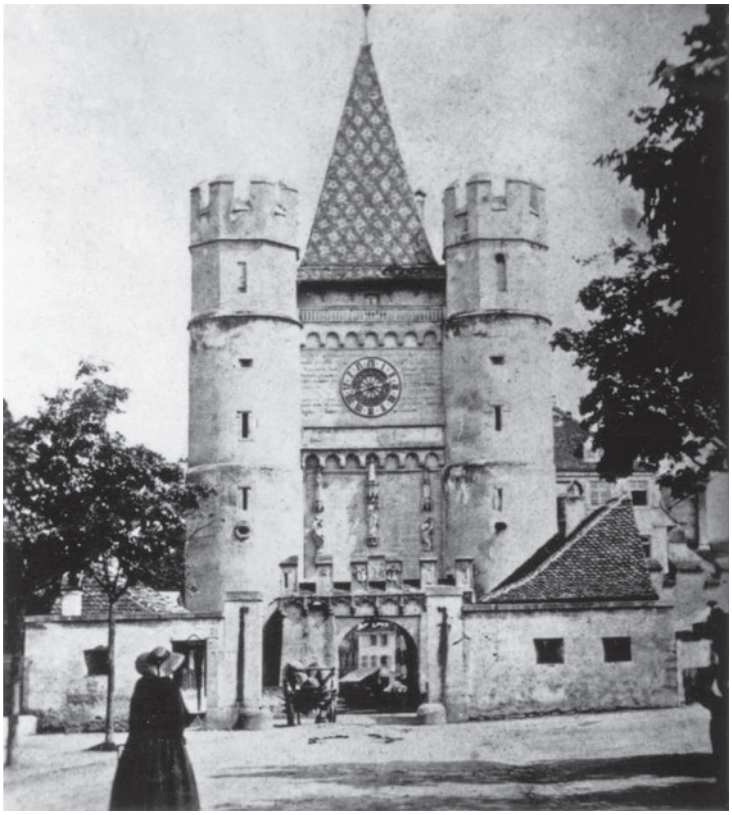
When the canton of Basel was split in 1833, the city was cut off from its traditional hinterland. Since large areas within the city limits such as Gellert and Gundeldingen were still undeveloped, the bulk of the increase in population that occurred in the 19th century could be accommodated there. Only after about 1870, when Basel's growth took off, did the city's frontier location start to become a factor in town planning. Previously, its districts had not been divided on class lines; the population lived cheek by jowl, with poorer groups such as domestic servants and porters often being housed in basements, the upper stories of buildings or annexes. The phenomenon of segregation, where individual districts are inhabited exclusively by particular social classes, is thus relatively new in historical terms.

"More modest, more boring, more frugal"

Housing policy was less interventionist in Basel than in Zurich or Geneva, not least because in the city, with its humanist traditions, many things were traditionally run on philanthropic lines. At the end of the 19th century, the Gesellschaft für das Gute und Gemeinnützige (GGG; Society for the Common Good) played a particularly active role in housebuilding. Socially minded employers also offered their workers cheap accommodation. By contrast, the first municipal law providing for subsidized housing did not come into force in Basel until shortly before World War I.

Like other Swiss cities with republican constitutions, Basel had no courtly society that lived by its own rules. "Life was different without an aristocracy," Burghartz says. "Everything was a bit more modest, more boring, more frugal. Elsewhere, by contrast, the aristocracy acted as luxury consumers and attracted scholars and artists. Still, Basel had a university that was able to take on some of that role."

Can Basel's proverbial modesty, its oft-cited understatedness, be explained by the city's lack of a courtly tradition, perhaps? Burghartz does not think so. Rather, she sees the phenomenon as attributable to the prevailing social attitude within a municipal entity, where no one is allowed to stand out too much. In earlier times, however, there was no such insistence on modesty. Right into the early modern period, Basel was a colorful city with many paintings on its buildings. A good example was the house "Zum Tanz", not far from the fish market, whose facade was decorated with frescoes by Hans Holbein the Younger. Only from the 17th century onward did it become fashionable to paint houses' facades in black and white, giving them a much more restrained appearance. ■



Basel's Gate of Spalentor housing customs and guardrooms, ca. 1860: It was built after the earthquake of 1356 as a part of the extended city walls, which then marked a clear separation between inner city and surrounding areas. Following the deconstruction of the city walls toward the end of the end of the 19th century, only the St. Johann and St. Alban gates remain in addition to the Spalentor.

Amerikanerblätz, Hägendorf, Canton of Solothurn
For a time, the gold rush and cheap land in California enticed the less wealthy people in the village of Hägendorf to set sail for America. Amerikanerblätz was where these people awaited the coach that would take them first to Paris and then on to the coast where their ship awaited them.

More on page 19

New housing for social change.

Text: Samuel Schlaefli

Co-operative living is back en vogue. A Basel-based sociologist is following the development of new housing projects and researching their innovative and socially transformative potential.

Since the beginning of this millennium, community-oriented housing co-operatives have experienced a renaissance. LeNa and wohnen& mehr in Basel, Kalkbreite and Kraftwerk 1 in Zurich, Warmbächli in Bern, or the Giesserei in Winterthur – they all serve the same mission of creating affordable, needs-based, sustainable housing options. This is not a novel vision: The first housing co-ops in Switzerland date back to the mid-19th century. So what's driving this new spike of interest at this particular moment?

This is the central question Sanna Frischknecht explores in her dissertation, which is part of the SNF project "Transformative Communities as Innovative Forms of Living?" at the Department of Social Sciences. The researcher is taking an in-depth look at several housing co-ops that all share an interest in "community-led, co-operative housing". "Common elements of these projects are ideals such as democratic decision-making and self-administration, as well as architecture that meets the need for community and for privacy at the same time," the sociologist says.

Her main interest is not so much the end product, that is living in the finished building, but rather the process of creating it, which can span years: "The negotiations about guiding notions, housing concepts, and cooperation convey the motivations, desires and predicaments of those involved."

Actively fighting housing shortages

For many participants, the main incentive for their time-consuming and mostly volunteer-based involvement in community co-ops is the fact that an acute housing crisis in cities and rising real-estate prices make it impossible for them to adequately meet their housing needs, Frischknecht explains. Other important motives are creating stronger social connections and support networks to overcome a sense of isolation and a lack of social security.

Sanna Frischknecht is writing her dissertation in sociology on various types of housing co-operatives. Her research interests focus on urban and housing sociology, housing co-operatives and social movements.

Dietmar Wetzel is co-project manager of the SNF project "Transformative Communities as Innovative Forms of Living?" at the Department of Social Sciences at the University of Basel.

For co-project manager Dietmar Wetzel, the concept is also about redefining our notion of community and challenging the boundaries of our willingness to share with others. People don't sit through hours of meetings, engage in heated debates, and struggle through red tape just because social circumstances and economic or ecological crises compel them, Wetzel argues. Being part of the "alternative co-op scene" is also a way to live one's own ideal of a sustainable lifestyle. This is why it's no surprise that housing co-ops lean toward community-supported agriculture and other aspects of the alternative economy.

No substitute for the welfare state

A closer look at the composition of these active groups reveals that many members are around 30 or over 55. Most are socially and culturally relatively well-placed citizens with a stable financial base. "You have to invest a lot of time in the process of creating such a co-op; it can take years," Frischknecht says. And yet, there are practical ways to also make projects and housing available to the socially disadvantaged, be it through partnerships with public authorities and institutions, or by co-ops raising their own solidarity funds.

Yet, Wetzel feels that private efforts to assume public tasks also entail certain dangers. For it is a key neoliberal strategy to harness private initiative to allow the state to back away from its social responsibilities: "Such housing projects are not supposed to be an opportunity for the welfare state to retreat under the pretext of individual responsibility." ■

Where the life sciences are concentrated.

As one of the world's leading locations for life sciences, the Basel region is home to a cluster of companies and organizations that not only compete with one another but also engage in cooperation. These are the findings of a new research study in the field of geography.

Text: Christoph Dieffenbacher

The view extends over Basel and far beyond. On his geography field trip on the history of life sciences in the region stretching back over 500 years, doctoral student Thomas Vogel stands atop Roche's "Building 1" office tower and talks about the influential apothecaries' guild of the Late Middle Ages, as well as the humanist anatomists and printers that spread the city's medical and pharmaceutical expertise far and wide. When religious refugees, innovators, and later industrialists from France came to the region, they spurred on its development: from dyes for the silk ribbon industry to chemistry, pharmacy and the life sciences.

The immigrants brought with them expertise, capital, and business relationships, which would then combine with Basel's own entrepreneurial spirit and local capital. Over the years, hundreds of large and small businesses have arrived on the scene: specialist suppliers and companies working in research and development, production, sales, and consulting in areas such as textile chemistry, pharmaceuticals, medical engineering, biotechnology, and agrochemistry. The city's location on the River Rhine was convenient for production, transport, and the discharge of effluents.

A lack of patent law

In France, a patent law had existed for chemical products since 1844, providing protection not for the chemical manufacturing process or the inventor, but rather for the manufacturing company and the product itself. Many inventors therefore emigrated to Basel, where products patented abroad could still be manufactured until the advent of the Chemical Patents Act in 1907. Initially, the companies established here operated as conglomerates that had evolved over many years. A series of subsequent mergers and spin-offs led to more focused lines of business. With Novartis and Roche, Basel is now home to the world's second- and third-largest pharmaceutical companies in terms of revenue.

A cluster is defined as a local concentration of similar enterprises. This situation can lead to innovation and competitive advantages, as well as providing a boost to the regional economy, as highly specialized companies often choose to establish themselves only in certain regions despite the possibility of opening locations worldwide. "The choice of location is therefore an important area of geographical research, typically yielding new insights for the promotion of locations and regional development," explains Rita Schneider-Sliwa, Professor of Geography.

What are the benefits of a cluster?

Specifically, her doctoral student Thomas Vogel is studying the advantages for companies of locating themselves in the Basel Life Sciences Cluster, as well as the sectoral and corporate structures and interconnections that the cluster produces. To this end, he has surveyed 766 life sciences companies in the region, achieving a response rate of 20.2%.

In general, the companies consider the conurbation a good place to do business: of six influencing variables, those most frequently cited as positive were the supporting infrastructure, residential and leisure amenities, and transport infrastructure. On the other hand, their response was less positive in relation to the availability of highly skilled local workers, for example, which leads the companies to recruit skilled workers internationally.

Using what is known as a geographical information system (GIS), Vogel is creating the first comprehensive overview of the life sciences cluster by sectoral, corporate and spatial structure. The companies are concentrated geographically in the cantons of Basel-Stadt and Basel-Landschaft,

with the most important industry being the pharmaceutical industry, followed by medical engineering and biotechnology. It is clear from the analyses that the region is a research-intensive location – but also that manufacturing continues to play a key role. The geographer sees the high concentration of companies relative to the size of the city as a distinguishing feature of the Basel Life Sciences Cluster.

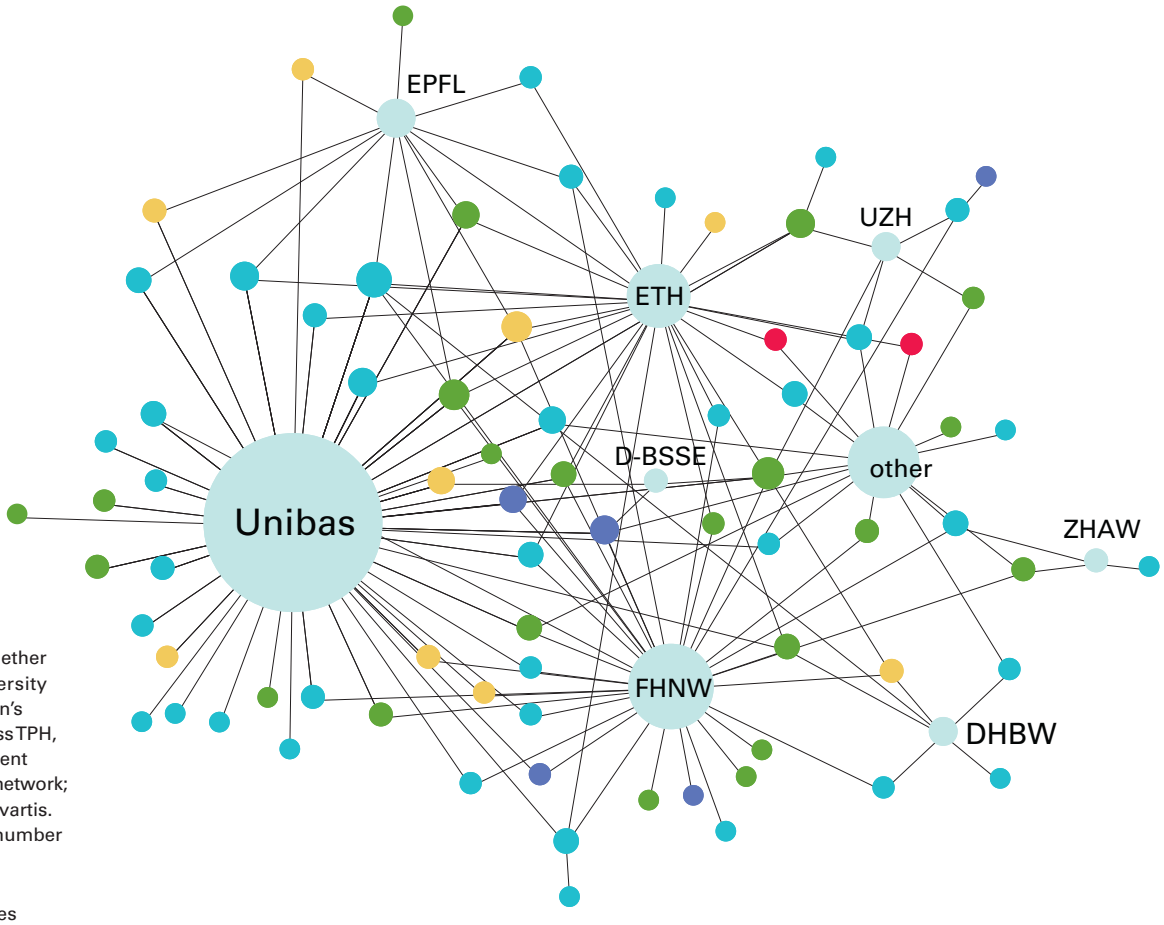
Cooperation within the network

In addition to the supply of international skilled workers, the perceived benefits for companies of a location in the Basel cluster include the opportunities for collaboration and informal contacts. Through a network analysis, Vogel is examining the question of whether and how companies, institutions, and organizations within the cluster are interconnected in terms of business and research relationships. What is noticeable here is that the University of Basel together with its partners and associated institutions (Biozentrum, University Hospital Basel, University Children's Hospital Basel, Swiss TPH, FMI) play a central role in the life sciences research network (without including Roche and Novartis) and account for 48% of all collaborations.

Where the companies in the cluster have Twitter accounts, Vogel has studied them to see who refers to whom as a follower. As expected, this again revealed a clear process of clustering: "The large companies have the most followers within the cluster and therefore play a key role in communication, as well as enjoying greater reach," says the researcher.

Employees and training structures

In conclusion, the study reveals pronounced cluster formation that has its origins in long-standing, historic traditions – and that today builds upon the positive overall assessment of the Basel region as a place to do business. Numerous soft location factors also play a role here. By contrast, opinions were less positive with regard to factors arising in part from the discretionary scope of policies geared toward a knowledge economy, such as the lack of local skilled workers that companies complained about in the survey. "Research findings like these support efforts to adapt training structures to the specific needs of the labor market and develop them on an ongoing basis," Vogel says in relation to his work. In his view, this also applies to plans to create new centers – such as the University of Basel's Life Sciences Campus – that will make this an even more attractive location for research. ■



Network analysis
The University of Basel, together with the Biozentrum, University Hospital, University Children's Hospital Basel (UKBB), Swiss TPH, and FMI, is the key component in the Life Sciences Cluster network; not including Roche and Novartis. This hub is growing as the number of collaborations expand.

- Pharmaceutical companies
- Biotechnology companies
- Other companies
- Medical technology companies
- Agrochemical companies
- University/Research institute

Armeholz, Arlesheim, Canton of Basel-Landschaft
During the French Revolution, the steep, forested valley of Armeholz is said to have been gifted to the poor people of Arlesheim for their personal use. The donor was a certain Sebastian Becheaux, marchand commissionaire patenté in Pruntrut.

More on page 19

City districts: shifting spaces.

Cities are structured into different districts. A human geographer has been exploring the characteristics of Basel's neighborhoods.

Text: Christoph Dieffenbacher

Esther Schlumpf has a doctorate in human geography. She went on to study urban and regional management, and currently works as a project leader for the regional economic development company RW Oberwallis AG.

Neighborhoods can be large or small. Some are arranged around a center, while others are not. They have different histories, and together they form the blend that makes up a city. Who lives in which districts? How do people perceive these neighborhoods, in all their diversity? What image do residents have of the area on their doorstep? And how best can cities improve the visibility of their districts as social spaces with their own identities? The geographer Esther Schlumpf has been asking these kinds of questions, with particular reference to the city of Basel.

Schlumpf, who is originally from the canton of Aargau, lived first in Grossbasel and then in Kleinbasel while she was at university. The city was an unfamiliar research location for her at first, as she did not know much about its 19 districts beforehand. For her dissertation, she surveyed more than 2,000 residents from seven selected districts, using questionnaires. "The first thing that struck me was that the population have very different perceptions of the various suburbs. They see some as quiet and well-to-do, others as dirty, creative and vibrant," Schlumpf says. She also spoke to and interviewed numerous professionals drawn from politics, government, town planning and architecture.

Even the names attached to districts are significant. Schlumpf discovered, for example, that suburbs abolished decades ago, such as the Hegenheim district, which is nowadays officially part of the Iselin district, are still known to their residents by their old names. Conversely, there are names around today, such as "Am Ring" in Grossbasel, whose use is confined to government or statistics; no one living in the area would call it that.

City districts are living spaces. Many change every few years, while others retain their character over a long period. One of the study's conclusions is that, on the whole, how people see a district – its "image" – is closely linked to the average social status of those living there. "It turned out that these ideas were extremely persistent and, to some extent, simplistic," Schlumpf says, noting that the socio-spatial reality is often different from what exists in people's consciousness.

She is amazed that Basel, with its particular geography, is still capable of creating new districts: in the harbor area, Klybeck and the Erlenmatt development. Here a real "district within a district", with residents from different backgrounds, has sprung up in Rosental. To some extent, public participation is also built into the planning process, which Schlumpf sees as helping to foster a sense of identity and belonging. "There is evidence that people who move around a lot within a particular space and exchange ideas there have a more realistic image of that space and are more actively committed to it," she says.

What recommendations does Schlumpf have for politicians? In her view, everything possible should be done to support efforts to strengthen a district's character, residents' identification with it, and their sense of belonging to it. This involves not just creating public spaces where people can meet, for example, but also measures that actually encourage people to go to these places. This could range from community centers and neighborhood initiatives through to street festivals, and composting groups.

"More could be done to publicize the different characteristics of the city's districts, in all their diversity, to the outside world," Schlumpf adds, raising the issue of location marketing. She therefore sees new initiatives such as the Saturday market in the Matthäus district, which started up a few years ago, as positive developments. Here, people can shop for fruit and vegetables right in the heart of the city. Schlumpf came to appreciate the hustle and bustle of this urban market while working on her dissertation, as she lived very close by. ■

Neighborhoods 2.0

Are neighborhoods becoming less important in an individualized and increasingly mobile society? Not according to cultural anthropologist Christina Besmer, who claims that they are simply changing form as diversity grows and society is digitalized.

Text: Samuel Schlaefli

Christina Besmer's dissertation looks at urban neighborhood practices with a focus on Kleinbasel.

Pumpipumpe.ch, a global neighborhood network founded six years ago by two Swiss graphic designers, promotes a sharing society, rather than a throwaway society. More than 9,000 households now help to shape their neighborhood via the online platform and by placing stickers on their letterboxes. If you don't want to buy a bicycle pump or drill that will only be used a few times a year, the digital map will show you anyone in your area willing to lend theirs out, allowing you to collect it from their home. Pumpipumpe.ch also sends out stickers for members to place on their letterboxes showing the items available.

Super-diverse district

Pumpipumpe.ch promotes a new way of organizing your neighborhood, packaged in a contemporary design, supported by digital media, and with a deliberate emphasis on fun. For Christina Besmer, a cultural anthropologist at the University of Basel, this project is an example of what she calls "doing neighborhood": "I see the concept of neighborhood not as something given that cannot be altered, but as a social framework that people are constantly producing and reproducing, its form differing depending on the time and context."

Besmer has been focusing on the "making" of neighborhoods since 2013. Her research is part of the SNSF "Media Worlds and Everyday Urbanism" project, which examines current social developments in the district of Unteres Kleinbasel. Basel-Matthäus, the neighborhood in which Besmer started her research, is an example of what cultural scientists call "super-diversity": A population not only of many different nationalities, but also many different lifestyles, religions, mobility patterns, and age groups.

Besmer began her fieldwork by taking perceptual walks and participating in local neighborhood events – and found herself surprised: "Cities are generally seen as places of anonymity, density, movement, and ephemerality. Discourses on globalization, digital networking, and individualization all point to a decline in the importance of local communities and spaces." However, she perceived the discourse locally to be somewhat different: "Everywhere there were references to 'neighborhood', for example in participatory processes, local events, and new apps that aim to help people get to know their neighbors."

Besmer soon saw how strongly normative the term "neighborhood" can be, particularly during participant observations in urban participatory processes. Since 2005, participatory urban development has been enshrined in the constitution of the canton of Basel-Stadt in the form of participatory processes. These processes aim to guarantee that residents, even those not entitled to vote, are involved in shaping their immediate surroundings. Besmer says that while participation is voluntary, the process is always based on the notion that the neighborhood is a single entity with shared values on the importance of participation. This groups diverse people at various stages of life, with different social, economic, and

cultural capital, with different connections to places, different lifestyles and backgrounds into one homogeneous collective. “Efforts to strengthen interaction and neighborship in the local area therefore always aim to hold something together that diverges in conditions of super-diversity.”

Making complexity tangible

In her research project, Besmer examines the question of how neighborhoods are established in different social contexts. “This helps us to understand how urban communal life and coexistence is organized in cases of super-diversity.” In addition to participant observations during participatory processes and other events, she conducted 20 semi-structured interviews with local residents and people involved in the “making of a neighborhood” in various capacities. One idea recurred throughout the interviews: “The concept of neighborhood helps to make tangible the complexity of a modern, globalized society by breaking it down into local spaces.”

Besmer provides a specific example: In August 2013, she took part in an anti-littering campaign called a “trashmob”, that had been initiated following a discussion evening organized by the Kleinbasel local district office. On a Saturday afternoon, around 60 volunteers picked up trash in the neighborhood: “The global refuse problem is far from solved, but participants were able to do something practical to help on a manageable scale.” Interestingly, this was inspired by a similar campaign in India that a group member had found online. The trashmob is also an example of the increasing links between local and global developments.

New concepts through new media

Besmer’s research also showed that different groups assign different meanings to the concept of neighborhood. For the canton, neighborhoods primarily offer potential for official urban development. For autonomous groups, they are the basis for resisting this development. Start-ups, meanwhile, see neighborhoods as opportunities to develop apps to earn money.

Besmer explains that, over the last few years, digitalization and new media have brought another new dynamic to the “doing neighborhood”. “Previously, neighborhoods had clear spatial definitions based on your place of residence and were inescapable. Today, they are often temporary and chosen by the people themselves.” The Pumpipumpe.ch portal is an expression not only of a new desire to share, but also of increasingly flexible social relationships. ■

“Previously, neighborhoods had clear spatial definitions based on your place of residence and were inescapable. Today, they are often temporary and chosen by the people themselves.”

Christina Besmer

A critical take on sedentarism.

Text: Samuel Schlaefli

The expectation that "migrants" should become actively involved in the local community of the urban district in which they live is often at odds with their mobility patterns and motivations.

It was certainly a forward-looking idea: The plan was to create a smartphone app to help reach out to all neighborhood residents, including newcomers and people with limited German skills, to integrate them into neighborhood life. The app was intended to combine information on small local businesses and sales promotions with news content provided, for instance, by local district offices. However, after a series of planning meetings and the development of a prototype, the idea was shelved for the time being because the app did not do justice to the complexity of the local social setup.

False premises

University of Basel cultural anthropologist Ina Dietzsch has analyzed the problems plaguing the development of the neighborhood life app: "Language issues, users' technical skills, reaching poor people without reliable Internet access – these are all challenges that can be overcome," she says, before adding, "The main problem was false premises."

According to Ina Dietzsch, the difficulties encountered in creating the app are symptomatic of the problems facing projects aimed at fostering interaction under the conditions of what anthropologists and social scientists call "super-diversity". In the course of her field research in Basel's Matthäus district, as well as in talks with urban planners and neighborhood coordinators of participation processes, she often found the implicit expectation that everyone living in the neighborhood be involved in shaping it. Dietzsch puts this down to a "normative concept of sedentarism," a positive notion of rootedness combined with small-scale units such as districts or neighborhoods viewed as valuable and associated with a sense of belonging, well-maintained relationships, and a willingness to contribute to the shape of a shared living environment. She says that mobility-driven lives in Basel are often treated as a problem that needs to be solved: "Both the city council and neighborhood associations strive to promote a lasting sense of belonging to the local area. But people with transnational experience who lead mobile lives aren't necessarily keen to commit to this kind of neighborhood life."

Weddings in the border triangle

By way of example, Dietzsch cites the Kurdish diaspora, which she knows well. This diaspora is particularly prominent in the Matthäus district. She talked to male and female Kurds from different generations, attended weddings, and accompanied families on trips to southeastern Turkey to learn more about their mobility patterns as well as the ways in which they use media to create social networks and communities. "Basel's Kurdish community has very strong trinational links," says Dietzsch. "For many, it's not so much the district they live in, but rather family networks and weddings especially in the tri-border area where significant sociality occurs." As an additional factor, she mentions Kurds' different understanding of politics, explaining that, as a result of the decades-long political struggle for their rights, many Kurds' notion of politics is related more to a European rather than an urban neighborhood scale.

So what should urban planners and neighborhood associations do? Should they abandon their efforts to involve as many diverse inhabitants as possible in decision-making processes? "No, they shouldn't," she says emphatically. "However, we should take seriously the fact that the same physical environment means different things to different people. And we should think of public participation as dependent on individual or even situational motivation rather than as a function either of the current place of residence or origin."

As Ina Dietzsch explains, for people who currently live in the Matthäus district but do not know how long they will stay or who know that they will not stay, it may not make sense to go through a time-consuming participation process in order to have their say in urban planning matters, whose realization may lie far in the future. On the other hand, she adds, non-residents or even passers-by may be the ones to contribute ideas. "The growing cultural diversity in cities must lead to the insight for all those who want to engage city users that any form of attribution and expectation based on totalizing generalization and categorization is doomed to fail." ■

Ina Dietzsch
is a private lecturer and research associate at the University of Basel's Institute of Cultural Anthropology and European Ethnology.

Heimatlosenblätz, Anwil, Basel-Landschaft; Kienberg, Solothurn; and Wittnau, Aargau
With none of the three cantons that it borders on laying claim to this steep woodlands area, Heimatlosenblätz was, for a long time, no more than a blank spot on the map. It was here in this legal no-man's land with no jurisdiction that beggars and vagrants sought refuge and protection. In 1931, the three-sided boundary stone was finally laid and the land divided among the three cantons.

More on page 19

The lives of cross-border commuters.

Some 320,000 commuters – twice as many as 20 years ago – cross the border into Switzerland for work. Sociologist Cédric Duchêne-Lacroix takes a closer look at the complex lives of cross-border commuters.

Text: Tobias Ehrenbold

Cédric Duchêne-Lacroix is lecturer at the Department of Social Sciences at the University of Basel. Since 2007, one of his ongoing research topics has been multilocality. In social science, people who use places of abode at more than one location are considered a new mass phenomenon. A study conducted by research institution *ETH-Wohnforum* and supervised by Duchêne-Lacroix concluded that a good 25% of the people in Switzerland, i.e. some two million people, live 'multilocally'.

When his Swiss co-workers sign off at the end of the working day and go out for a drink together, he unfortunately has to catch the train; otherwise he wouldn't get back home to his family in France until after ten in the evening. By crossing over the border he was sadly missing *"plein de choses" (all kinds of things)*, one respondent explained to the authors of the study "The Situation of Cross-Border Commuters in Switzerland". Generally speaking, maintaining friendships, living a family life, or pursuing hobbies is quite a challenge for cross-border commuters, explains Cédric Duchêne-Lacroix, who conducted the study in collaboration with colleagues at Basel and Luxemburg universities as well as the Geneva School of Social Work. According to the study, cross-border commuters tend to be better qualified, highly mobile, and well integrated in Switzerland.

International Northwestern Switzerland

Cross-border commuters have existed as long as there have been borders. Since 2000, the number of cross-border commuters in Switzerland has more than doubled to almost 320,000 today. In other words, more than 6% of all employees reside abroad; in some regions this figure is even as high as 25%. This significant rise in numbers had already started to manifest itself even before the introduction of the Agreement on the Free Movement of Persons (AFMP), following a decline in cross-border commuters in the 1990s, explains Duchêne-Lacroix. This trend is not related to a slackening of work permit regulations, but rather to Switzerland's economic stability.

Basel is the third most important destination in Switzerland for employees whose usual residence is abroad. The canton of Basel-Stadt now has just short of 37,000 cross-border commuters, while the canton of Baselland has an additional 21,000 plus. One in six employees here lives either in Germany or France. There are other border movements in the Basel region, says Duchêne-Lacroix, citing shopping tourism as an example. Movement here is in the other direction, with Swiss consumers shopping in nearby towns across the border, often resulting in traffic jams in German border towns. According to a study, Swiss-German shopping tourism makes up as much as 70% of business in the border towns. Besides international cross-border traffic, there is also cross-border movement within the different cantons in Switzerland. The city of Basel alone, for instance, attracts 50,000 employees from the Basel region. Interestingly, these commuters are rarely referred to as cross-border commuters.

Here, Duchêne-Lacroix is referring to a peculiarity that borders have – the fact that we perceive them differently, because their significance often only unfolds in our minds. In Basel, the notion of borders would appear to be less strong than elsewhere. Here, chance meetings with people from a neighboring country, for example, are part and parcel of daily life. What has changed in recent years, however, is the origin of the cross-border commuters. In the 20th century, most came from the Alsace and often worked in factories and retail stores, whereas now an increasing number of people who live in Germany have office or lab jobs in Basel.

At present, the number of French and German cross-border commuters in Basel is roughly equal. The German workforce tends to be highly qualified and, having German as a native tongue, they have the edge over the French, says Duchêne-Lacroix. Swiss salaries – which are often significantly higher than across the border – are without a doubt one of the decisive factors here. It would be oversimplifying matters, however, to say that the motivation behind cross-border movement of labor is purely financial. More important, for example, is the prospect of an international career, explains Duchêne-Lacroix. Employment mobility among young people, in particular, is very high, with young workers changing their residence situation to suit their job and some not infrequently even setting up home in several locations at the same time.

Competition from across the borders

In his research, Duchêne-Lacroix has observed how different the perception of cross-border commuters is from one part of Switzerland to the next. In the north, for example, political reactions are barely discernible, whereas in Geneva and Ticino, cross-border workers or *frontaliers*, as they are commonly referred to, are very much a political issue. "These regions are seeing the biggest increase in the number of cross-border commuters," explains Duchêne-Lacroix, adding that "while cross-border commuters go practically unnoticed in the north-west, on the labor market here they are seen as foreign competition." In the two cantons frequented most by cross-border commuters – more than 84,000 in Geneva and almost 65,000 in Ticino – right-wing populist parties have long since been urging for action to be taken. According to the Geneva Citizens' Movement (MCG), which began in 2005, the *frontaliers* are partly to blame for the persistent traffic jams in Geneva.

Meanwhile in Ticino, the movie *Frontaliers Disaster* (which roughly translates to: *The Misadventures of a Cross-border Commuter*) sheds a comical, humorous light on this phenomenon. Such negative portrayals of cross-border workers played a decisive role in securing victory for the "yes" vote in the 2014 referendum on mass immigration in Switzerland. Slogans such as "Prima i Ticinesi!" ("Ticino First!") served to underline the new dichotomies during the referendum campaign: Swiss/Frontaliers – Us/Them – Legal/Illegal.

Despite the fact that the referendum sought to set a limit on cross-border commuters as well, their numbers continue to rise. As various economic studies show, the labor market in Switzerland relies on them. It's as simple as that, explains Duchêne-Lacroix, citing the example of the healthcare sector, which would have significant bottlenecks to deal with if it weren't for cross-border workers. Even considering the many care jobs carried out predominantly by women from across the border, there has been little impact on the structure of the cross-border workforce, with almost two-thirds being male. Having roots in your home town or city tends to be more important for women than for men, Duchêne-Lacroix says. According to a study, female cross-border workers are less likely to pursue new friendships in Switzerland than their male counterparts.

"Having roots in your home town or city tends to be more important for women with families than for men."

Cédric Duchêne-Lacroix

Statistics do not reflect the reality

One hundred years ago, the situation was the opposite, with more Swiss workers crossing the border for work than foreigners. With the exception of Liechtenstein, where more than 10,000 Swiss are employed, the daily commute between Switzerland and abroad has been completely reversed. In Baden, which is located in the German state of Baden-Wuerttemberg, for example, the ratio of Swiss to German cross-border commuters is 600 to 35,000.

There may be more and more statistics, explains Duchêne-Lacroix, but cross-border commuters continue to be poorly recorded. The different methods used by the various offices mean that it's often impossible to compare figures. Many cross-border commuters are also often too mobile to be recorded at all. The Swiss Federal Statistical Office, for instance, only records cross-border commuters with cross-border permits who return to their homes across the border at least once a week. The number of unrecorded cross-border commuters with more than one place of residence is, in all probability, rather sizable, adds Duchêne-Lacroix. ■

In the swimming tunnel.

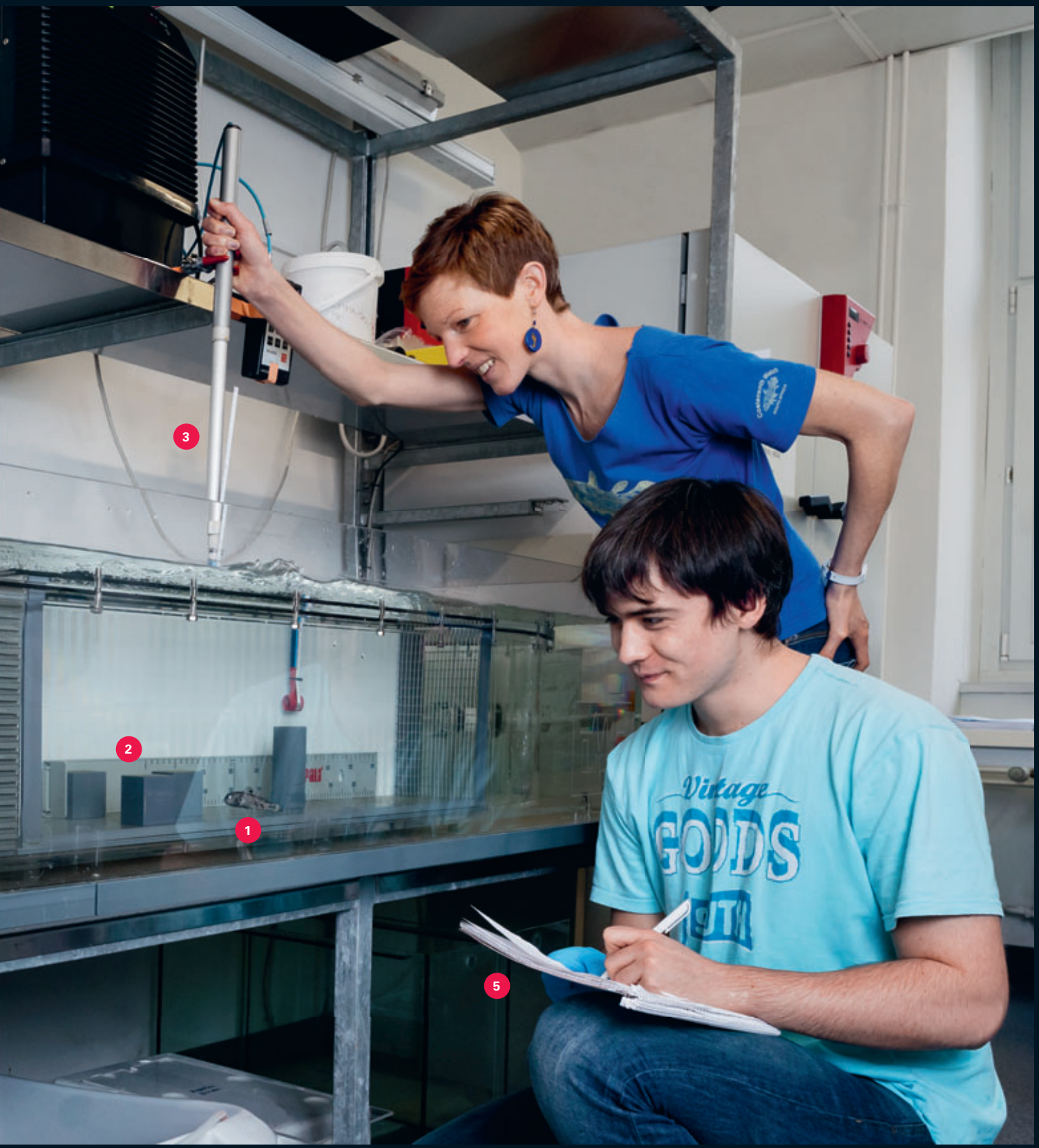
In recent years, native fish stocks in the High Rhine and other Swiss rivers have become increasingly endangered by the dispersal of invasive fish species such as the Ponto-Caspian round goby. Researchers are conducting experiments in a swimming tunnel with the goal of developing a barrier that will stop the round goby, while allowing the passage of native fish species.

Photo: Basile Bornand

Vanessa Kunz is a postdoc in the Department of Environmental Sciences. She researches the propagation of invasive fish species in river networks and the role of man-made structures.

Joschka Wiegleb is a doctoral student in the Department of Environmental Sciences. He develops 3D models that can be used to measure the physical forces to which fish are subjected in currents.

1 The round goby is a rather weak swimmer that lives at the bottom of rivers. Researchers can use the swimming tunnel to examine how gobies react to different water flow velocities.
2 Obstacles of various forms create vortices that influence the behavior of the fish.
3 A flow meter measures the flow velocity at different depths.
4 Further sensors record the water temperature and salinity.
5 The researchers visually observe the behavior of the fish. In addition, two cameras above and alongside the swimming tunnel record the swimming behavior of the gobies and how they are affected by the obstacles.


3
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Vintage
GOODS

What does the future of money look like?

The money economy is currently undergoing a period of rapid change, thanks to digitization. Cash as we know it will disappear. But what consequences is that going to have?

We can already say for certain that money in the future will be virtual money. What that means for people is that physical money – cash – will disappear. In future, all payments will be made using mobile phones, smart watches or other gadgets. Actually, this is a pity, as cash has many desirable qualities that cannot be replicated by virtual money. Cash is represented by a physical object, usually a coin or bill. The owner of a cash unit is automatically the owner of the value unit to which it relates. This means that ownership rights to the cash units that circulate freely in the economy are always clearly established, without the need for recordkeeping. What is more, the persons involved can remain anonymous and do not require a permit to use cash.

Virtual money, by contrast, has no physical representation. It exists only as an accounting entry. When a payment is made, the accounts are adjusted by deducting the amount paid from the purchaser and crediting it to the seller. For a virtual currency to function, it must be clear at all times how many monetary units there are and how new units are created. In addition, there needs to be a consensus mechanism to ensure that participants are in agreement at all times about the ownership of the virtual monetary units. A consensus about these rights of ownership can be achieved using two kinds of technology; essentially, one centralized and the other decentralized. In a traditional electronic payments system, a central authority – normally a bank – keeps accounts for buyers and sellers. However, centralized payment systems have numerous disadvantages. Large amounts of data are collected about users, and a user can be locked out at any time. Users' accounts can also be accessed at any time – an all-too-frequent occurrence in countries with dubious legal systems.

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Bitcoin is the first functioning virtual currency where ownership rights to the different monetary units are administered on a decentralized basis. There is no central authority, no boss, no management even – and yet it works. The payment system uses a form of decentralized recordkeeping called bitcoin blockchain. It would take too long to describe this mechanism in detail, but it should be clear that administering digital property on a decentralized basis represents a radical new departure. It has many potential applications even now, and there is no telling how it may be put to use in future.

How are new bitcoins created? They are produced by a process known as "mining", by analogy with digging for gold. In the same way as the Big Bang created gold from nothing, so to speak, bitcoins are produced from nothing. To make sure that too many bitcoins are not created, the developers have built in a requirement for "miners" to solve complex mathematical problems. The system is also calibrated in such a way that currently 12.5 new monetary units are produced, on average, every ten minutes. Some people may be disturbed to learn that bitcoins are created from nothing, but I would merely point out that the same is true of today's Swiss franc. The Swiss National Bank, too, creates new money from nothing – and that has served us well so far. ■

They say that it's hard to make predictions, especially when it comes to the future. However, three trends seem to me to be indisputable. First, cash will disappear, to be replaced by payment using apps installed on our smartphones. One of the driving forces behind this change is our desire for convenience, which leads us to transfer even very undemanding tasks like handling cash on to our mobiles. Another is the economic interest of the IT and financial sectors in making payment itself into a business, controlling how it is conducted, levying charges on it, and marketing the data that have been captured from it.

It is possible to see the disappearance of cash as just another change in the form that money takes. There have been many such changes historically, such as the shift from coins to bills. However, it is tied up with the loss of anonymity of those involved, which is an essential feature of trading in civil society. A person who uses cash leaves no traces. When someone makes a payment electronically, on the other hand, they do so in their own name. Many people will not find that worrying. Still, when cash disappears, it will take with it the freedom of the individual to be just a buyer, and ultimately, their right to be treated equally as a participant in the market.

A second trend is the growth of complementary currencies. These are not totally new; in some respects, they have a long history. These alternative currencies are complementary because the aim of their creators and users is to plug the gaps in a currency system that they see as defective, due to its dependence on transregional markets and use of excessively high interest rates (or even interest per se). The flaw in the system whereby conventional money operates as a barrier to market access is to be overcome by people agreeing to provide everyday goods and basic services, generally, in return for a means of exchange accepted only in a particular locality or region.

First, we are seeing not just an expansion in the currency supply, but the development of separate sectoral currencies for specific jobs. This is because local or complementary currencies function only as means of exchange, not as units of value or assets. Alternatives have long been available to perform this monetary function, too. Bitcoin is just one of them. Secondly, complementary currencies are an expression of the repersonalization of economic life, if not of money itself. They are symptomatic of an attempt to embed all too anonymous market processes in the familiar setting of everyday life.

Axel Paul
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The third trend is that our monetary system itself is coming under fire. On the one hand, a coalition of libertarians, hackers and start-ups have taken it upon themselves to undermine the state monopoly on currency by inventing and disseminating cryptocurrencies. We are promised a kind of money that is free not just from state oversight, but from political attempts to manipulate it. On the other hand, there are complaints that our currency system has long been open to private abuse. In fact, it is the private commercial banks, not the central banks, that decide how much money is created and, consequently, how wealth is distributed.

In the eurozone, money has become a political bone of contention partly due to the policies of the European Central Bank, which has managed to rescue the euro, but only by exceeding its mandate – which it continues to do. As a result, troubled times lie ahead for monetary policy. We will have to learn to think in more than one currency. ■

For more than 100 years, copper has been used as an effective antifungal treatment on grape vines, apples and potatoes. While copper effectively stops fungal spores from germinating, it is toxic at higher concentrations and accumulates in soil and groundwater. This is why alternatives to copper are needed. Organic farming, in particular, has to move away from using copper if it is to remain credible. In the search for much-needed alternatives, researchers at the Department of Pharmaceutical Sciences of the University of Basel have joined forces with the Research Institute of Organic Agriculture (FiBL) in Frick, testing various plant-derived substances that could replace the harmful heavy metal in the treatment of downy mildew on vines, apple scab, and powdery mildew on potatoes. More than 2,500 different plant extracts were tested for efficacy in preventing fungal growth. Their active constituents were characterized using chromatographic and spectroscopic methods, and selected plant extracts applied to seedlings under controlled lab conditions, and later tested in the field. The researchers are optimistic: A number of the extracts proved effective and the respective active constituents were successfully identified. Two extracts yielded particularly promising results in field tests.

Photos: Christian Flierl
Text: Christoph Dieffenbacher

Plant extracts against fungi.

Collection
In a forest in Central America, long sticks are used to collect leaves from a deciduous tree (left).

Storage
Extracts are taken from the plants collected worldwide. A library containing more than 3,000 plant extracts is stored at a temperature of minus 80°C in the basement of the Department of Pharmaceutical Sciences at the University of Basel. Lab assistant Orlando Fertig removes a box from the library (right).

Investigation
The active constituents are investigated at the Department of Pharmaceutical Sciences using chromatographic and spectroscopic methods. Doctoral researchers Ming Yuan Heng and Justine Ramseyer study the molecular structure by nuclear magnetic resonance (NMR).


2

Testing
The effect of the extracts and their active constituents are tested on seedlings (left).

Examination
Dr. Barbara Thürig of the Research Institute of Organic Agriculture (FiBL) in Frick examines the seedlings in the greenhouse (right).

Quality control
Dr. Olivier Potterat and lab assistant Orlando Fertig carrying out quality control checks on the plant product. The leaves are then extracted in large quantities for further testing in field conditions.

Matthias Hamburger is Professor of Pharmaceutical Biology and head of Pharmaceutical Biology at the Department of Pharmaceutical Sciences. One of his main research focuses is the use of plant-derived natural products in the treatment of human and plant diseases.

Olivier Potterat is senior research associate and lecturer at the Department of Pharmaceutical Sciences. He is in charge of the cooperation project together with Matthias Hamburger.

Theory of power instead of porn.

Text: Urs Hafner

Jacob Burckhardt is going virtual. Two hundred years after his birth, the ideas of Basel's great cultural historian are being brought to life by a 3D installation at the Basel Historical Museum.

This space achieves both: It seems to go on forever, yet at the same time it feels enclosed. It appears endless because of its towering height, its nooks and crannies, its plateaus and staircases. What makes it feel enclosed is the absence of natural light. An eerie twilight prevails here, dimly illuminated by the material itself.

The visitor sets out uncertainly across this vast expanse. In front of him, a set of giant compartments rises up toward the roof; from the right, a giant photograph of a classical sculpture floats toward him, and he tries to grab it with his virtual hand. Arriving at the Roche Tower, the new symbol of Basel, he enters – and is confronted by a baroque-style interior. Is there an evil monk lurking behind the buttress? Could it even be Jacob Burckhardt, the great Basel historian, who was born 200 years ago?

This space, this disturbing dreamscape that feels like something straight out of a surrealist painting, does not really exist. It is virtual. When the visitor, confused, takes off his bulky 3D glasses and has a look round, he finds himself back in the real world of the Basel Historical Museum. He is sitting at a desk surmounted by an imposing set of compartments – a reconstruction of Jacob Burckhardt's office furniture, which is kept nearby. It was in these compartments that the historian filed his correspondence and notes, along with, perhaps, his pictures and photographs.

"The desk's function was to organize knowledge and to imagine history," says Lucas Burkart (no relation), Professor of History at the University of Basel. It was this desk that provided Burkart and Mischa Schaub, head of the draft design research company Virtual Valley, with the inspiration for their 3D installation "Desktop". Together, with their "intervention" to mark the bicentenary of Burckhardt's birth, they have achieved a real breakthrough in virtual technology.

A conservative nonconformist

"Desktop" transposes Burckhardt to a surreal space where he can be encountered through his ideas, his pictures and his surroundings, interwoven with the present. The installation erases the conventional distinction between present and past, the real and the virtual, without succumbing to the temptation to resurrect this conservative nonconformist in digital form.

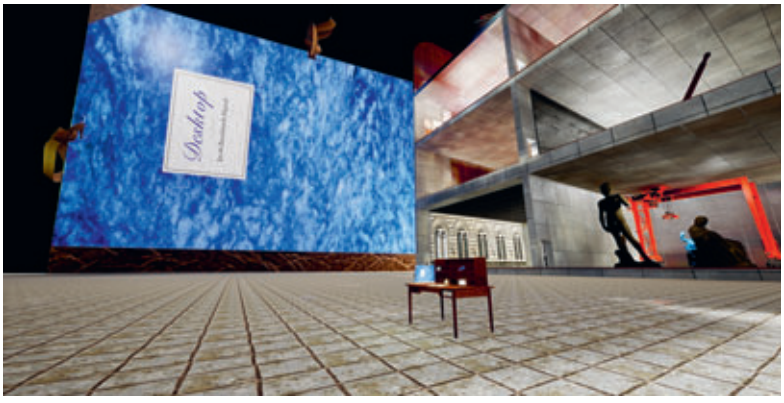
Jacob Burckhardt was born in Basel in 1818; he died in the same city in 1897. This cultural historian, whose image adorns the Swiss 1,000 franc note, is being celebrated because his work, which deals primarily with the Italian Renaissance and Greek antiquity, has stood the test of time astonishingly well. His "Reflections on History" has long been a classic of historical theory. Burckhardt's methodology is now seen as groundbreaking, as he relativized the primacy of the state and religion, establishing culture alongside them as a third world-historical "power". For Burckhardt, culture was "all social intercourse, all technologies, arts, literatures, and sciences" – in fact, "society in the broadest sense".

Burckhardt understood the mentality of an era as a kind of underlying structure. For a long time, this made him an isolated figure in historiography. His colleagues were mainly interested in princes and politicians, in important individuals and "reality" – as is the case once again today.

Yet Burckhardt was not just original; he was also reactionary and elitist. Developments like industrialization, mechanization, democratization and universal education horrified him. He had little time for the new, liberal Switzerland. For Burckhardt, the only remaining bastion of human values in his time was high art. At the university and among his small circle of drinking companions, he created his very own sanctuary from the demands of modernity. In his letters, he expressed racist and anti-Semitic views, like some of his fellow citizens – a subject explored in part of the 3D installation.

Burckhardt – a media pioneer

And this Burckhardt, of all people, is now being launched into the new, virtual world of unlimited possibilities, a world normally populated by first-person shooters and dominated by violence and porn? Has Burckhardt been banished to his own personal hell? Lucas Burkart and Mischa Schaub reject this suggestion, citing Burckhardt's role as a media pioneer. While his contemporaries worked exclusively with written sources, they point out, Burckhardt made innovative use of the



Virtual reality at the museum

"Desktop" will be on show at the Basel Historical Museum from 4 May until the end of July 2018, and then at the National Museum Zurich. It was put together by a four-person team from the Basel University's Department of History and the draft design research company Virtual Valley (Lucas Burkart, Mischa Schaub, Maike Christadler and Sid Iandovka). It is freely accessible on the internet; anyone with a pair of 3D glasses can use "Desktop" at home.
jacobburckhardt.ch/desktop-jb-digital

emerging medium of photography, amassing a huge collection of 10,000 items.

According to Lucas Burkart, the Basel historian broke down the barrier between today and yesterday. "He knew that history is created by the present and provides the basis for how we approach the future." The blurring of temporal boundaries that Burckhardt envisaged is now happening in the virtual realm.

Mischa Schaub points to the triumphal march of "mixed realities": "We cannot escape the digital revolution, regardless of whether we think it is good or bad. It is happening, here and now." The two creators of the Burckhardt installation agree that soon the computer screen will be replaced by a lens that we will all wear in front of our eyes. The key issue now is to defend the content we view from technology. In other words, Burckhardt instead of bazookas?

"Desktop" is an ambitious project. It provides us with an opportunity, if we are able and willing to take it, to rediscover in the virtual realm Burckhardt's thought – the historian himself never appears in person – as interpreted from the perspective of media theory, and then to build on that by reflecting on what is meant by history. What is the baroque interior of the Roche Tower – a vision, a warning, an "archaeology"?

And if we are unable or unwilling to do that, what will we find in this surreal landscape? Perhaps the dream we had last night. That is worth something in itself. ■

More than five fingers is not possible – or is it?

Text: Yvonne Vahlensieck

Today's vertebrates normally
have no more than five fingers or toes on each limb.
Biologists in Basel now want to find out why.

Paws, feet, hooves, wings – evolutionary biologists see all these body parts as variations on the same basic morphology, which has been optimally adapted to suit an animal's way of life. Some of the original five fingers or toes are often lost during this process of adaptation. Thus, there are three fingers in a bird's wing, an even-toed ungulate like a deer has two toes, and a horse runs on hooves perched at the tip of its single toe. Yet in spite of this diversity, it is surprising to find that there are no vertebrates around today with more than five toes on each foot. According to Professor Patrick Tschopp, a developmental biologist at Basel University's section for integrative biology, "there seems to be a natural limit here."

Again and again, however, there are cases of individual animals developing supernumerary fingers or toes as a result of mutations. This kind of hereditary polydactyly also occurs in humans (see box). In his research project, Tschopp is now investigating the embryonic development of these supernumerary fingers. He is mainly interested in whether they are fully functional – that is to say, whether they also develop the nerves and muscles needed for controlled movement. "We want to find out whether the neuromuscular system can adapt to the presence of a higher number of fingers. If not, that could explain why there is an upper limit of five fingers."

Chickens and mice as experimental models

Tschopp chose the chicken as the model organism for his study. In doing so, he was following in a long tradition of developmental biology; more than 2,000 years ago, Aristotle smashed hens' eggs to find out how they produce chicks. Modern-day methods are a good deal more sophisticated. The researchers carefully cut a small window into the eggshell, through which they are able to observe the chick's development step by step. It is even possible to perform minor surgical procedures without harming the embryo. For their experiments, the Basel team implanted tiny beads soaked in retinoic acid in the wing bud of an embryo that was just a few days old. This caused the number of finger bones to double, so that the chick's wings grew with six fingers, rather than three.

By staining different kinds of tissue, the researchers were then able to examine whether the additional fingers were establishing connections to muscles and nerves as they developed. Their analysis showed that the neuromuscular system is very flexible. Both the nerve fibers and the muscle cell precursors recognized the extra fingers, formed new branches, and grew on to the fingers. A series of tests carried out by Tschopp in collaboration with colleagues at the Department of Biomedicine yielded similar results. In a strain of mice with a mutation that caused them to develop more than five fingers, muscles and nerves also formed on the extra fingers.

Connections in the spinal cord

The development of muscles and nerves does not in itself mean that the extra fingers are fully functional, however. "It is also important for the brain to be able to control the movement of the extra fingers independently of the original fingers," Tschopp says. In the next set of experiments, therefore, the researchers want to find out how the nerve fibers on the fingers are attached to the central nervous system.

This will involve researchers using a special staining technique to track the course of individual nerve fibers from the fingertips to the spinal cord. "There, all nerve cells that are under the control of the same brain cells and that control individual muscles are clustered together in pools," Tschopp explains. "The question is, do the nerves from the extra fingers join an existing pool or form a new one?" If it is the latter, that is a strong indication that they are controlled independently and that at this level, too, there is no natural limit restricting the number of fingers to five.

The final results of these tests are still pending. However, if the neuromuscular system really can support more than five fingers, it raises the question of why nature has ignored this option up till now. Perhaps the negatives of having more than five fingers and toes outweigh the positives. People with polydactyly in fact usually have their supernumerary body parts removed for cosmetic reasons. ■

Polydactyly in humans

There have always been people with extra fingers or toes. In prehistoric settlements of the Pueblo Indians, American anthropologists have found handprints and skeletons with six fingers, as well as the remains of sandals with room for six toes. Polydactyly is not a rare phenomenon today, either. "It is the most common congenital limb anomaly in humans," Dr. Isabel Filges, Medical Director of Medical Genetics at University Hospital Basel, explains. The incidence of polydactyly is highest in Africa. In Switzerland, Filges estimates that the prevalence is between around one in 1,000 and one in 2,000, but no precise record of the condition is kept.

The supernumerary fingers or toes can also take a wide variety of forms. "Sometimes they are just small soft tissue appendages, but there are also patients with fully formed fingers," Filges observes. Polydactyly is usually hereditary and affects more men than women. Although some of the genes responsible have been identified, the complex genetic mechanisms of limb development are still not elucidated yet, according to Filges. Generally, when polydactyly occurs as an isolated finding – that is to say, when those affected are otherwise healthy – no genetic testing is carried out in clinical practice. However, sometimes malformation of the fingers is part of a syndrome and is associated with other developmental problems. For these patients, staff at University Hospital Basel's medical genetics department can carry out chromosomal testing or specific gene analysis, if indicated. Medical doctors can then advise the families concerning the implications for their child and the possible risk of recurrence.

Living in the human body.

Text: Katrin Bühler

Trillions of bacteria, fungi and viruses live in our bodies. Most of them go unnoticed but influence us throughout our lives. When this community – known as the microbiome – becomes out of balance, illness can ensue.

Urs Jenal is Professor of Molecular Microbiology at the University of Basel's Biozentrum. His research focuses on the development of microbial communities called biofilms and their role in chronic infections.

Human beings are largely dependent on microscopic residents within their body. Our skin, mucous membranes, teeth and intestines are teeming with bacteria, viruses and fungi. Our bodies host around 100 billion microorganisms in total, compared with around 30 billion human cells. Thus, we may ask ourselves who we are and, if so, how many? We all carry around about two kilos of bacteria, most of which can be found in the intestines: Just one gram of feces contains more bacteria than there are people on earth – around one trillion.

These bodily residents go practically unnoticed in our day-to-day lives. They live in peaceful symbiosis in and on our bodies, helping us to digest food, producing vitamins, and forming a protective shield against pathogens. "In the last few decades, we have learned that intensive communication takes place between microbes and our bodies," says Urs Jenal, Professor of Molecular Microbiology at Basel University's Biozentrum. "A very close relationship has developed throughout human history that benefits us in various ways."

Using food more efficiently

For example, we need the intestinal flora to break down plant material, something our bodies cannot do. Our microbiome provides us with around 300 times as many genes as we carry in our genetic make-up. This expands our toolbox of enzymes enormously. The more enzymes we have, the more efficiently we can use our food. Overall, intestinal bacteria perform more metabolic reactions than the human liver. Jenal comments: "Around 30 percent of the metabolic products in our blood seem to stem from our little companions."

Numerous studies show that our microbiome has a large influence on our health and wellbeing, for example by training our immune system in early life. With its help, our immune system learns to recognize things that are harmless and not to fight the developing microbiota as if they were foreign bodies. If specific microbes are lacking during a certain stage of development or if the microbiome changes, the immune system can quickly overreact. This can cause allergies and asthma as well as autoimmune diseases. More recent studies even point to a link between the intestinal flora and mental illnesses such as depression.

Modern lifestyles are not exactly conducive to a healthy microbiome. "By consuming unhealthy foods, we disrupt the fine balance in our intestinal flora," says Jenal. "In the case of obese people, for example, the intestinal flora changes in composition and becomes significantly less diverse. If you transfer

the microbiome of an obese mouse to a mouse of normal weight, it will also become fat unless its diet is changed."

Loss of diversity

Around 1,000 to 1,400 different types of bacteria live in our digestive system, some of which are pathogenic. The overall bacterial population keeps these in check by successfully fighting them for resources. However, loss of diversity weakens the protective shield against pathogens, which can then gain the upper hand and overrun the healthy intestinal flora. These shifts, known as dysbiosis, can lead to diarrhea, stomach pains, and chronic inflammation of the intestines.

Sometimes problems are caused by members of the normal intestinal bacteria such as *Clostridium difficile*. "If antibiotic treatment changes the composition of the microbiome, it creates particularly favorable conditions for these bacteria to multiply and fulfill their pathogenic potential," explains Jenal. "This largely affects hospitalized patients. Sometimes fecal transplantation is the only solution. Apparently, some Swiss hospitals are already using this therapy with success."

It has been clear for some time that bacterial diversity in the intestine is decreasing. It is possible that we are in the process of shifting the balance by reducing the microbiome diversity that humans have acquired over half a million years. This theory is reinforced by the fact that indigenous peoples such as the Yanomami of South America have a much higher diversity than people with a "modern" lifestyle. "Many people believe that diversity is declining because people today are growing up in overly sterile environments. We no longer have sufficient contact with dirt and are therefore failing to gather enough important microorganisms. Excessive hygiene may thus be part of the problem."

Generally a harmonious symbiosis: gut bacteria E.coli under the scanning electron microscope.

Individual intestinal flora differs

The theory of the "disappearing microbiome" suggests that our modern lifestyle – and not least medical advances – contribute to the decline in diversity. More and more babies are being delivered by Caesarean section and fewer mothers are breastfeeding. This impairs a mother's ability to pass on the microbiome to her child, a process that appears to be very important. "The risk of contracting asthma later in life seems to depend, among other things, on which types of bacteria colonize the intestine in the first twelve months of life," says Jenal. "Taking antibiotics in the first year of life can also impair bacterial diversity and thus the child's long-term health." In twin studies, researchers have also established that a person's genetic make-up plays a certain role in the composition of his or her microbiome. Every person has their own specific intestinal flora, a cocktail as individual as a fingerprint.

It really is not so difficult to do something good for your intestinal bacteria. As in so many cases, it's all about healthy living. Exercise and a balanced diet with plenty of vegetables and vegetable fibers will help good bacteria to flourish and diversity to increase. And it's never too late to change your eating habits. After all, the right conditions make community life much more pleasant. ■

"Probing" cells for more efficient cancer diagnostics.

Text: Samuel Schlaefli

The stiffness of tumor cells gives an indication of how a patient's cancer will develop. A start-up company called ARTIDIS takes advantage of this fact by using an atomic force microscope to probe tissue collected from breast cancer patients. A clinical study involving more than 500 patients is being conducted at University Hospital Basel.

Breast cancer is the most common form of cancer in women. A new case is diagnosed every two minutes, and more than half a million women worldwide die from breast cancer every year. If cancer is suspected, a patient will usually undergo a breast biopsy. Histological analysis is, however, labor-intensive and time-consuming. The tissue samples must first be sliced into millimeter-thin sections and then stained before being qualitatively assessed under a microscope. Up to five specialists are involved and results can take two weeks.

"This period of uncertainty is very stressful for patients," says Marija Plodinec, who until recently was a research associate in Professor Roderick Lim's group at the University of Basel's Biozentrum Center for Molecular Life Sciences. "Which is why we wanted to get results to patients faster." After years of research to this end, the group around Lim devised a method for nanomechanical analysis of cellular tissue. "This allows us to largely automate tumor analysis and to determine in as little as three hours whether a tumor is benign or malignant," she says. The method is being trialed at University Hospital Basel and may soon find its way into hospitals all over the world.

Atomic force microscopy for biology

In a small laboratory at the Biozentrum, Plodinec provides an insight into the potential future of cancer diagnostics: At the core of the technology is a hinged white case the size of a moving box – an atomic force microscope. This instrument makes it possible to analyze the surface texture of materials at the nanometer scale. Such microscopes are commonly found in chemical or physical laboratories, whereas they are more than unusual in a biology context. Next to the machine, a researcher prepares a 2 mm by 1 cm specimen for analysis: a tissue sample freshly collected at the University Hospital from a patient with suspected breast lesion.

As soon as the researcher initiates the examination, a so-called cantilever, a tiny arm which is housed inside the case with a metal tip just 20 nanometers across, starts to mechanically probe the breast tissue. The tip has a constant force of 1.8 nanonewtons acting on it. A laser beam measures how much the cantilever bends as it passes over the sample. After 10,000 measurements along a predefined raster scan pattern, the results are displayed on four screens beside the analysis device, taking the form of various colored lines on a histogram. Normal tissue and benign tumors are relatively stiff, which translates into a steep curve with a characteristic single peak. By contrast, malignant tumor tissue is heterogeneous and less stiff; the resulting curve is noticeably shallower.

Today, we know that the softer cancer cells are, the easier it is for them to spread through other tissue, form metastases, and attack the body. "That's why the stiffness of breast tissue is an indicator of how likely a cancer is to metastasize," Plodinec explains. She adds that this is crucial because more than 90 percent of cancer-related deaths are caused not by primary tumors, but by metastases. "However, only a small proportion of cancer cells actually form metastases, so we want to identify them."

Exploiting the clinical potential

In 2012, Marija Plodinec and colleagues first presented their breast cancer diagnostics platform in the specialist journal *Nature Nanotechnology*. The innovation consists of an adapted atomic force microscope (AFM), a specifically designed analysis methodology, and data analysis software. She immediately recognized the clinical potential of the system. "AFM technology is actually quite complex and

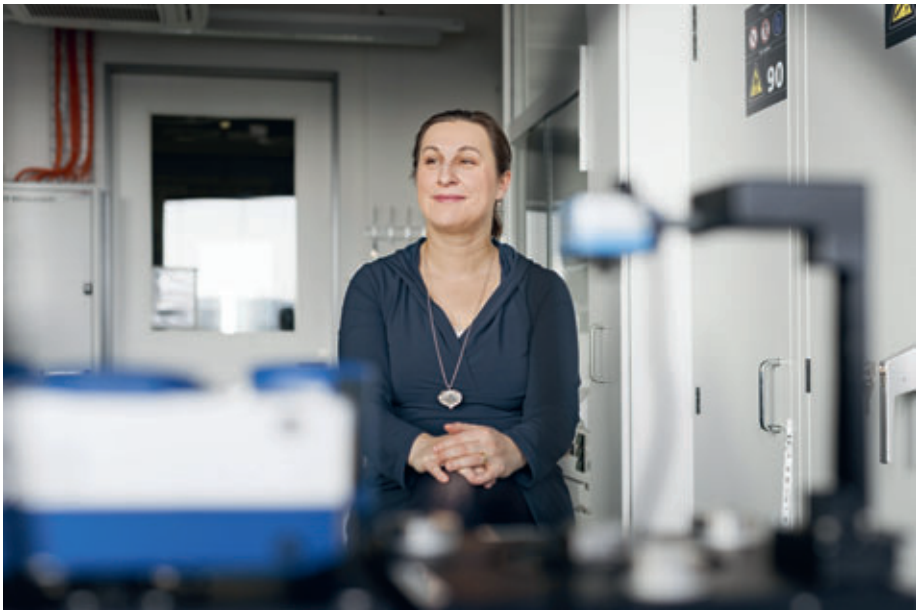
demands specialist expertise. Also, scans would sometimes take over nine hours, which wouldn't have been practicable for hospitals." Much has happened since then. Today, Marija Plodinec is CEO of ARTIDIS, a University of Basel spin-off which is currently developing the technology to make it market-ready. The company already has ten employees, who work in a laboratory and three offices housed in the technology park at the Stücki site. ARTIDIS has maintained its close collaboration with the University of Basel's Biozentrum.

Clinical implementation of the first prototype is already taking place: Hospitals in the USA, Germany, Britain, Croatia and Switzerland are testing the diagnostics platform for research purposes. In parallel, a clinical trial involving 508 patients is currently underway at University Hospital Basel and scheduled to conclude at the end of 2018. "It's actually a world first," says a visibly proud Plodinec. As part of the study, the same biopsy samples are analyzed both histologically and using the ARTIDIS atomic force microscope. The two sets of results are then compared. No additional biopsy material is needed, because nanomechanical probing leaves tissue intact. Plodinec regards the close collaboration with the University Hospital and Dr. Burian, a principal investigator on the clinical study, as a boon: "We had the great advantage of being able to carry out experiments in a real-life setting at a very early stage. The feedback we received from doctors was invaluable in improving the technology."

Breast cancer diagnostics is only the beginning

In the long run, ARTIDIS aims to establish new uses for nanomechanical analysis also in areas other than breast cancer diagnostics. Most recently, in collaboration with Roche, the atomic force microscope was employed in a study unravelling the new mechanism in age-related macular degeneration, the leading cause of visual impairment in old age. In addition, the technology will eventually be used not only to diagnose cancer, but also to monitor its treatment. Marija Plodinec is convinced that meaningful quantitative analysis can significantly optimize and improve the success rates of treatment, as well as help cut oncology costs. "It's still common for patients to be either overtreated or undertreated," she says. "Chemotherapy is being used needlessly, causing catastrophic side effects in patients; or it is initiated too late, with equally disastrous consequences."

Whether mechanical probing of cancer cells will become common practice in hospitals depends on many factors: Whether the statutory health insurance organizations approve and agree to fund the method, as well as on the acceptance by clinicians. The launch of the next generation of ARTIDIS devices for the biomedical research market is planned for spring 2019. At the same time, multinational trials will be launched in Europe and the US that will hopefully bring this exciting technology to everyday clinical practice. ■



As a researcher, Dr. Marija Plodinec has developed an analytical method for cancer diagnostics. As an entrepreneur, she now wants to bring the tool to market.

Media Studies

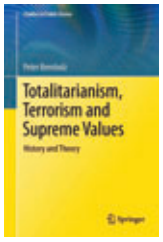
Ferdinand Hodler on the silver screen.

Even in the field of Cultural Studies, there is still scope for surprising discoveries: The influential Swiss painter Ferdinand Hodler (1853–1918) was caught on film as he visited the Swiss Village at the Exposition Nationale in May 1896. This rare find was uncovered by a Media Studies research group and the Digital Humanities Lab at the University of Basel. Dr. Hansmartin Siegrist and his research team conducted a microanalysis of the oldest conserved film reel of Basel from 1896 while researching the early work of the film pioneer François-Henri Lavanchy-Clarke. Lavanchy-Clarke was the first person outside of France to hold a license for the Lumière brothers' cinematograph. He also ran a pavilion at the State Exhibition which, as well as showcasing Sunlight products manufactured by the English 'soap king' William H. Lever, and coffee produced by the Basel Mission Trading Company, also functioned as Switzerland's first temporary cinema. Lavanchy-Clarke opened the doors of this *Palais des fées* on the same evening as the opening of the State Exhibition of Swiss Art. Hodler had won the competition to paint 26 panels for the entrances and the facade of the Pavillon des Beaux-Arts, and was therefore one of the most celebrated artists at the State Exhibition. Lavanchy-Clarke's films were used to advertise the State Exhibition across Switzerland. Following in-depth analysis of the film material and extensive visits to a specialist archive of artists, the researchers were able to identify many of Hodler's colleagues. In addition to the more typical archival research, the team also employed methods involving the overlaying of photographs with physiometric data. ■

Biology

Fungus-ridden ants.

Ants of various species who live in meadows on the Swiss-German border near Riehen and Basel are falling victim to a mysterious fungus. As researchers of the Section of Conservation Biology at the University of Basel report, the fungus *Myrmicinosporidium durum* first infects an ant's abdomen, then spreads to other parts of its body and its head. Ultimately, the fungus kills the ant. So far, very little is known about the fungal infection. It was first described in 1927 when it was observed in an ant species near Würzburg; later, evidence of the fungus was also found in other countries, mostly in the Mediterranean region. In the Basel area, the disease affects several ant species, some of them coexisting on the same meadow. Worst affected is the Yellow Thief Ant *Solenopsis fugax,* which not only feeds on small soil life and disposes of cadavers, but also invades other ant species' colonies, stealing their eggs, larvae and pupae. The miniscule worker ants are highly aggressive and use chemical substances as a deterrent. It is yet unknown how the ants become infected with the fungus. One hypothesis is that infected Thief Ants might be carrying the fungus to other species on their forays into other ant colonies. The researchers are planning to conduct experiments to clarify the path of infection. It is also important to know to which extent the fungal disease impairs the ants' function within the ecosystem. ■



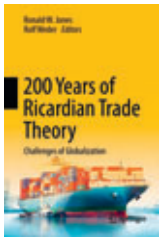
Totalitarian Regimes

Modeling the evolution of ideocracies.

Totalitarian regimes are ideocracies in pursuit of supreme and absolute values, and willing to sacrifice everything to achieve these aims. Based on a fascinating range of historical cases of such regimes from the Aztecs through to the so-called Islamic State, this book applies a formal, mathematical model of totalitarianism to highlight certain commonalities. Whereas the ideologies themselves differ widely in the nature of their aims, the author demonstrates that totalitarian regimes all develop out of circumstances of crisis and depend on a charismatic leader. The author extends his dynamic theory of how ideocracies evolve to explain the connections between totalitarian regimes, terrorism and modern media.

Peter Bernholz has been Professor of Economics at the University of Basel since 1971. Now an emeritus professor, his research focuses on economic history, experimental economics and financial economics. This latest work applies a unique political economic perspective to an historical study of totalitarianism. ■

Peter Bernholz: Totalitarianism, Terrorism and Supreme Values. History and Theory
Springer, Cham 2017
160 pages, CHF 101



Globalization

Examining Ricardian trade theory.

Inspired by the 2017 conference on Ricardian trade theory, this book provides a rich and broad account of British political economist David Ricardo's enduring concept of international trade. Since Ricardo first published *On Foreign Trade* in 1817, his central premise of comparative advantage and that "not all markets are global" remains essentially unchallenged 200 years later. Undergraduate and graduate students, in particular, will find in this book all there is to know about Ricardian trade theory, including insights from leading experts on international trade theory. To underline the lasting relevance of Ricardo's thinking, the final section addresses challenges facing globalization and trade today.

Rolf Weder, who co-edited this book, is Professor of International Trade and European Integration at the University of Basel's Faculty of Business and Economics. He has published several academic articles and books on subjects including international economics, European integration and Swiss economic policy. ■

Ronald W. Jones, Rolf Weder (Eds.): 200 Years of Ricardian Trade Theory. Challenges of Globalization
Springer, Cham 2017
268 pages, CHF 126.50

James Joyce

Musical structure in literature.

This ground-breaking study by Michelle Witen examines with extraordinary insight Joyce's claim of having structured the "Sirens" episode of *Ulysses* as a *fuga per canonem*. She begins by tracing the rise of 19th-century absolute (non-referential) music, placing this alongside Joyce's early works (essays, poems, *Dubliners, Portrait of the Artist as a Young Man)* to show his shifting engagement with musical forms. Witen shows that Joyce had the musical background and knowledge to expertly deploy the highly-contested fugal structure in "Sirens." She demonstrates his purposeful structuring of "Sirens" as a double fugue, as demonstrated by his drafting process, while also incorporating the effects of a fugue — the inseparability of structure and effect being an important consideration in absolute music. The book concludes with an analysis of the "pure music" of Joyce's final work, *Finnegans Wake*.

Michelle Witen is a senior lecturer at the University of Basel's English Department. She is currently writing on 19th-century periodicals and serialization processes. ■

Michelle Witen: James Joyce and Absolute Music,
Bloomsbury Academic,
London 2018
320 pages, GBP 84.99

Cinema and Cybernetics

A cultural technique of trance revealed.

Watching a film is often a transformative experience. This book examines the ability of cinema to unconsciously shift our perceptions as a type of cultural trance technique. In a unique approach ingeniously combining cinema, psychology, cybernetics and anthropology, Ute Holl takes the reader from anthropological and experimental cinema through to 19th-century psycho-physiological laboratories to show how cinema is used to both control and free the mind. Holl also analyzes three key areas of experimental and anthropological filmmaking.

Ute Holl, Professor of Media Aesthetics at the University of Basel since 2009, worked as a filmmaker and commissioning editor in Hamburg, Germany, before completing her doctorate on cinematic perception, anthropological filmmaking and cybernetics. Her research interests include the history of perception in the 19th and 20th centuries; science and technology studies of audiovisual media; a history of acoustics and electro-acoustics; as well as experimental and ethnographic cinema. ■

Ute Holl: Cinema, Trance and Cybernetics
Amsterdam University Press, Amsterdam 2017
352 Pages, USD 105

Left out and excluded.

It is painful when other people exclude you. Especially when you don't know why.

Text: Rainer Greifeneder and Selma Rudert

Rainer Greifeneder has been Professor of Social Psychology at the University of Basel since 2012. He studied social and economic psychology in Mannheim and at the University of Virginia (USA).

It is painful to be excluded. Regardless of whether the person who does so is a friend or an enemy, or whether the exclusion is real or imagined, it always hurts when you are shut out, just as it always hurts when you put your hand into a fire. In the literature, it is likened to a reflex. Although social exclusion does no harm to the body, it activates the same areas of the brain as physical pain. Most people report that they have been ostracized and excluded at some point – in the school playground, for example, or at work. Some even report being left out on a regular basis. This has negative consequences both for those who are being excluded and for the groups that are excluding them. To take an extreme example, the majority of young people who carry out shootings at schools do so following long periods of marginalization. Companies, too, can be harmed if excluded individuals are less motivated, develop symptoms of depression or start to behave in ways that are damaging to business.

Why do we experience social exclusion as painful? People have a basic human need to belong. From an evolutionary perspective, groups provided protection and allowed for the sharing of work and knowledge. If you belonged to a group, you were more likely to survive and prosper; left to fend for yourself, you could expect your life to be hard and – often – short. According to scholars, this explains why people are extremely sensitive to signs of impending social exclusion. The feelings of danger and pain that an individual experiences provide a warning, signaling the urgent need to act. Interestingly, we do not need to be actively excluded to have these feelings; we also feel pain when we are ignored by others, or even when we only think that we are being ignored.

There are many reasons for social exclusion. Many people assume that it is motivated by malice; they think, for example, of bullying at school. Some think of the perpetrators as sadistic individuals, who take pleasure in the pain of those they have excluded. A second kind of social exclusion has nobler motivations, from the point of view of those doing the excluding. Groups, institutions and societies are themselves exposed to dangers that threaten their survival, so they use shared norms and laws to ensure that their members are able to co-exist harmoniously and effectively. Social exclusion is used today, as in the past, to punish failure to observe these common rules and thereby to ensure that the group's survival is not threatened. This is the case both in large groups and in the very smallest units – for example, when parents send a child to his or her room for throwing food around.

A third very common reason for social exclusion is to do with social roles and hierarchies. For example, the President's Conference at the University of Basel is restricted to members of the President's Board and the deans, while all other members of the university are excluded. Generally, people do not find this type of social exclusion hurtful, as it is justified by the role of those concerned within the organization. In the same way, the management of a company does not generally find it hurtful to be excluded from meetings of the works council. What

is interesting about role-related exclusion is that the excluded individuals feel no pain, even though they have, in fact, been left out. This is where the analogy with putting your hand in a fire breaks down. Social pain is indeed different from physical pain because people have no direct receptors for social exclusion; rather, they have to construct each individual situation in their heads. This construction is influenced by other ideas – for example, identification with certain social roles – which prevents the experience of pain.

A fourth reason for social exclusion is ignorance – of a person's existence or abilities, for instance. A temp working at a company may not be invited to a barbecue because the organizers are unaware of their existence; information exchanged in the corridor may not reach a colleague who is working from home; a French-speaking member of staff may feel left out at lunch because her two Bernese colleagues have lapsed into dialect without thinking. Although this fourth form of exclusion is generally unintentional, the ironic thing is that it is particularly hurtful; someone who is being ignored feels invisible and, therefore, that their very existence is being called into question. Against this background, studies show that an impolite rejection is preferable to none at all, for example, as an impolite rejection at least acknowledges your existence as a person and gives you a chance to vent your anger. If you do not receive a rejection, it signals that even this was too much effort in your case.

The key factor in determining the stance of third parties is which of these reasons they see as applying in a particular situation. If they believe that someone's exclusion is motivated by malice, observers will sympathize with the excluded person and want to help them. If, on the other hand, they see exclusion as prompted by a desire to uphold social rules, observers will sympathize with those doing the excluding and withhold support from the excluded person. However, the reasons for social exclusion are seldom that clear-cut. In many everyday situations, observers do not know the reasons for social exclusion, as they may not have been present to witness all that happened, for instance. In such cases, there is a simple rule that often determines who attracts their sympathy and support. If the victim and the perpetrator are similar – for example, in appearance – people will assume that exclusion is being imposed as a punishment. Yet, where there are differences between victim and perpetrator, there will be an assumption of malicious intent.

Anyone who excludes others deliberately should be aware of how much it can hurt. It is particularly important for those, such as parents, who do it in the belief that they are acting in the group's best interests to realize this. Children, like adults, find it painful to be sent to "their room" or ignored. It is also a good idea to be aware of the consequences of unintentional exclusion and to take steps to prevent it. Organizations can make a key contribution in this regard by having a transparent information policy and culture, both internally and externally. ■

Selma Rudert has a PhD in psychology and is a postdoc and research associate in social psychology at the University of Basel.

"Someone who is being ignored feels invisible and, therefore, that their very existence is being called into question."

Rainer Greifeneder and Selma Rudert

Text: Irène Dietschi Photo: Andreas Zimmermann

Research for the benefit of the patient.

Following her talk at the conference on the impact of immunotherapies on clinical cancer research, Professor Hess gave a quick interview during which, it would be fair to say, she certainly did not mince her words. According to Hess, the study designs to test these new active agents are very heavily geared toward industry. Too little consideration is given to the opinions of physicians and patients. Hess continues: "For us as doctors, it is becoming increasingly difficult to treat all patients according to the same standards and to make drugs universally available. The system is often arbitrary and unfair." An audible murmur rippled through the audience. They had certainly not anticipated such frankness.

Insurmountable problems every day

"That's just my way," says Hess later with a laugh: "I don't always find it productive to adapt to the norm." We interviewed Professor Hess in the modest office she shares with her colleagues on the 8th floor of the Oncology Clinic at University Hospital Basel. Hess is Head of Clinical Cancer Research and her work focuses primarily on gastrointestinal tract cancers. She emphasizes that research is a key component of oncology: "Every day we are faced with problems that we simply cannot solve."

Professor Hess is dressed elegantly and wears a small string instrument pendant around her neck. "It's a cello," she explains in her broad Zürich accent, "my second passion after medicine." All her children also play instruments, not the cello, but at least one of her daughters plays the viola – and that's close enough, says Hess with a smile.

In our day-to-day clinical work in oncology, says Hess folding her hands together, we face all manner of difficult situations quite unrelated to standards and guidelines: "For the patient, it is about finding a path that is right for them, one that takes their individual situation into consideration." As well as applying her clinical expertise, being able to listen attentively and take account of the individual patient is what makes her job so fascinating, Professor Hess explains. What about the idea that oncologists could be replaced by computers making diagnoses and suggesting the optimal form of therapy? Hess shakes her head and laughs. Until now, a computer certainly hasn't managed to do that.

Early ambition: pediatrics

Professor Hess had not originally planned to go into oncology. Now a mother of four, she had actually wanted to be a pediatrician. She spent the first two years of her studies in Lausanne rather than Zürich. She discovered only later that she would have to sit oral exams in French but it all went smoothly. She met her future husband while studying medicine in Zürich – they connected through music, both being cellists. Together, they then moved to Basel as a medical "dual-career couple".

For a number of months, Hess worked in the pediatric emergency department. She had her eye on a residency at the pediatric hospital, she tells us. However, she realized through her work in the emergency department that "in acute care, doctors frequently have to poke needles into children or 'torment' them in other ways. And the time spent with the children tends to be brief – I just didn't find that fulfilling." She had actually only intended to try her hand at oncology but then the discipline drew her in completely.

What Professor Hess finds particularly appealing about oncology is that it is evidence based. In fact, it was one of the first branches of medicine to introduce this principle: "Some of the drugs we administer are so toxic that you have to be certain whether new active agents compared with controls are really going to make a difference." The meticulous way of thinking, the exact measurements, the need to use studies to generate knowledge that is as precise as possible – all of this appealed to her nature: "Admittedly, the human organism is very complex and we can't control for all conditions in one trial, but," says Hess, and pauses, "just because something is complex does not mean we should not examine it as carefully as possible. The more accurate the results, the better we can apply these findings to individual patients."

Lack of "fine-tuning"

Yet it is precisely these types of application that can and in fact should go beyond the evidence. This becomes crystal clear when we look at new active agents such as immunotherapy: "These drugs work in a completely different way to chemotherapies – at the moment we really can't predict with any confidence who will benefit from them and who will not." The biggest problems are the side effects. Ideally, the stimulated immune system will destroy the tumor cells but sometimes it then starts to attack the healthy tissue. "We still need a great deal of research in this area," says Hess. And that's exactly where today's system falls short: "Until the drugs are launched on the market, the pharmaceutical companies test the active agents on cancer patients who are otherwise healthy." However, the possible effects of a drug on someone with multiple

With the apparent ease of a concert soloist, Viviane Hess has advanced up the ranks to become an exceptional oncologist. Professor of Medicine, Hess holds several senior positions including Head of Clinical Cancer Research at University Hospital Basel. She is not afraid to criticize the system in which she has pursued her career.

Viviane Hess

Born in 1971, Viviane Hess is an honorary professor at the University of Basel, senior physician in oncology, and Head of Clinical Cancer Research at University Hospital Basel. She completed her professional training at various institutions of higher education including Harvard Medical School in Boston and The Royal Marsden Hospital in London. Alongside her clinical work and research activities, she is also dedicated to supporting the development of young doctors. Professor Hess is married to Professor Christoph Hess, Head of Outpatient Internal Medicine at University Hospital Basel. The couple have four children: two girls and two boys, aged from 8 to 15 years.

health issues or on older patients, for instance, or the response of other subgroups – this "fine-tuning" is something the market pays far too little attention to.

As well research collaboration with companies, Hess has her own projects. Her focus is on using non-pharmaceutical interventions to improve the effect of drugs. She has, for example, developed a web-based program to help cancer patients better manage stress. She currently leads a large multi-center study looking into whether patients with colorectal cancer tolerate chemotherapy better if they undergo physiotherapy at the same time.

Research also enabled Hess to combine her family life and her career. "Thanks to a research professorship, I had quite a lot of freedom," she explains "and I also shared my clinical posts with colleagues." However, Hess still rejects the notion that she is a role model for women balancing a career with family. She is also critical of how the medical career path is structured. She claims the system is often not very progressive or flexible, and this applies to both women and men: "At university, you have to learn by rote until you can't take anymore; during your residency, you have to dedicate yourself to clinical work until you collapse, then you need to research and publish as much as you can. Then, once you reach the top and become a professor, you are required, first and foremost, to have management and political skills." As a result, the system causes many talented people – of both genders – to leave, says Hess. Here too she speaks with her characteristic frankness. ■

Alumna at work: Salome Preiswerk

Innovative lawyer in the investment business.

Text: Bettina Volz-Tobler

Salome Preiswerk

Salome Preiswerk studied law in Basel and worked as a strategic consultant for banks after graduation. In 2014, she founded her own company, Whitebox, with the aim of revolutionizing private asset management using the latest IT technology tailored to meet customer needs. Within just a short time, Whitebox became one of Europe's leading companies in this sector.

UNI NOVA: You studied law and now work in digital asset management. How did that happen?

SALOME PREISWERK: I don't see it as a break, but more as an evolution – and I had a few other jobs in between. In fact, my legal "career" ended on the last day of my studies. I then moved straight into management consultancy. Law students don't all have to end up as attorneys or judges; you find them in different areas of business. My subsequent move into digital financial services was really a transition, aided by my consultancy experience and my basic legal grounding.

UNI NOVA: You are considered a "digital pioneer" in specialist financial circles. What exactly does your service entail?

SALOME PREISWERK: My service offers high-quality asset management, but in digital format. This means it's no longer reserved for a small, elite group, but is open to anyone able to invest at least CHF 5,000. The service is committed to ambitious portfolio management, packaged in a simple and intuitive user experience, and underpinned by a fair and transparent business model – at a very reasonable price. And it shows that asset management can be fun.

UNI NOVA: What was it that gave you the push to become self-employed?

SALOME PREISWERK: To my parents' alarm, I knew from a young age that I wanted to work for myself. Admittedly, my early "business models" were rather crude, but it was only a matter of time.

UNI NOVA: You studied at the University of Basel and have travelled the world. What would you say were the particular advantages of your degree course? How do you feel about Basel University today?

SALOME PREISWERK: I have to admit that today, as during my studies, I tend to view the university from the outside … I studied before the Bologna system was introduced and don't regret it – regardless of general doubts at the time about the reforms. My studies gave me the opportunity to gain important professional experience, pursue my passion for sport, and enjoy my life too. I'm sure that Basel University is much more modern now. For example, I think it's good that the university pays more attention to its public image and has an alumni organization. ■

Department of Sport, Exercise and Health

Exclusive tour of a TV studio.

Text: Urs Jehle, President, Alumni & Alumnae DSBG

An alumni association for the Department of Sport, Exercise and Health (DSBG) was officially launched eight years ago, making it AlumniBasel's first faculty-specific group. Recently, members enjoyed a visit to the Schweizer Fernsehen television station.

In 2010, following the amendment of the AlumniBasel statutes, the alumni association of the Department of Sport, Exercise and Health (AlumniDSBG) became the first official faculty-specific alumni group. From the outset, it was important that the alumni board be closely connected to the department. Thanks to the efforts of general manager Dr. Martina Dittler and the active support of the department management led by Professor Uwe Pühse and Professor Lukas Zahner, the board was soon ready to start its work.

Podiums, events, lectures

AlumniDSBG has been offering a range of activities ever since. Together with the department management, it has developed an attractive alumni program with podium discussions, visits, networking events and lectures. The alumni organization is always represented at graduation ceremonies, which provide a unique opportunity to build bridges between students and alumni.

At the end of 2017, the organization held a very special event: Following a welcome reception, more than 60 alumni and current students from the Department of Sport, Exercise and Health enjoyed guided tours of the Schweizer Fernsehen studios given by a team of station employees. Home to programs such as "Tagesschau", "10 vor 10", "Arena", "Club", and "Kulturplatz", the TV studios proved both surprisingly simple and impressively technical. The tours provided insights into how direction, recording, and technology work together – and gave the visitors a chance to have some fun with the teleprompter.

Sporting legends

The highlight of the visit was being part of the audience for a very special edition of "Sportpanorama" as it bid farewell to Matthias Hüppi. Statements from top athletes and former colleagues celebrated the work of the popular presenter, who has worked for SRF for 38 years. Finally, some surprise guests arrived in the studio – sporting legends Bernhard Russi, Jörg Abderhalden and Alain Sutter.

The organizers could not have wished for a more exclusive event – sometimes, all that hard work needs an extra dose of luck … In this case, the AlumniDSBG board were amply rewarded for their efforts. And they can't wait to arrange more activities in the future! ■

dsbg.unibas.ch/de/departement/alumni

Donations

Basel showcase in Luxor.

The spectacular objects discovered in Egypt's Valley of the Kings by a Basel University research team led by archaeologist Professor Susanne Bickel are now on show to the general public. At the end of 2017, an appeal for donations went out to alumni to display the highlights of the Basel excavations in an attractive case in the Luxor Museum. After just a short time, around CHF 10,000 had been collected. In 2014, AlumniBasel donated around CHF 30,000 for a new project website and to enable student assistants to participate in excavations. ■

Hiking

A weekend in Davos.

The AlumniBasel hiking weekend has become a popular event with all generations and across all faculties. For the fourth hiking weekend on July 21 and 22, 2018, members will be heading off to the Davos area – a great opportunity to establish valuable contacts in a relaxed atmosphere and get to know interesting alumni.

This project was launched in 2015 in collaboration with the Academic Alpine Club at the University of Basel. ■

Project Bifertenhütte

Help wanted.

Great progress has been made in renovating the Academic Alpine Club's Bifertenhütte mountain hut above Brigels in Graubünden, a project supported by AlumniBasel. However, there is still plenty to do and a great many opportunities to lend a hand. If you have a few days to spare, please contact the club directly (081 330 66 80). Donations are also welcome (IBAN CH54 0900 0000 4042 1388 8, "Akademischer Alpenclub Basel"). ■

"Das Narr" literary magazine

Successful Germanists.

The University of Basel would seem to be a magnet for innovative humanities scholars with an entrepreneurial mindset: Back in 2011, years before Corinna Virchow and Mario Kaiser launched their brilliant magazine "Avenue", a group of Basel students set up a novel (and now well-established) literary magazine entitled "Das Narr", or "The Fool". The magazine is run by three Germanists: René Frauchiger, Daniel Kissling (now an alumnus) and Lukas Gloor, who is currently completing his doctorate on the literature of Robert Walser.

"Das Narr" has become one of Switzerland's most important literary magazines, and its reputation is growing in the rest of the German-speaking world. The past 24 issues have featured works by over 100 authors – many of them published for the first time. Adam Schwarz and Jan Müller, both alumni of the Department of German, joined the editorial team two years ago.

One striking feature of the magazine is its publishers' willingness to experiment: Every year, stand-alone book projects are published in elaborately designed special editions that experiment with new literature and take it to the public, for example a Basel travel guide with a difference and, recently, Groschenhefte (dime novels). The publishers also independently arrange regular readings and collaborate with literary institutions and festivals. In 2016, the magazine received the Canton of Solothurn's prize for literature. Innovation isn't always about nuts and bolts or even algorithms and bits – even purely cultural products can be innovative and successful. Just like life sciences researchers, Germanists are helping to boost the University of Basel's reputation. ■

Experimental publishers (from left): Adam Schwarz, Mirko Leuenberger (graphic), René Frauchiger, Lukas Gloor, David Lüthi (graphic), Daniel Kissling. Not shown: Jan Müller.

Letter from Johannesburg

On the trail of apartheid.

Franziska Rüedi is a historian and postdoc at the University of the Witwatersrand in Johannesburg. A grant from the Swiss National Science Foundation has enabled her to research the relationship between the content, development and spread of rumors and politically motivated violence during the transition to democracy in South Africa.

I have been interested in history ever since I was a child and first visited South Africa at the age of 18. This made my choice of degree subject very easy, and in 2001, I began to study African history in Basel. Professor Patrick Harries, who also came here from South Africa, became one of my most important mentors. Like many other students, I benefited from his lively and fascinating lectures and seminars. So I was delighted to get an assistant's position in his department after completing my master's. My work as a lecturer taught me a lot about day-to-day work at the university.

After a year, I moved to England to begin doctoral research at Oxford University on political uprisings in South Africa in the 1980s. My time in the "city of dreaming spires" was intense and extremely rewarding. Before long, I thought nothing of evening meals taken wearing robes in the college's medieval dining hall – although I never really understood the Latin prayers. I regularly flew to South Africa to collect data on research trips lasting several months. After my doctorate, I left chilly northern Europe behind and moved to Johannesburg. This city is the complete opposite of Basel and Oxford: chaotic, huge, and constantly changing.

My work here at the University of the Witwatersrand is very varied. I'm constantly meeting people and encountering content that cause me to rethink my view of the world. For example, oral interviews with former freedom fighters describing the period of resistance against the apartheid regime provide insights into the oppression and daily violence that characterized the apartheid era. Although South Africa became a democratic country with a majority-rule government back in 1994, the legacy of apartheid makes itself felt every day. For most of the population, poverty and inequality remain a part of life. I continue to visit Basel on a regular basis and enjoy being able to use my in-depth knowledge of Africa in uniting these very different worlds. ■

Historian Franziska Rüedi conducts research into the oppression and daily violence of the apartheid era.

Andrea Bieler has been Professor of Practical Theology at the University of Basel since 2017. In her research and teaching, she focuses on religious interpretations of vulnerability, collective traumatization and the practice of memory, empathy and conflict resolution, migration and xenophobia, and constructions of sickness, health and ageing.

Photo: Andreas Zimmermann

Andrea Bieler

"Beloved" by Toni Morrison: The Ghosts of the Past.

"The novel reveals the price to be paid for confronting wounds that will never heal and remembering nightmares."

I spent twelve years of my life working as a theologian in the USA. A pressing issue at the time was the impact of slavery on the present day and how this violent history of human rights abuse continues to shape educational institutions, social relations, economic conditions and religions. Toni Morrison's *Beloved* (1987; published in German as *Menschenkind*) is a key literary text dealing with the question of how the ghosts of the past still haunt the present.

The novel opens at 124 Bluestone Road, Cincinnati, shortly after the Civil War. Sethe, a former slave, is living there with her daughter Denver. Her house, once the beating heart of the neighborhood's black community, is now haunted by the ghost of Sethe's first-born daughter, who drives out every living thing and turns Sethe's own existence into a living death. When an old acquaintance, Paul D., turns up to see Sethe, a flood of memories is unleashed. Twenty years earlier, while heavily pregnant, Sethe had run away from the plantation on which she was being forced to work as a slave. While on the run, she had lost her husband and other companions, giving birth to her daughter, Denver, with the help of a young white girl. When tracked down by her old master, who wanted to "get his property back", she had decided to kill her children to save them from a life of slavery.

At first Paul D. manages to drive out the ghost, and for a while peace is restored. Later, however, the two of them meet a girl who introduces herself as Beloved, the name that Sethe had had inscribed on her daughter's gravestone. Beloved does not know her own history. Together, the four of them embark on a life dominated by power struggles, betrayal, and the search for closeness, in which their obsessive efforts to achieve understanding ultimately fall short: "Anything dead coming back to life hurts." This impressive novel reveals the price to be paid for confronting wounds that will never heal and remembering nightmares that refuse to be dispelled – when broken-off splinters of a traumatic history come back to life and are reassembled. ■

unibas.ch/aktuell

A selection of events. May–June 2018

May 7–9

Interdisciplinary Conference on Radiophonic Cultures

Radio, which developed over the course of the 20th century into a crucial form of communication, is currently undergoing processes of fundamental reorganization that can be summarized under the general heading "digitalization". The interdisciplinary conference Radiophonic Cultures investigates the history of radio and its sounds as a history of the tensions and interactions among its technical, aesthetic, and political dimensions and thus plumbs the depths of future radio's potentials.

radiophonic-cultures.ch

Museum Tinguely, Paul Sacher-Anlage 2, Basel

May 22, 6.15 pm

The Politics of the Apolitical: Jacob Burckhardt and Heinrich Wölfflin

Lecture by Evonne Levy, Professor of Renaissance and Baroque Art and Architecture at the University of Toronto. Her most recent monograph, *Baroque and the Political Language of Formalism (1844–1945): Burckhardt, Wölfflin, Gurlitt, Brinckmann, Sedlmayr*, shows how political events, political thought, and the political beliefs of art history's protagonists shaped their concepts of the Baroque.

University of Basel, Department of Art History, St. Alban-Graben 8, Basel

May 26, 1–6.30 pm

TEDxBasel 2018

The theme of the 4th annual TEDxBasel conference will be Borders & Frontiers and will feature ten speakers and performers from the fields of Design, Science, Sports, Technology, Leadership and more. Among this year's regional speakers is Prisca Liberali, Assistant Professor at the University of Basel. She will present on her groundbreaking research at the Friedrich Miescher Institute on Organoids and how these self-organized stem cell systems can potentially provide insights into development and diseases as never before. In addition to the live talks, TEDxBasel2018 will feature the initiative Popup Talk that gives conference attendees the opportunity to sign-up to give a short 3 minute Pop-up talk sharing their own ideas. The best talk will be selected by fellow audience members to go onstage to be presented alongside the official roster of TEDxBasel speakers.

For the first time, TEDxBasel is offering a special discounted ticket to those aged 26 and under.

tedxbasel.com

Musical Theater Basel, Feldbergstrasse 151, Basel

May 29, 6 pm

From Syphilis Therapy to Malaria Eradication

Public habilitation lecture by PD Dr. Jörg Möhrle

Alte Universität, Room 201, Rheinsprung 9, Basel

May 30, 6.15 pm

Cultural Marxism

Lecture by art critic and historian Sven Lütticken. Lütticken teaches at the Vrije Universiteit Amsterdam and publishes regularly in journals and magazines such as *New Left Review, Texte fur Kunst, e-flux journal, Grey Room* and *Afterall.* His latest book is entitled *Cultural Revolution: Aesthetic Practice after Autonomy* (2017).

University of Basel, Department of Art History, St. Alban-Graben 8, Basel

June 28, 8.30–5.30 pm

Clinical Research in Resource Limited Settings – Mission Impossible or Role Model for Future Drug Development?

The Swiss TPH Summer Symposium 2018 invites clinical researchers and drug development specialists and students to review and discuss future approaches to drug development. The symposium will cover a wide range of topics including cost explosion of drug development, impact of GCP-guideline amendment 2016, conducting sponsor-investigator trials in Switzerland, the Biotech approach to clinical development, the Pharma view on clinical development, alternative business models and partnerships etc. Registration Deadline: June 25, 2018.

swisstph.ch

Zentrum für Lehre und Forschung, University Hospital Basel, Hebelstrasse 20, Basel

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