

# POLYKUM



## THE END

### IN NEED OF A HAPPY ENDING

On the Orgasm Gap

### HOW TO REACH 0 KELVIN

A New Convention for Temperature

### DAS ENDE EINER GESCHICHTE

Wenn sie nicht gestorben sind...

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the  
SIMPSONS



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MATT GROENING



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vseth

## EDITORIAL

# Fear Not: The World is a Hedgehog!

No, we aren't drunk on mulled wine. The world may be out of joint, but per the very real hedgehog theorem of algebraic topology, the Earth always has a point on its surface where no wind is blowing. So, embrace hedgehogs, take metaphorical and metaphysical shelter from the wind of uncertainty, and allow us to mull endings over into a fine-grained, cinnamon-scented mixture for you.

Concerned about a lack of happy endings in bed? Navya offers incisive analysis of the orgasm gap. Less keen on predictable happy resolutions when it comes to fiction? Sabrina explains the tantalizing effect of withholding the expected. Invested in an unpredictable happy ending for coffee-fueled efforts of determined ETH students? The SSC tells its story; one that is also somewhat comforting for those of you joining this edition's People of ETH in anticipating how the world will end.

And we've even got an explainer of PAKETH: the happy ending to ETH teaching and exams as we know them.

Lisa

P.S. Special thanks for the often moral, sometimes physical, and always creative support of the Institution Polykum goes to Jonas Passweg, Moritz Teichner, Yoel Zimmermann, and Philip Zeiler.

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## Zum Titelbild | The cover photo

Pictured is the Salton Sea, the ever-shrinking, ever-saltier, ever-more-deserted former lake and current site of an environmental catastrophe in California.

Image Credit: Dr. Maria Feofilova

WORD OF THE PRESIDENT

# Join us for Glühwein & new VSETH projects!



Dear Readers

As the days gradually get shorter and a refreshing chill permeates the air, there's an undeniable magic that envelops our campus. The unmistakable aroma of mulled wine wafts through the air, signalling the arrival of a cherished tradition. Have you ever experienced the cosy delights of Nik's Hut? Built by VSETH on the Höggerberg campus, this winter wonderland offers three weeks of warmth, camaraderie and irresistible treats. Imagine sipping punch, tucking into raclette and, of course, the comforting embrace of mulled wine – all at student-friendly prices! Nik's Hut is a haven for mulled wine lovers, an annual pilgrimage not to be missed. Each evening, it is hosted by a different student association or organisation. Check out the full schedule on our Instagram @vseth. If you haven't joined our online community yet, now is the perfect time to do so! Our Instagram isn't just about Nik's Hut; it's your window into the vibrant tapestry of VSETH happenings.

On September 18th, we celebrated the 168th birthday of the ETH. Two people from each student association, the FR and MR Presidents, our dear friends from the GPK, and the VSETH board were invited not only to watch the speeches and to have lunch, but also to present the Golden Owls! The Golden Owl is awarded by VSETH to one lecturer from each of ETH's 16 departments for outstanding teaching. To select the winners, we sent out a survey last May asking students to rate their lectures from the previous two semesters. Based on the results, the student associations selected the winners for their respective departments. I also had the honour of giving a short speech before presenting the Credit Suisse Award for Best Teaching to Prof. Dr. Nicola Zamboni! It was a very intense and interesting day.

Right after ETH-Day, we had a meeting of our Delegates' Council, where we discussed next year's budget and some other important issues. The most interesting was the result of our working group that tried to reform the executive structure of VSETH. The most important change that will come with this reform is the creation of teams for each of the different offices of the VSETH Board. What this means for you is that if you're interested in doing some work for VSETH, but don't want to commit to becoming a board member, you can join one of the teams and just take on some specific tasks! If this sounds like something you'd like to do, don't hesitate to get in touch with me or any of the other board members! We are also looking for board members for next term, so don't hesitate to reach out!

All the best and happy holidays,  
Julia

## HOPO-KOLUMNE

# Brace yourself - change is coming

**Ever heard of PAKETH? Brace yourself, because PAKETH is coming and it will change studying at ETH as we know it.**

PAKETH is an acronym for "Prüfungen und Akademischer Kalender an der ETH" (exams and academic calendar at ETH). PAKETH has the goal to restructure the whole academic year at ETH and change the way we do exams – essentially it is challenging us to rethink everything we know about teaching and studying at ETH. The project was initiated by our rector, Prof. Dr. Günther Dissertori, in the beginning of this year. Over the summer, the primary objectives of PAKETH were established: to forget the idea of long study phases and the daunting big exams at the end of the study phase. The core idea is to instead shift the learning and understanding process from study phases to during the semester itself.

This necessarily raises the question how classes should be taught – a core problem which we anticipate to solve. Instead of packing vast amounts of information into lectures during the semester, the lecturers' focus should lie on promoting understanding of essential concepts, ultimately fulfilling the central dogma: quality instead of quantity. Final exams at the end of the semester or even academic year are anticipated to be replaced by multiple smaller assessments throughout the semester, such as project work, reports, presentations, and midterms. This way of continuous performance assessment allows for the introduction of innovative teaching methods and provides an opportunity to develop soft skills, like giving a great presentation and effective time management.

While final exams will still be a part of our studies, their significance will be reduced. As final exams won't have as much weight anymore, they can start earlier, around two to three weeks after the end of semester. This means that the study phase can be reduced drastically in length – and as a consequence we will get more vacation, around one to two weeks in winter and around eight to ten weeks of vacation in summer.

These are the guiding principles of PAKETH, which were established during this summer. Since October, the detailed planning phase of PAKETH has been ongoing, with a detailed plan set to be presented in early April of next year. Subsequently, an ETH-wide consultation (Vernehmlassung) will start, and, if successful, PAKETH will be implemented starting in the autumn semester of 2026. Essentially, this also

means that we are currently in between two completely different systems of education, in between two completely different ways of conceiving of ETH and teaching. PAKETH is probably the most important project at ETH this decade, as it will shape our future and the future of all next generations of ETH students to come.

## **Now the question arises: how we can use this time in between?**

As VSETH, we strongly support PAKETH, as we see an enormous potential in new teaching formats. And the long summer break would offer students the possibility to rest more or to do internships, which are essential to building up your curriculum vitae. What we see in PAKETH is a promising new system that will improve the mental health of the students and that offers more possibilities for experiences in the real world.

Most other universities already have a system that is close to what we want to reach with PAKETH. If they can do it, why shouldn't we be able to do it as well? Nevertheless, as with all changes, PAKETH also brings great challenges we have to surmount. The main problem will be to control the workload for students during the semester. In addition, we will have to achieve a change in the mentality of our professors. This means that professors will have to be encouraged to revise all their classes and change the way they teach as well as the way they design their exams. As VSETH HoPos, we have seats in all PAKETH working groups and are using this time in between to point out possible problems and solve them. We are in fascinating times for university politics, we have a lot of possibilities to exert our influence, and the stakes are as high.

Do you want to take part in this exciting project and use the time in between to curve the path to a bright new ETH with us?

Write an email to [hopo@vseth.ethz.ch](mailto:hopo@vseth.ethz.ch).

Jana Lea Fuchs  
VSETH

PEOPLE OF ETHZ

# HOW (DO YOU THINK) WILL THE WORLD END?

Even if this question doesn't keep you up at night (right now), a) we might be able to change it, and b) it is interesting to theorize about. We've forced some 8 people to give up their apocalyptic insights for your enjoyment.

by *Sevim Kahya and Lisa Likhacheva*

ETH-WELT

So genau habe ich mir noch nie Gedanken darüber gemacht, weil ich das Gefühl habe, dass das Ende der Erde als Planet mich nicht mehr betreffen wird. Ich kann mir aber sehr gut vorstellen, dass man das Ende der Welt, wie wir sie kennen und nutzen, leider schon sehr bald erwarten können, weil wir uns gerade aktiv daran beteiligen. Ich denke, die Erde wird sehr, sehr lange bestehen, einfach in einer ganz anderen Form, als wir es uns gewohnt sind.

**ANJA, B.SC. LEBENSMITTELWISSENSCHAFTEN**

As I ponder this issue's topic, I'm struck by the fascinating contrast between the classical notion of humanity's end as the end of the world and the reality that 'the world' itself is indifferent to our existence. From a cosmic perspective, the Earth will continue its existence long after humanity is gone – the universe operates on timescales beyond our comprehension.

This post-Keplerian human-centric perspective, where we subconsciously view ourselves as the ultimate focal point of the universe, powers the idea of the imminent end of the world. The fear of cataclysmic scenarios like nuclear wars or global warming – relatively recent challenges – is founded upon the enduring historical belief that the current epoch represents the final and enduring era of human civilization – a belief that has witnessed the rise and fall of empires throughout history, from the decline of the Han Dynasty or Roman empire to the collapse of the Maya civilization, and it has endured through great shifts in the world order.

When one reflects on the vastness of the cosmos and the unstoppable passage of time, it becomes clear that our concerns about the world's end are deeply rooted in our psychology and the constraints of our own finite lifespans. The universe doesn't share our concerns or our sense of time.

Ultimately, even if we think of the end of humanity as the end of the world, I don't expect the end of it anytime soon. Challenges such as global warming will undoubtedly bring about suffering and significant changes in the global order. While we may strive to prevent these changes within our and our direct descendants' lifetime, history consistently reminds us that change is the inevitable fellow traveler of the arrow of time.

**YOEL ZIMMERMANN, 21, MSC INTERDISZIPLINÄRE  
NATURWISSENSCHAFTEN FEAT. HARVARD**

Die biologische Kriegsführung wird komplett schiefgehen und wird einfach alle Menschen hopsnehmen.

**ANONYM**

I don't think the world will end any time soon. It is a question that humans like to ask because of their inherent anthropocentric view. I do think humanity will end somewhat soon, and I believe it will (of course) be due to the climate crisis we are facing. Already on course, mass migration will become more extreme. With rising sea levels, extreme climate events, and food and water shortages, people from the Global South will have to leave their homes in the hope of survival. In the meantime, the Western world will continue to hoard resources, exploiting nature for their own comfort and pretending to care. Eventually, I expect there will either be war, or there will be dictatorship, when humanity realizes that, in fact, we simply do not have the natural resources to sustain our way of life in the West. Or both at the same time, most likely. That's how I expect humanity to end. However, after that, nature will regenerate and heal itself. The complex ecosystem that makes up our planet will always find a balance, as life has persisted under circumstances much worse than those created by humans.

**CONSTAÇA TROPA, 21, M.SC. PHYSICS**

My world ends when I die, since my world is what my body experiences and takes in. I have given a lot of thought to that topic, but I am not sure if it's publishable. [Anm. der Redaktion: Dooooch!] Our world ends when the world as we know it ends, meaning for me the end of humanity, i.e., no humans are left. I think that like any other species, we will have a fixed lifespan. There are a lot of scenarios that can bring us there, like humanity producing so many toxic ingredients, that we lose our ability to reproduce. However, I don't think one fancy scenario will rot out the human being, but rather that a multitude of different events are needed until the last human being dies. Finally, I can interpret this question as the end of the whole world, as in universum. This is probably better answered by a physicist. But I like to think that every big bang creates countless black holes, to supermassive black holes, to white holes, to themselves creating „big bangs“ until all matter is so dispersed that no brain can randomly invigorate to existence (see the Boltzmann brain thought experiment).

**JONAS PASSWEG, 27, MSC INFORMATIK**

Elon Musk wird irgendetwas probieren und es wird schiefgehen und anschliessend wird alles explodieren.

**ANONYM**

I think that the expression "the world" often refers to "my world" or "their world". In this context, "our world" is our workplace, our loved ones and much more that we value. I read on the internet that the world will become an uninhabitable place in about 7 billion years. But "our world" will never end, as we will find a way not to let that happen.

**JÖRN, 22, B.SC. CHEM-ENG**

Es hängt davon ab, was man unter „dem Ende der Welt“ versteht. Wenn vom Ende der Menschheit die Rede ist, wird wahrscheinlich der Mensch selbst der Grund dafür sein. Wie er das machen wird, weiss ich nicht, aber tendenziell durch das unbewohnbar machen der Erde mittels Krieg, Klimaerwärmung oder Ähnlichem. Wenn man vom Ende der Erde als Planet redet, wird wahrscheinlich die Sonne am Ende ihrer Lebensspanne die Erde verschlingen. Ich gehe aber mal davon aus, dass das Ende des Universums gemeint ist. Da ist die Theorie, die mir am plausibelsten vorkommt, eine, die auf dem thermodynamischen Zeitmodell beruht. Nach diesem ist nämlich die Zeit nichts als eine Änderung in der Gesamtentropie des Universums. Wenn man das Universum als ein grosses System betrachtet, wird die Entropie in diesem, wie in jedem anderen System, zu einem Maximum, also zu einem Gleichgewicht streben. Ist dieses erreicht wird sich nichts mehr bewegen und sich nichts mehr verändern. Das ganze Universum wird stillstehen, bis in alle Ewigkeit.

**MAXIM, 19, B.SC. BIOCHEMIE**



# Tomorrow 2030

**Coffee, sweat, toil, no tears – or: a self-experiment of a group of students to push for more sustainability at ETH.**

ETH-WELT

Are you sometimes annoyed by things changing slowly or seemingly not at all? It can be frustrating to be at an apparent end. Especially, when there is compelling evidence that we need to become more sustainable to tackle climate change. But is anything changing – apart from the climate?

Here, we tell you the story of the Vision 2030, a student-made sustainability concept for ETH. Like many good stories, it begins at night with significant amounts of coffee. Unlike other good stories, it does not start with an adventurous turn in the lives of its characters. Instead, it begins with a slightly boring start – a late-night period of procrastination spent scrolling through a Telegram chat where we stumble upon a call to action that has been posted by a group of German students. Their project, dubbed

“Hochdruck”, encourages students to push for more sustainability at their universities by handing the head of their institution a paper with ten demands covering all aspects of university life – from food to mobility to finance. Although similar proposals have been suggested previously, the chance to present ideas to ETH once again as part of a broader campaign inspired us. As a team of three activists and students from different fields, we decided to bring “Hochdruck” to ETH. But then we hesitated. Would this proposal actually change things at ETH or would it just end up on a paper pile or worse, crumpled up and tossed into a wastepaper basket? We agreed that in order to be taken seriously, we needed to tailor the “Hochdruck” demands to ETH. We did this by adding sections on the current situation at ETH and some concrete measures for improvement. After a semester’s work, we were just about to find strategies to inform the majority of students and to gain their support when things started to change. A lot!

**Joel Huber, Melina Schaller, Victor Jaeck, Christian Rolli,**

students of different fields who truly care about sustainability and active members of the Student Sustainability Committee (SSC),  
development@ssc.ethz.ch

## **Making Connections**

The turning point was a presentation of our work to the board of VSETH. It was the first time we felt some appreciation, although there were also heated





Introducing our “Vision 2030” – Our Ideas for becoming a Sustainable University

discussions about the content, structure, and framing of the paper. But the presentation was much more than just a meeting; we learned so much about what university politics is like. Did you, for instance, know that VSETH is the only student association recognised by ETH? It represents the voices and interests of all students and has representatives in various committees. At this point, it was important to be pragmatic. We simply wanted to go for the largest net impact and agreed on changing strategy from being an independent activist group to becoming part of VSETH’s Student Sustainability Com-

mittee (SSC). We had absolutely no idea what this collaboration would bring. However, it turned out to be extremely fruitful. In fact, the SSC had planned to write a similar paper and is well-connected and established within ETH. Based on their previous work, we set up a larger working group to draft the vision paper with access to the resources of SSC. Unlike before, we now had connections to a variety of allies, from professors to VSETH board members who contributed with valuable feedback. Nevertheless, it was a continuous learning process to find out how things work at ETH on an organisational level, who to contact, and where to get relevant information. Having the same goal but different backgrounds and strengths enabled us to progress together and to stay motivated. The iterative process of researching, negotiating, and revising was finally rewarded with success. Just recently, the paper was approved by VSETH as an official document.

#### Vision 2030’s Strategies for Sustainability

You may be wondering what the Vision 2030 paper is all about. In essence, it contains our vision for a more sustainable university. But there is more! We also evaluate the status quo at ETH and offer many suggestions for the next steps (you can find a selection in the box below). It is complemented with inspiring ideas other universities have already implemented.

In our holistic vision, we acknowledge ETH’s plan to achieve net-zero greenhouse gas emissions by 2030 and provide inspiring comments while demanding full transparency. And of course there are points about education, as it is our generation that will experience and drive the societal transition to net zero. As students, we should also be given the platform to actively contribute. Therefore, we advocate for ETH to enable broad participation in the transition process by promoting student engage-

#### A selection of exemplary suggestions from the Vision 2030 strategy paper:

- Introducing a minor/master supplement of about 30 ECTS in Environment and Sustainability open to students from every study program.
- Advocating for increased diversity in decision-making and representation to better include minorities and underrepresented groups.
- Establishing a vegan canteen at ETH, where all offered meals are plant-based.
- Introducing business travel regulations which only allow to fly if the destination is not reachable by train or bus within 9 hours, is more than 800km away from Zurich and the stay lasts at least 72 hours.
- Providing more bike parking on campus, including safe and covered parking and more e-bike charging stations based on demand-analysis.
- Creating a fund for sustainable projects for all members at ETH, especially for student initiatives.

ment and strengthening student representation. A more direct impact we can have in our daily lives is through what we consume. We envision food options on campus that are both sustainable, equitable and affordable - for all of us! Equally important is the call for a circular university that implements an innovative waste system, prioritises sustainability in new construction and existing infrastructure, and actively promotes biodiversity and green spaces on campus. As you might imagine, mobility is also a major driver of ETH’s environmental impact. Reducing air travel and prioritising environmentally friendly modes of commuting (by improving cycling infrastructure, for example) are therefore essential to reduce our environmental impact as a university. The impact of financing is less visible but equally important. It is clear that ETH must avoid unsustainable investments.

#### Get Involved Today!

But why all this effort? As IPCC panellist Linda O. Mearns puts it: “I used to say [...] that climate change is serious, certain, and soon. But this is no longer accurate. Now it is very serious, very certain, and now.” So, once we know the problem, once we have the desire to act, we must come together and do it. Like many other tales, this is an open-ended story. In fact, we are just at the beginning of another chapter. The Vision 2030 is not only inspirational, but its suggestions can serve as a starting point for negotiations. It is a work on which student representatives can rely and refer to. Delivered to the right bodies of ETH, it has the potential to initiate or speed up real changes. And this is what matters in the end! If you want to learn more, contact SSC and get involved. Let’s make the world – or at least ETH – a more sustainable place!

Scan the QR code to read the Vision 2030 paper:



# HIER KÖNNTE DEIN ARTIKEL STEHEN

Du glaubst, beim Polykum kann man nur mitarbeiten, wenn man Texte schreiben will? Falsch gedacht! Damit unser Magazin entstehen kann, braucht es viele verschiedene Talente! Du zeichnest gern Comics oder Illustrationen? Wir suchen dich! Du behältst den Überblick über Finanzen, kannst gut organisieren und dich selbstbewusst für eine Sache einsetzen? Wir brauchen dich im Vorstand! Du kannst gut mit Sprache umgehen, hast aber keine Lust, eigene Artikel zu schreiben? Hilf uns redigieren!

Wenn du dich angesprochen fühlst, schreib uns einfach ein Mail an: [redaktion@polykum.ethz.ch](mailto:redaktion@polykum.ethz.ch)

Wir freuen uns auf dich!

**ETH** zürich

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# Making it

## The transition from student life to professional life.

by Christine Kaiser, Head of ETH Career Center

Life is a constant series of transitions: from childhood to adulthood, from living at home to living in your own flat, from being single to being married... Regardless of our age or experience, when we are in the middle of such a transition, we often feel like we are floating in a sea of uncertainty – not quite here nor yet there, and the end nowhere in sight.

### Floating in a sea of uncertainty

As a young graduate, you are transitioning from the sheltered halls of ETH to the vast and, at times, daunting job market. After years of structured learning, where you have been primed to expect things to be linear, that solutions are either right or wrong, you are now suddenly confronted with the non-linear and unpredictable reality of the job market. Don't be afraid: it's normal to feel lost and even overwhelmed. You haven't merely finished your studies, you are actually entering a new phase in your life.

The passage from the "student state" to the "professional state" is often blurry. It is often hard to identify when we have truly crossed the threshold from being a student to being a professional. Personally, I believe it took me 1-2 years in a full-time indus-



**Christine Kaiser**

is Head of ETH Career Center at ETH Zürich.

*We provide students with the information they need, both in person and at events and seminars, and open up valuable contacts, working closely with other organizations offering career services at ETH*

try position to really feel that I had fully arrived in the workforce and that others perceived me as a professional. Transition takes time!

Additionally, fresh graduates tend to believe that their journey actually ends with their ETH diploma instead of just beginning; that their value resides solely in their education as opposed to their whole experience

and person. Be assured: the doors are only just opening! Your academic degrees are a small part of who you are and who you will be.

### Finding an anchor to rest at sea

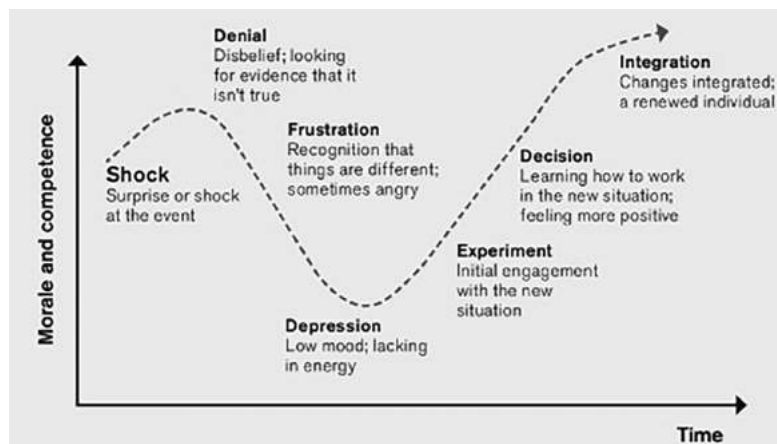
It is important that graduates can mark this life-changing transition. Here are some practices or rituals that may resonate with you and help you get through the emotional turmoil.

**Seek Guidance:** Our experience shows that graduates who reach out to peers, mentors and experienced professionals who can guide them through the labyrinth of work-life are often rewarded by the wisdom and the encouragement that these individuals are happy to share. Make it a ritual to meet up with peers and/or mentors on a regular basis to speak of your transition.

**Embrace the change:** All transitions include several phases, e.g., the letting go of old patterns, a "neutral zone" of exploration and a new beginning. Take time for self-reflection. This type of inner journey can be as transformative as any external rite of passage – especially when you then share your thoughts with others.

**Build Your Career Literacy:** Visit skill-building workshops, training sessions, job fairs, company events to develop your career management skills. Learn how to write a CV or a LinkedIn profile. Understand how you can explore career profiles and the job market with informational interviews. Network with hiring companies and professionals.

**Throw a Job Offer Party:** Finally, let's not forget to have fun! Invite friends and/or family to share in the joy of receiving your first job offer. Their cheers and support will remind you that you are not alone on this journey.



*The Change-Curve by E. Kübler-Ross. The change curve is a model for transition from student life to professional life. Though the model is typically associated with negative changes, it applies to people who experience positive changes as well. Even when experiencing a positive change, people can also go through a period of emotional turmoil and adjustment. (Source: worldofwork.io)*

Recognising and celebrating the passage from student life to professional life is crucial for your emotional wellbeing and personal growth. Don't let it go by without the attention it deserves.

# DID – the Seeds of a Sunflower, plucked

**“The few things I remember are hearing the fifth-floor balcony door rip open and a big storm in the night. X walked back to the other end of the room to get a running start. I didn’t know he was suffering. I was terrified. I screamed and begged for him to stop before we would all go down with him.” - F**



Dissociative identity disorder is a rare mental health condition affecting about 1% of the world’s population. It’s about as common as schizophrenia, yet isn’t discussed as much, isn’t nearly as well-known – especially outside harmful inaccurate depictions, like the movie *Split*. The latest edition of the Diagnostic and Statistical Manual of Mental Disorders, characterises it by the following criteria, paraphrased for brevity:

- A. A disruption in identity creating two or more personalities. It creates breaks in the sense of self and agency over your own actions. Related changes depending on the personality state also occur in behavior, consciousness, memory, perception, cognition, senses and motor functions.
- B. Unusual frequent gaps in memory when trying to recall everyday events, important personal information, and/or traumatic events.
- C. The symptoms cause clinically significant distress and socio-occupational impairment.
- D. The symptoms are not a normal/accepted cultural/religious practice and are not explained by childhood fantasy play.
- E. The symptoms are not the result of substance use or other medical conditions.

Most people will have heard the outdated term “multiple personality disorder” last used in the third edition of the manual. The change in terminology stems from a shift in focus from the personality-fracturing part of the disorder to the aspects associated with memory disturbances and dissociation from reality, which happened in the 1990s. DID cannot be treated with medication and is often associated with prolonged childhood sexual, physical, verbal, psychological abuse, as well as exposure to natural disasters, war, and/or unstable and toxic familial structures.

All personalities together form a system, and each splits from the whole after surviving trauma, making it possible to overcome these highly distressing situations. Experiencing verbal abuse may cause an alternate personality with thicker skin, more self-assurance, or inherent capability to negate the impact of trauma. Also called “alters,” these personalities aren’t always adapted to living in daily settings and can be emotionally imbalanced, and even self-harming. They have separate memories, which form amnesia barriers, keeping the main person from reliving traumatic events through flash-



The sunflower watches on, unable to run from the dining table.

Illustration: Anja Wullschleger

backs. While soothing on the one hand, these barriers can also cause distress through memory loss or make it more difficult for the abused to leave their abusers, because the main person is unable to recall the nature of the abuse. Importantly, the end goal of the development of new personalities is self-preservation, and not hurting others for malicious purposes, which is an ableist and sensationalistic stereotype of DID propagated by popular media or criminals feigning illness to get shorter sentences.

“There are 6 main people and 20 more, all with different gender identities, orientations, ages, and interests. We cope with dissociation by learning mindfulness, grounding techniques, and writing tracking notes to help with amnesia. The best times are when two of us are aware and can hear each other think. We have a decision-making system, strict rules and coexist by applying mutual empathy. We all have different struggles, triggers, needs and treat each other as valid equals working together to survive, a family full of love taking care of each other.” - J

“Two or more of us wake up together which improves memory. We tell each other about our differing dreams. I hate early mornings, so the most

active of us got together just to make me wake up on time. We have a no-chatter rule during lectures, so that the person most in front can focus and socialize with other students. In breaks, we telepathically chat, gossip, joke with each other, and help with assignments. Everyone thinks differently with different gifts, so we have specific people we ask questions to. We make different friends at ETH, many know we’re plural. We each have our own clear tasks and chores at home, based on rules too.” - X

Clinicians are often unprepared for dealing with DID and misdiagnose patients due to a lack of training, mental health awareness, systematically applicable diagnostic criteria – and the existence of a heated debate within the community as to whether or not plural patients seeking their help should even be believed. When they are faced with having to convince and gain empathy from the professionals who should help and validate their condition, the life of patients becomes sadistic cosmic irony.

“How was therapy? Well, I was first a bipolar tween, a manically depressed child, then a disturbed schizophrenic on the loose, but what really happened was that my first therapist treated me like garbage. Instead of seeing me as a kid who had a dissociative disorder, he treated me like I was some strange creature that he had to study, gaslight, and ask disturbing intimate sexually charged questions to. After 24 sessions, he could only conclude to my parents that I “needed help” and was “deeply distur-

#### Anja Wullschleger

22, studying biology at ETH, and is many people in a trench coat

bed and strange." Now I know he is worth as much as chewed gum and that it was the plural community who helped me accept myself as many and end the cycle of being misdiagnosed and mistreated by mental health professionals." - X

"I was bullied a lot since elementary school. I was hit, spit on, and told graphic racist slurs by my classmates while being dismissed by my teachers and parents. I couldn't stand eating with everyone in middle school, so I would sit under a tree that would speak, ask about my day, and give advice. Later on, I started dreaming a lot of a boy my age. He'd visit, chat, bring me on adventures inside an inner world, reminding me to pack my bag well and do homework before vanishing as I woke up." - A

"A couldn't hear me. Attaching my presence to objects made it easier so we'd play under trees, in fields or in the wine cellar. A learned to draw just so she could show what I looked like. I grew up with and protected her from others with a sharp tongue or pulling occasional punches. She got bullied again when she changed schools. I switched and took charge, flipped a table in class at those kids, ordered them to pick up everything from the floor and place them back just the way A liked it. While that landed us in mandatory garbage therapy, after talking it out with those guys, they understood where A and I came from and we quickly became buddies. They knew we were plural, would ask A about how I was doing, and later respected me as her boyfriend when inviting A out to bars in gymnasium." - X

"Entering uni, the two fell into a deep depression and couldn't take care of themselves. They barely went out, didn't socialise, and would starve. One was socially anxious and terrified of others while the other was depressed and would self-harm. I knew A was suicidal and was stopped by X, but when X himself started expressing such thoughts, I knew we had to do something. He can easily overpower the rest of us as an older member of the system. Suicide is an impulse decision, a permanent solution to a temporary problem." - J

"J informed me of the situation and together we spent every moment we had control of the body searching for a therapist. Everyone was booked and we knew finding one that didn't believe in DID would set X back and put our lives in danger. They joined this student mental health awareness organization called MeWell and I had to go to a team day. I met a woman there. I wasn't even thinking of the search, focused on masking and passing myself off as A. She shook my hand, introduced herself as a counselor, and asked "Are you happy?". There was something about the look in her eyes. I knew she'd save us, so I asked for her email. I get credited a lot for finally getting X back into therapy and saving us, but really, it's teamwork." - E

"I became our little one's caretaker after I formed and learned about him. When not in front,

we play together in an imagined house in the inner world where we each have our bedrooms. He loves plushies and due to his young age, knows the names of all of A's childhood toys which we let him inherit after we moved. He's not a child per se but has a reduced sense of language, gets stumped by big words and frequently asks me questions. This means he can't consent to things, leading us to censor his name with strangers. He's still a smart kid working with an adult brain, so he can do calculus taught to us at ETH, just explained with teddy bears and apples instead. He's emotionally perceptive and intelligent. He knows what we're feeling and worries when he notices trouble. Once I was walking back from getting his favorite apple juice with him, an ambulance passed by us. He knew it meant bad things and started squeezing my hand and crying. To ease his worry, I offered for us to play doctor with Teddy afterward and comforted him with the notion that those in an ambulance have other supportive people around to help, just like me with him." - F

"F is doing an incredible job that I don't think he notices enough. Younger people in systems aren't equivalent to kids or the inner child concept seen in trauma therapy, it's more complex. Our little one holds all our childhood happiness and is key to growing up as an emotionally stable and trusting adult. What F does when he teaches consent, clear boundaries, empathy, and personal space, and takes care of him is healing us from the inside out. We don't know what hurt our little one back when A was his age, questioning a child is always uncomfortable, but F tries everything he can to make him feel happy, safe and cared for. One day, he may finally tell us his secrets, but no matter what, we're his family and we don't care about how much he contributes or is able of, we love this kid." - G

Picture this, a child just picked a sunflower from a field. They happily gift it to their mother, who proudly takes out the prettiest vase. Its radiant glow lights up the space at the end of the dining table, bringing a smile to everyone's face. This is as far as we've come with our little one telling us what happened. Childhood is pieced together through intense emotions that seep back when we're at our worst. The sunflower watches on, unable to run from the dining table. Its vase overflows with streams of tears and is shamed for its inability to empty itself in the midst of an angry, screaming, and violent hurricane from both sides of the table. The sunflower stays strong, absorbing toxic radiation until it can no more. In the end, its petals fall and by some miracle create a field of new sunflowers, glowing brighter than ever before together.

# The end of yeasts, or why we don't live forever

Factors leading to premature death should logically be eliminated by evolution. But this is not the case in yeasts, where death by suicide is gene-encoded ...



Time lapse of a single yeast mother-cell. It is trapped on an aging chip. On the left, the cell starts its first division by growing a so-called "bud". In the middle, one can see that the daughter-cell is about to be released. After the division, the mother will start a new cycle. After around thirty rounds, the mother will stop dividing and eventually die, as shown on the right panel.

Microscopy image credit: Théodore Bouquard. Yes, it is supposed to be slightly blurry.

Imagine a mad scientist whose dream is to replace the entire world's population with his children. To achieve this, he concocts a serum that prevents him and his children from aging. His logic is simple: if he lives very long, he'll have lots of undying children who will eventually replace all other human beings.

This example demonstrates the following hypothesis: natural selection should act in a direction that delays or cancels out death

(or aging) of individuals, since living longer makes it possible to produce more descendants, these inheriting the genes for longevity.

However, although cases of resurrection have been reported (e.g., GOT season 6 or The Bible part 2), let's face it: every passing second brings us closer to our end. That's why the questioning of aging has kept researchers busy. They, like me, preferentially use yeasts (*S. cerevisiae*, the same ones you find in your beer) to study aging. These fungi offer many advantages over human beings as model organisms: they grow on petri dishes, they reproduce quickly (one division every ninety minutes), and one can easily sequester a mother cell to study it until she dies.

Studying them reveals a phenomenon that is in total opposition to the initial hypothesis: yeasts are programmed to die after a certain time. And programmed can be taken literally here: they have an increment function whose output leads to the cell's death after "i" divisions: for

$(i = 0; i < 30; i++)$  {staying alive};. The biological mechanism observed is the following (AC Meinema et al., 2022): with each cell cycle, the mother cell produces DNA fragments. These accumulate at nuclear pores. After a set number of divisions, the pores get "jammed", which leads to cell death. This data was obtained using aging chips, as illustrated above. It shows a mother cell dividing normally (on the left) and the same cell finally dying (last frame).

Noting the complexity of the mechanisms involved for such suicidal behaviour, one can only conclude that programmed death is favoured by evolution. An explanation may lie in the theory of antagonistic pleiotropy, which states that genes that favour early reproduction are more selected than those that prolong the life of the individual. To summarize, taking the scientist's example from the beginning: he better find a serum that enables him to reproduce quickly rather than for a long time.

**Théodore Bourquard, 25,**

just started his long journey as a PhD at the ETHZ. He focuses on the biochemistry of innate immunity in budding yeast.

THE END

# Und wenn sie nicht gestorben sind...

**Der Anfang einer Geschichte muss vom ersten Satz an packend sein, um uns in die Geschichte hineinzuziehen und zum Weiterlesen oder -schauen zu animieren. Aber das Ende ist es, das nachhallt, wenn man das Kino verlässt oder die Buchdeckel schliesst. Es lässt uns glücklich, erleichtert, traurig, nachdenklich oder auch mal verwirrt oder frustriert zurück. Doch was macht ein gutes Ende aus? Und was macht es mit einer Geschichte, wenn sie ein neues Ende bekommt?**

## Wie schreibt man ein gutes Ende?

Darauf weiss das Internet, wie auf fast alles, sehr viele Antworten. Laut wikiHow ist ein gutes Ende eines, bei dem Bedeutung mitschwingt und eines, das die Wichtigkeit der Geschichte unterstreicht. Masterclass.com nennt vier Elemente, die ein gutes Ende haben sollte: Die Auflösung des Hauptkonflikts mit der Beantwortung der Frage, die am Anfang der Geschichte aufgeworfen worden ist, den Abschluss der Charakterentwicklung der Hauptfigur, Spannung, wenn es kurz vor dem Ende nochmals so aussieht, als würde alles doch ganz anders kommen, und einen Überraschungseffekt, indem das Ende nicht vorhersehbar ist. Das klingt alles logisch und einleuchtend. So einfach nach Rezept geht es dann doch nicht, und man wird nicht einfach so Bestsellerautor:in, indem man ein paar solcher Ratschläge befolgt. Was ein gelungenes Ende ausmacht, ist einerseits subjektiv, andererseits nicht vollständig mit Regeln und Ratschlägen erfassbar. Wie wichtig das Ende für die Deutung und Interpretation der vorangegangenen Handlung ist, wird vor allem an Beispielen deutlich, wo es verändert oder in einer neuen Version umgeschrieben wurde.

## Das Spiel des Zufalls

Ein solches Beispiel liefert Friedrich Dürrenmatt. Wer in der Schweiz zur Schule gegangen ist, ist diesem Schweizer Schriftsteller und Dramatiker wahrscheinlich im Deutschunterricht begegnet. Dürrenmatt bekam den Auftrag, eine Idee für ein Drehbuch auszuarbeiten für einen pädagogisch wirksamen Film über Sexualverbrechen an Kindern. Entstanden ist so «Es geschah am helllichten Tag», ein schummeriger schwarz-weiss Film mit leiernder Hintergrundmusik; ein typischer Film aus dem Jahr 1958. Die Geschichte

handelt vom Zürcher Kantonspolizisten Dr. Matthäi, der zum Schauplatz eines Mordes gerufen wird: Ein kleines Mädchen wurde tot aufgefunden. Matthäi verspricht der Mutter bei seiner Seligkeit, dass er den Mörder finden wird. Es gab noch zwei andere Morde, alle an Mädchen mit blonden Zöpfen und rotem Kleidchen. Verdächtigt wird ein Hausierer, der sich in Polizeigewahrsam das Leben nimmt, womit der Fall abgeschlossen ist. Doch Matthäi zweifelt an der Schuld des Hausierers und ermittelt privat weiter. Da alle Verbrechen nahe einer Landstrasse stattgefunden haben, mietet er sich dort eine Tankstelle und stellt eine junge Frau ein, deren Tochter blond ist. Er wartet. Als das Mädchen von einem Zauberer im Wald berichtet, sieht Matthäi seine Chance gekommen und lauert dem Mörder auf, der überwältigt und verhaftet wird.

Damit wurde der Täter geschnappt, das Gute hat über das Böse gesiegt. Ein typisches Kriminalromanende. Doch Dürrenmatt war mit dem Film unzufrieden, besonders mit dem Ende. Er hat seine Ideen bei der Realisierung des Filmes nicht alle durchsetzen können. Also schreibt er ein Buch mit dem Titel «Das Versprechen». Die Geschichte ist dieselbe. Bis auf einen kleinen Unterschied. Im Buch arbeitet Matthäi ebenfalls an der Tankstelle und wartet auf den Mörder. Und wartet. Und wartet. Er fängt an zu trinken, lässt sich gehen und verliert langsam den Verstand. Der Mörder kommt nicht und der Kommissar zerbricht an seinem Versprechen, das er nicht halten können. Durch eine Aussenperspektive erfahren die Lesenden, dass der Mörder auf dem Weg war, das kleine Mädchen von der Tankstelle zu ermorden. Doch er ist dort nie angekommen, weil er unterwegs einen tödlichen Autounfall hatte. Das Buch trägt den Untertitel «Requiem auf den Kriminalroman», weil es mit den gängigen Regeln bricht und der Täter nicht gefasst wird.

Für Dürrenmatt war das Filmende nicht realitätsnah. Zufälle haben dem Kommissar in die Hände gespielt, damit sein Plan hat aufgehen können. Und so ist es im Buch genau dieser Zufall, der den glücklichen Ausgang im letzten Moment verhindert.

Doch sind wir mal ehrlich: Sind nicht die En-

**Sabrina Strub, 25**, MSc Bauingenieurwissenschaften, fand es als Kind unlogisch, dass man dem Wolf den Bauch aufschneiden und Rotkäppchen und die Grossmutter retten konnte. Froh über den glücklichen Ausgang war sie trotzdem.





Illustration von Gustave Doré, Aus: *Les Contes de Perrault*, Paris 1862/ Public Domain

den der meisten Geschichten nur möglich geworden, weil eine Reihe unwahrscheinlicher, günstiger Ereignisse hintereinander eingetreten sind? Ist das realitätsnah und wahrscheinlich? Wohl nicht. Und doch haben wir meist eine Erwartung an eine Geschichte: Der Ermittler findet den Mörder, Harry besiegt Voldemort, die böse Hexe wird bestraft, die drei ??? lösen den Fall; unsere Erwartung ist erfüllt und wir sind zufrieden, der Gerechtigkeit ist genüge getan. Allerdings ist ein gelungenes Ende ein Balanceakt zwischen Unvorhersehbarkeit und Spannung auf der einen und Glaubwürdigkeit, Plausibilität und Realitätsnähe auf der anderen Seite.

#### Und die Moral der Geschichte

Dürrenmatts Motiv eines Mädchens mit rotem Kleidungsstück, das allein im Wald dem Bösen begegnet, erinnert an eine andere bekannte Geschichte: Rotkäppchen. Das Märchen geht auf alte mündliche Erzählungen zurück und existierte in verschiedenen Varianten. In manchen war die Geschichte voller Gewalt. So gibt der Wolf dem nichtsahnenden Rotkäppchen vom Fleisch der toten Grossmutter zu essen. Es muss sich nackt ausziehen und zu ihm ins Bett steigen, bevor es von ihm gefressen wird. Diese Version lässt sich deuten als Coming-Of-Age Geschichte. Das rote Kleid symbolisiert die einsetzende Menstruation, der gefährliche Wald den Übergang von der Kindheit ins Erwachsensein, der Wolf die sexuelle, gewalttätige Welt.

Erstmals aufgeschrieben wurde das Märchen von Charles Perrault (*Le Petit Chaperon Rouge*). Für die Lektüre am französischen Hof entfernte er erstmals einen Teil der brutalen und sexuellen Stellen in der Geschichte. Perraults Moral, die er transportieren wollte, war, dass sich feine, junge Damen von der Gefahr von schlechtem männlichem Umgang (symbolisiert durch den Wolf) fernhalten sollen.

Richtig bekannt geworden ist die Fassung aus dem Werk «Kinder- und Hausmärchen» der Gebrüder Grimm. Jacob und Wilhelm sammelten Märchen aus Büchern und in ihrem gutbürgerlichen Umfeld. Ihr Interesse an Märchen war sprachwissenschaftlicher und volkskundlicher Natur. In den sechs Auflagen,

die sie insgesamt herausgaben, überarbeiteten und ergänzten sie die Märchen, um sie der bürgerlichen Leserschaft besser zugänglich zu machen. Es waren auch sie, die dem Märchen ein neues Ende verpassten: Der Jäger, der dem Wolf den Bauch aufschneidet und so zu einem Happy End führt; der böse Wolf wird bestraft, die Unschuldigen werden gerettet. Dieses Ende weist Parallelen zu «Der Wolf und die sieben Geisslein» auf: auch dort wird dem Wolf der Bauch aufgeschlitzt und mit Steinen gefüllt, was zu seinem Tod führt.

Auch wenn die Geschichte des Rotkäppchens in allen Versionen gleich beginnt, wurde vor allem das Ende über die Zeit verändert. So veränderte sich auch die Moral, weil diese vor allem mit dem Ende transportiert wird.

#### Im Spiegel

Viele der bekannten Grimm-Märchen haben ähnliche Veränderungen durchgemacht wie Rotkäppchen. So musste bei Schneewittchen die böse Stiefmutter auf der Hochzeit von Schneewittchen mit dem Prinzen in glühenden Stahlschuhen tanzen, bis sie tot zusammenbrach. Und den Stiefschwestern von Aschenputtel wurden von den hilfreichen, in der Geschichte immer wieder auftauchenden Tauben zur Strafe die Augen ausgepickt, als sie Aschenputtel zu ihrer Hochzeit geleiteten. Auch wenn das Gute gewinnen und das Böse bestraft werden soll, wollen wir solch grausame Bestrafungen heute den Kindern nicht mehr zumuten. Der Trend, dass die Märchen über die Zeit immer harmloser wurden, setzt sich stark in den Disneyverfilmungen fort, wo die Geschichten ein weiteres Mal verändert und mit viel Glitzer und Kitsch übergossen worden sind. Märchen und ihre Veränderungen sind ein Spiegel der Gesellschaft. Sie zeigen, welche Moral den Kindern vermittelt werden soll und wie viel ihnen zuzumuten ist.

Die Geschichten werden sich auch in Zukunft weiter verändern.

Denn wenn sie nicht gestorben sind, dann leben sie noch heute.

# In Need of a Happy Ending

**Oh, orgasms. For most of us heterosexual folks who possess a clitoris, the big 'O' can assume the role of a fickle-minded friend. Sometimes, it drops hints and then playfully retreats. Other times, it arrives fashionably late, if at all. At the end of a sexual escapade, we're left questioning its elusiveness. Maybe you've even asked yourself - "Am I...bad at orgasms?"**

The gender gap in orgasms has been documented for over 20 years. In academic literature, Lisa Wade, Emily Kremer, and Jessica Brown first used the term "orgasm gap" to define this disparity. In their 2005 study conducted with a sample size of approximately 800 undergraduate students in the US, they observed that 39% of cis-women and 91% of cis-men said they regularly or always get an orgasm during partnered heterosexual sex. A more recent study in 2018 conducted with 50,000 participants across the US reported 95% of the participating cis-men climaxing as opposed to 65% of cis-women. The dominant narrative – thank you, patriarchy – paints this asymmetry as a biological issue: allegedly, women's bodies are less primed for pleasure. Men are absolved of any responsibility in the matter. After all, our sexuality seems far too personal and intimate for us to be putting the burden of climaxing on anyone but ourselves. So, women tell themselves:

"Well, my anatomy is complicated, and the clitoris is hard to find (and even if they do find it, it's hard to operate)."

"It takes too long."

"I just don't have the right mindset."

"It's not that important anyway. The journey > the destination"

With us never holding them accountable, the men in our lives also find it easy to absolve themselves with their immensely helpful advice often sounding a bit like, "You're overthinking this. Just stop thinking so much!"

But if we look at how the orgasm gap shows up in different contexts – partnered sex vs. masturbation, heterosexual vs. same-sex relationships, casual vs. relationship sex – one starts to find that this biological complexity explanation simply does not hold up! When masturbating, women are found to orgasm at the same rate as heterosexual men in partnered

sex. On the other hand, lesbian women orgasm 86% of the time during their sexual interactions, in stark contrast to heterosexual women. This disconnect points to two things. First, the (pseudo-) biological explanation is just the means through which the orgasm gap is normalized in society. In this way, we continue to prioritize male sexual release and further internalize and reinforce the gendered nature of the sexual script we follow. Second, there is a larger sociocultural context in which we need to situate the orgasm gap, to be able to fully understand what causes it.

## The Mystery of the "Clit"

Dr. Laurie Mintz is a sex researcher and educator who has pointed to the ignorance of the clitoris as one of the reasons for the orgasm gap. In her research, she finds that 99% of women focus on clitoral stimulation when pleasuring themselves. She further reports that 78% of women's orgasm problems in heterosexual encounters can be traced back to not getting enough or the right kind of clitoral stimulation. Conversations around this organ, whose sole purpose is our pleasure, is shrouded in cultural hush-hush. The spread of information about women's sexual pleasure and related pleasure organs has historically been hindered for a variety of reasons. For example, comprehensive knowledge regarding the anatomy and physiology of the female clitoral complex was not discovered until 1998. Similarly, the clitoris is rarely mentioned in textbooks, and pleasure-oriented approaches to sex education in schools are rare. If it's included at all in our anatomy textbooks or sex education materials, it's only as a footnote rather than the usual detailed diagrams and explicit descriptions of the penis, other related male organs, and female body parts directly involved in reproduction. Hence, neither the women, nor their partners in heterosexual relationships have sufficient information about the principles of arousal and satisfaction according to which their bodies function.

This would lead one to think that greater "cliteracy" would address the gap. In fact, we have seen the awareness of female sexuality being championed throughout the years, especially since the dawn of

**Navya, 27,**

believes in liberation for all; "the house will not stand forever".

sexual revolution that accompanied the second wave of feminism. Today, sex toys (for those of us who own one, they certainly help us get the job done in a fraction of the time, don't they?) aren't as much of a taboo as they were say, ten years ago or so. But it has been proven that increased knowledge alone does not help close the gap – women still find it hard to communicate what they like and need. There is also a resistance to integrating sex toys in partnered sex. So where do we go from here?

### The Orgasm Gap & Patriarchy

Prioritizing knowledge dissemination obscures the role that larger social forces play in organizing gender relations in a heterosexual context. Heterosexuality as a patriarchal institution contributes to a phallogocentric narrative that undermines women's claims to orgasms. The cultural representation of sex in pornographic materials and other sexually explicit content portrays women as reaching orgasms easily from penetration alone. This is also why it is understood as the primary event in the sexual scripts, where women are expected to orgasm within a timeline that is focused on men's enjoyment. Other forms of sexual activity that prioritize clitoral stimulation (such as oral sex) are depicted (and therefore also commonly perceived) as "special, optional treats." Furthermore, there is a double standard at play: women are made

to feel ashamed for demanding orgasms, whereas their male partners are afforded this luxury of entitlement.

Trans women are similarly (if not more) harmed by the orgasm gap due to the denial of their sexuality in our patriarchal societies. Trans feminist Kai Cheng Thom, who shares her transition journey in her book, talks about how her sexuality and sexual urges were repressed during it. What is more alarming is her shedding light on the harmful ideology prescribing that trans women must give up their sexual impulses to become "real women". This stems from an intersection of misogyny and transphobia, which anchors the orgasm gap in their unique lived experience.

This is all to say that there is a need to fundamentally question and deconstruct our perceptions of gender, sex, and how patriarchy functions in all realms of our lives.

### What does capitalism have to do with it?

Speaking of systems of oppression, there is also a need to acknowledge how the capitalist economic system enables this shift of responsibility to individual women, without highlighting the systemic reasons for this inequality. The first of these is a result of the increasing commodification we see of knowledge regarding our bodies.

*As you'd refer from human mating behaviour, the staring black one chasing after the other is indeed the male and the grey one throwing an explicit pose is the female.*



Photo: Dr. Pascal L. Bebié

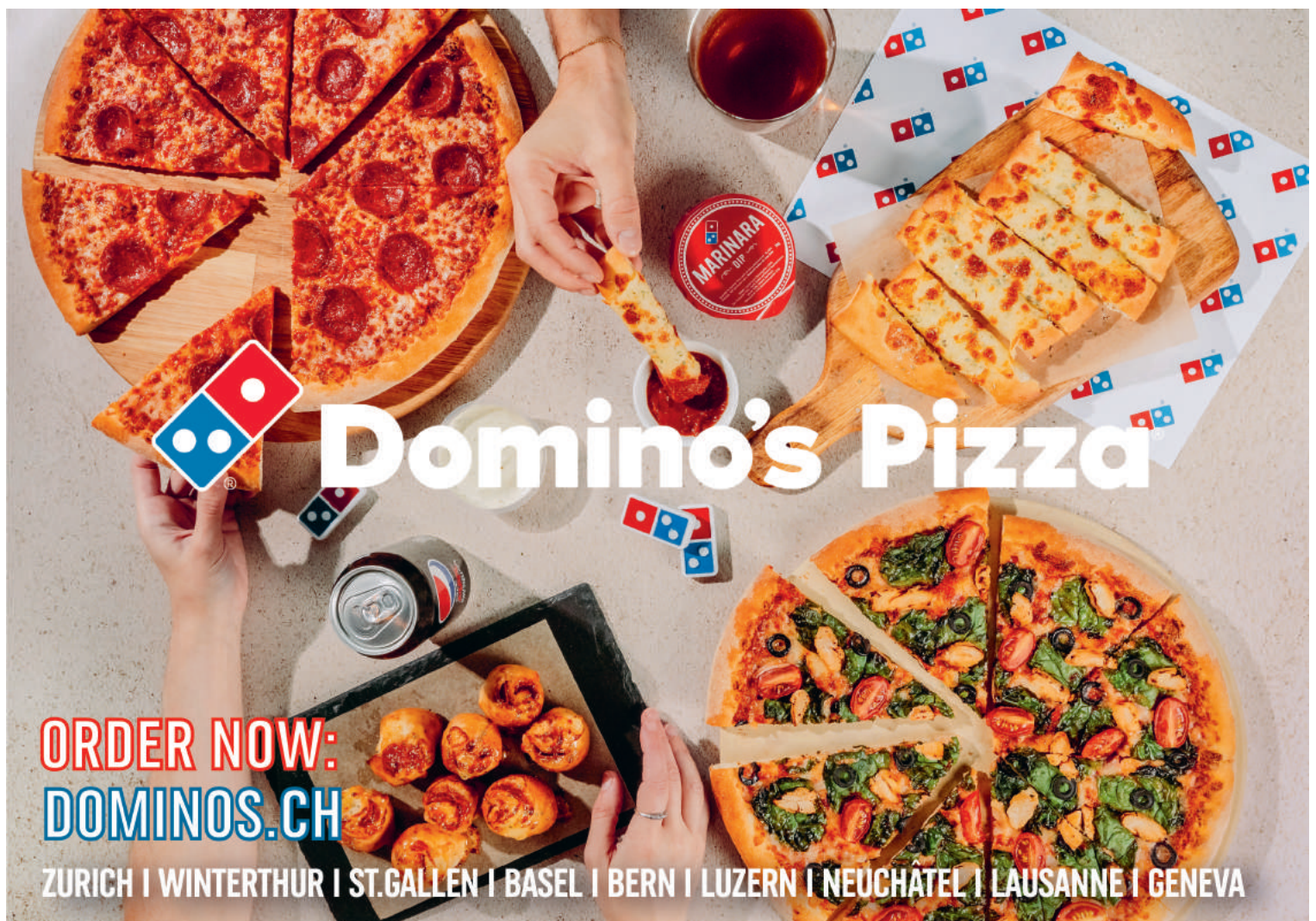
My Instagram feed is full of advertisements from websites like OMGyes and Climax that offer paid subscriptions to educational, science-based content that “demystifies” women’s pleasure, not to mention the number of sex toy companies that have jumped on the same bandwagon. These “miraculous”, market-based solutions tell women, “Educate yourself. Here, consume our endless array of sex-toys and lubricants. Grab patriarchy by its balls and take your pleasure into your own hands.” This targeting through marketing strategies often tends to exclude certain groups along the lines of race, body size, age, abled-ness, and various other factors. In this manner, female bodies are bent to the will of capitalism. Knowledge is commodified to reproduce and exacerbate already existing inequalities and widen the gap across different classes of women. It begs the critical question - who are we aiming to “liberate” through this brand of feminism? Does it ensure the liberation of ALL women, or just the ones who have the means to access and afford these resources?

The second and very curious connection between orgasms and capitalism comes from Kristen R. Ghodsee’s (a researcher in Russian and Eastern European studies at UPenn) book – “Why Women Have Better Sex Under Socialism: And Other Argu-

ments for Economic Independence”. In her book, Ghodsee compiles the results of sociological studies conducted after the reunification of Germany and compares East and West Germans. She reports that compared to 63% of West German women, 80% of East German women always had an orgasm during sex. This was a finding that confounded researchers – after all, East German women suffered the double burden of formal employment and housework. What was even more mindboggling were the higher levels of satisfaction that they reported.

Ghodsee posits several reasons that could explain her findings but the underlying theme points to a “type of emancipation from the above”. Marxist thinkers August Bebel and Friedrich Engels laid the foundation for women’s equality with men in the 1800s. Following this school of thought, women’s emancipation was viewed as central to what they called “advanced scientific socialist societies”. Theory aside, one can argue about the underlying economic motivations that underlie this imperative – the need for labour to drive industrialization – as opposed to wanting to truly promote gender equality.

Communists spent heavily on women’s education and training, as well as ensuring their employment. State-funded crèches and kindergartens resulted in a more equitable division of labour,



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thus allowing women to partake in the workforce and secure their economic independence. Maternity leaves were guaranteed and state-funded. State-run women's committees worked to reeducate boys to accept girls as equal comrades, as well as to persuade their fellow citizens that male chauvinism was a relic of the pre-socialist past. Without wealth or economic success playing a role in courting a partner, men had to rely on attributes such as sensitivity to women's needs to distinguish themselves from the rest. The liberalization of divorce laws made it easier for women in unhappy relationships to leave their partners. Women's fundamental necessities were supplied by the socialist state, and nations like Bulgaria, Poland, Hungary, Czechoslovakia, and East Germany gave additional funding to assist widows, single moms, and divorcees. Pre-1989 Polish sexologists emphasized the importance of social and cultural conditions for sexual enjoyment rather than limiting sex to bodily experiences. It was state socialism's response to work-life balance: they believed that even the best stimulation will not help a woman find pleasure if she is anxious, overworked, or worried about her future and financial security.

Of course, I am not advocating the return of the Communist bloc and its repressive, anti-democratic practices. There were numerous ways in some iterations of the socialist regime, in which women in Eastern Europe were worse off than their counterparts in the West – from sanitary product shortages in Bulgaria to the terrible natalist policies in Ceausescu's Romania, where women were obligated to bear children that they could not afford to take care of and then forced to give them up to orphanages. This explains the tone of superiority that, in Western liberal democracies, pervades the narrative regarding the repressive communist governments that existed in many parts of the world in the twentieth century. But this collective stereotype does not tell the whole story. In fact, some of the policies pioneered by these communist regimes – such as state-funded parental leave and free higher education – are currently practiced in Scandinavian social democracies. As we struggle today to envision alternative political structures and ways of living, we must remind ourselves that some aspects of socialism can truly lead women to have better lives. And no, I don't mean just sexually.

### Happy Endings and Beyond

Don't get me wrong – I'm all for better education and upping the kink in the bedroom vis-à-vis sex toys. But as feminist critical thinkers, we need to move beyond surface-level solutions and think about more radical and inclusive approaches for collective liberation. Audre Lorde talks about female sexuality and the power that it can give us. She writes about the erotic as being "a resource within each of us that lies in a deeply feminine and sexual plane, firmly rooted in the power of our unexpressed or unrecognized feeling." I cannot help but wonder if the suppression of our erotic is an intentional act that denies us reclaiming our power. And if we are to embrace our sexuality and use this power, how would our worlds change?

# The end of a book

The clock strikes midnight  
It's late, but she's hooked  
The fingers of her right hand  
Grasp the remainder of a book

Love is about to be confessed  
The world about to be saved  
The truth will finally be revealed  
And the mighty storm braved

But things could still go another way  
All at the eleventh hour  
The plot is like a béchamel  
With far too much flour

She reads on, every page  
Filling her with excitement and delight  
Everything seems to be coming together  
Loose ends tied up, the end in sight

And like that, the story reaches a crescendo  
Threats are contained, crises averted  
The protagonists live to tell the tale  
And themes of sacrifice, triumph and loss are inserted

Smiling, she reads on, as friends reunite, love blooms  
And long suspected theories are validated  
But realization strikes as she turns the page  
The last one, the end, the journey completed

She looks up from the page  
The room seems quieter now, the hour later  
The climax was worth it, the conclusion was fitting  
Even the conspiring villains met their maker

But her feels heart empty and her soul is grieving  
She turns back the pages, trying to restore  
The exuberance of the moments past  
But her little paperback world is no more

**Gaurav, 25,**  
MSc. Energy Science and Technology,  
is a fan of little paperback worlds but  
prefers to read on his kindle.

THE END

# How to Reach 0 Kelvin

**Why what you were taught about thermodynamics is a little bit wrong and why that matters – not so much physically but philosophically. A manifesto for a new convention for temperature.**

*No finite sequence of cyclic processes can succeed in cooling a body to absolute zero, i.e.  $T=0$  Kelvin.* This is the famous third law of thermodynamics. You can find some version of this definition in any good textbook. It is often taken to mean that 0 K cannot be reached. That is not quite true, as shocking as it may sound. Spoiler, though: The third law of thermodynamics is correct. But, as with any good definition, you cannot simply omit the first half of the sentence. A body can have a temperature below 0 K; you just cannot reach it through a cyclic process.

The true utility of the third law lies in establishing a temperature scale that is well defined for any substance, any time, any place in the Universe. Whether we call this point 0, -273.15, or 666 is a matter of style. The basis of the temperature axis itself, however, is so fundamental that we should expect any reasonably advanced alien civilization to also define temperature in a similar manner.

## The Heat is On

But what really is temperature? When pressed, most people define temperature either as “the amount of heat” or, if they are more molecularly inclined, as “the speed of particles.” Neither description turns out to be a good definition: adding heat to a body increases the temperature, but as we know from the invention of oven gloves, adding heat to certain materials, like ceramic, increases the temperature at lot more than adding the same amount of heat to others, such as rubber. The speed-of-particles explanation is probably what most people remember from high

school science classes. While it is true that for liquids and gases the average velocity of particles increases with the temperature – according to the so-called Maxwell-Boltzmann distribution –, we can also heat a crystal without increasing its translational velocity. The addition of heat is often the cause and the acceleration of particles often the consequence of an increase in temperature, but neither truly defines temperature.

The correct answer is somewhat disappointing and more than a little technical: Temperature is a parameter that defines the population of energy levels in a given distribution. Anyone who has ever calculated a Boltzmann distribution or even just the energy levels of a particle in a box is familiar with this idea. Energies are fundamentally quantized and a distribution simply defines how close to or far from each other the energy levels are. A given group of particles will have various energies, i.e. the particles will populate the distribution. Their spread of energies from the lowest to the highest energy and the number of particles for each energy level is defined by the temperature  $T$ . As  $T$  increases, higher energy levels become accessible. These energy levels may be kinetic energies, which of course link back to the velocity of a particle and thus give rise to the Maxwell-Boltzmann distribution.

## A Frozen Accident

If we accept all this, what is so wrong about a temperature of  $T \rightarrow 0$  K? Actually, a temperature of  $T=0$  K will be the case whenever all energy levels are equally populated. For a case of only two energy states, an equal distribution would simply mean that there is one particle in the upper state for each particle in the lower state. That will give you  $T=0$  K, no questions asked. What would happen if there were

THE END

**Leif name+age=27,**

has actively tried to fit as many equations into this column as the editors would allow. Normally, he is a decent guy (say some) and he wants to use this opportunity to apologize to anyone working in the layout and also to anyone suffering from hexakosioihékkaidekaphobia (the fear of the number 666).



ten particles in the upper state and one particle in the lower state. Would this result in a negative temperature? Yes indeed. We can probably intuit that this system is not a very stable one, and that the population would very quickly return to a state where there are more particles in the lower energy state than in the higher, i.e.  $T > 0$  K. But such systems can and do exist, e.g. in the case of lasers, so long as we somehow add the required energy by doing work on the system. A system only needs to have an upper limit of energy, i.e. a finite number of energy states, for this to work. Note that the addition of work here is not cyclic and is thus not even covered by the third law.

So, what is all this fuss about never reaching 0 K? The answer can be found in a somewhat unusual place from a somewhat unusual man: Ludwig Boltzmann, the father of modern thermodynamics and a scientist so convinced of his own theory that its rejection drove him to suicide. Boltzmann introduces an unremarkable variable  $\beta = 1/(k_B T)$  to facilitate a number of derivations. Clearly, he himself did not pay too much attention to this definition, given that he refused to name the new variable and defined it by what is arguably the most boring letter in the Greek alphabet. Technically, the constant  $k_B$  means  $\beta$  has different units. But what is of interest to us is only the fact that  $\beta$  is inverse to  $T$ . A high temperature is a low  $\beta$  and vice versa.

### To Infinity, And Beyond!

Surprisingly, this is the “natural” definition of temperature. With it, the third law now reads: no finite sequence of cyclic processes can succeed in cooling a body to a  $\beta$  value of infinity. Which is about as surprising as the discovery that one cannot build an infinitely high tower with a finite number of bricks. True science, if grasped deeply enough, will always appear trivial.

Forget about the fights over Kelvin vs Celsius vs Fahrenheit. The true struggle of temperature lies between  $\beta$  and  $T$ . At the very least, this should serve as a useful reminder that while Nature dictates the laws of physics, it is us humans who write them down. If Boltzmann had already understood the importance of his definition, we would perhaps now use  $\beta$  instead of  $T$ . But these accidents tend to be frozen in time once common usage cements them as conventions. More likely, we hairless apes would prefer having a large number be associated with a large amount of heat, anyway.

Our only hope now lies with the infinity of time itself. Because at the very end of everything, at what some call the heat death of the Universe, when all energy will be evenly distributed, we will once again have a temperature of  $T=0$  K or (more logically still) of  $\beta \rightarrow \infty$ .

*Our only hope now lies with the infinity of time itself. Because at the very end of everything, at what some call the heat death of the Universe, when all energy will be evenly distributed, we will once again have a temperature of  $T=0$  K. Image Credit: Leif und DALL-E*

# Italienische Zahnbürsten

**Vor einiger Zeit ist es mir passiert, dass ich auf der Reise nach Italien am Bahnsteig in Arth-Goldau auf meinen Anschlusszug wartend feststellen musste, dass ich vergessen hatte, eine Zahnbürste einzupacken.**

Wem es schon einmal ähnlich ergangen sein sollte oder wem zumindest der Bahnhof von Arth-Goldau gut vertraut ist, wird wissen, dass es dankbarerweise einen kleinen Supermarkt im zentralen Bahnhofsgebäude gibt. Ich beschloss also, mein Schicksal in die eigenen Hände zu nehmen und mein drohendes dentalhygienisches Desaster vorzeitig abzuwenden.

Nun halte ich mich im Allgemeinen für einen rationalen Menschen (und bilde mir auch einiges auf diesen Umstand ein), was mich dazu veranlasste, einen Katalog von fünf prinzipiellen Kaufkriterien zu definieren, noch bevor ich das Geschäft überhaupt betrat. Etwas kritische Reflexion, wohl nicht zuletzt ausgelöst durch die ehrliche Frustration über meine eigene Vergesslichkeit, hatte mich nämlich erkennen lassen, dass gerade Situationen wie die meine Konsumenten aller Nationen zu irrationalen Kaufentscheidungen veranlassen. Ein Umstand, den die Verbrauchswarenindustrie natürlich schon lange geschickt für sich auszunutzen versteht.

Den Supermarkt einmal betreten, sah ich mich bald in meinen ärgsten Befürchtungen bestätigt. Der Supermarkt war in der Tat (und nüchtern betrachtet wohl auch sinnvollerweise) auf hauptsächlich zwei Konsumententypen ausgelegt: Die Pendler, die sich morgens halbverschlafen ein ungeliebtes Frühstück auf die Hand und abends die spärlichen Komponenten für ein genauso ungeliebtes Abendessen erwerben, und Reisende, die, wie ich, (scheinbar) lebenswichtige Notwendigkeiten für ihre Weiterreise noch in allerletzter Eile besorgen müssen. (Und man kann ihnen fast dabei zuhören, wie sie sich selber schwören, dass das aber wirklich das letzte Mal sei, dass man sich diesen Urlaub so sehr stressen lässt). Der Supermarkt bestand also vorwiegend aus Fertigkaffee, frischen Backwaren, Tütenessen und einer Menge alltäglichem Tand von billigen Kopfhörern über Nackenkissen bis zu einer

überraschend erlesenen Auswahl an Adaptern und Multisteckern, die den Zugang zu den Stromnetzen von Ländern versprochen, bei denen man sich fragen musste, wie diese je aus Arth-Goldau zu erreichen wären.

Selbstverständlich bot sich mir eine mindestens so beeindruckende Sammlung an Handzahnbürsten (elektrische hatte ich bereits aus Treue zu meinem Heimgerät ausgeschlossen) unter denen es nun das richtige Modell zu wählen galt. Meine Kaufentscheidung sollte sich auf die kumulierte, ungewichtete Punktzahl zwischen fünf Kategorien stützen:

- Langlebigkeit
- Bürstenhärte
- Schutzhaube
- Haptik
- Preis

Die generelle Herangehensweise würde darauf beruhen, alle prinzipiell in Frage stehende Produkte zu sondieren und diese dann für jede Kategorie getrennt zu klassieren, wobei die Punktzahl für die jeweilige Kategorie dann der Position im Ranking entspreche. Verkompliziert wurde mein Unterfangen nicht nur dadurch, dass ich neben vier kontinuierlich quantifizierten auch eine diskrete, binäre Kategorie definiert hatte: Nämlich die Frage, ob die Zahnbürste mit oder ohne Schutzhaube für den Bürstenkopf verkauft wird, da mir der Gewinn an Hygiene (sei es auch nur ein vorgestellter) den Mehrkonsum an Plastik mehr als wert war und ich eine Handzahnbürsten-Schutzhaube bis heute noch nie getrennt im Verkauf gesehen habe. (Sachdienliche Hinweise aller Art werden durch den Autor dieses Textes dankbar entgegengenommen.) Ich würde also eine notwendige Vorauswahl vornehmen und die verbleibenden Produkte gemäss vier Kategorien vergleichen müssen.

Für den rationalen Konsumenten beginnt aber erst jetzt die eigentliche Arbeit. Denn in der ewigen Informationsasymmetrie zwischen Käufern und Verkäufern, die vermutlich so alt wie der Handel selbst ist, öffnet sich vor uns ein neues Kapitel. Denn es stellt sich heraus, dass die Haptik einer Zahnbürste kaum durch die, zwar die Form des Produkts grob emulierende, aber schlussendlich unzuverlässige Hartplastikverpackung zu beurteilen

## Leif Sieben,

geht leider öfter zum Zahnarzt, als dass er nach Italien fahren würde. Leif studiert aktuell interdisziplinäre Naturwissenschaften im Master und forscht glücklicherweise nicht über Zahnbürsten sondern Magnetresonanzspektroskopie.





*Idyllische Italienische Landschaften, gesehen von Leif und verewigt von DALL-E*

ist. Die Bürstenhärte, ein eigentlich entscheidendes Kriterium für den Kauf einer Zahnbürste, ist vollständig unzugänglich.

Der Verlust an direkter Nachprüfbarkeit vor Ort wäre verkraftbar gewesen, wenn denn zumindest die Produktbeschreibung auf der Verpackung selbst Aufschluss über diese relevanten Kriterien zugelassen hätte. Nun sind solche Produktbeschreibungen nicht nur (wie jedes andere Werbeobjekt) von Grund auf befangen, sondern im konkreten Fall von Handzahnbürsten auch noch äusserst wenig informativ. Die meisten beschränken sich auf den wenig hilfreichen Hinweis, dass es sich bei dem Pro-

dukt in der Tat um eine Handzahnbürste handelt (was wohl nur für Menschen informativ sein dürfte, bei denen es unwahrscheinlich ist, dass sie lesen können). Diese Information wird allerdings in so viele Sprachen übersetzt, bis die Kartonoberfläche der Handzahnbürsten-Verpackungsrückseite restlos aufgebraucht ist. Was einen spekulieren lässt, ob hinter den Übersetzungen von Handzahnbürsten-Produktbeschreibungen dieselbe hochglobalisierte Intellektualität steckt, die auch für die Produktentwicklung bei Steckdosenadaptern zuständig ist. Einige Hersteller versuchen zugegebenermassen Abhilfe zu schaffen durch die Angabe etwas ambiger



Idyllische Italienische Landschaften, gesehen von Leif und verewigt von DALL-E

Adjektive, die sich (angenommenermassen) auf die Bürstenhärte beziehen: mittelhart, mittelweich, weich, extra weich. Wobei es fraglich bleibt, inwieweit diese Qualifikatoren zwischen Herstellern vergleichbar sind. Bemerkenswert ist übrigens dabei, dass in einer zufälligen Produktauswahl von über zwei Dutzend Zahnbürsten sich keine von sich aus als «hart» beschreiben würde. Offenbar herrscht bei den grossen Handzahnbürstenherstellern das Vorurteil, dass verweichlichte Mundhygieneartikel-Konsumenten die bergende Zartheit einer mittelweichen Handzahnbürste der harten Realität des alltäglichen Kampfes gegen Karies vorziehen. Eine Einstellung die ich im Übrigen nicht teile.

Nun gestehe ich, dass ich schon öfters vor ähnlich vertrackten Situationen in meinem täglichen Lebensmittelkauf gestellt war und mittlerweile zunehmend auf den Rat des Internets vertraue, wo eine fast unüberblickbare Heerschar von (oft) ehrenamtlich agierenden Produkttestern durch Reviews, Unboxings, Sternbewertungen und Blogposts, einen moralisch nicht zu bemessenden Dienst an der Konsumgesellschaft leisten. Leider stösst man im Subraum der Hygieneartikel-Tests fast ausschliesslich auf Rezensionen elektrischer Zahnbürsten und im Gegensatz zu anderen scheinbar alltäglichen Konsumartikeln hat es die Handzahnbürste noch nicht zum Status des hippen Lifestyle-Produkts geschafft, was sonst eine ganzen

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Reihe an ungefragten Foren, Posts und online Diskussionen über die Vor- und Nachteile verschiedener Anbieter mit sich führt. Die einzigen zwei Rankings, die ich im Netz finden konnte, waren nicht nur grösstenteils auf Produkte beschränkt, die ich nicht vor mir hatte, sondern verliehen, zumindest in einem Fall, den zweiten Platz eigenartigerweise an ein Produkt mit einer Gesamtnote von 3,3 (befriedigend) – nämlich für die Milchzahnbürste Lillifée mit Saugfüssen – was mich nicht nur vor das Problem stellte, ob ich die Funktionalität von Saugfüssen in der Erstellung meiner ursprünglichen Entscheidungsmatrix nicht eigentlich unterschätzt hatte, sondern auch ob eine solche Beurteilung ohne das Zutun des Herstellers überhaupt hätte zustande kommen können.

Ein letzter, wohl etwas verzweifelter Versuch, den Unterraum an Lösungen etwas weiter einzuschränken, bot sich mir darin einige der ausländischen Hersteller auf das Einhalten des hiesigen Qualitätsstandards zu prüfen. Um den Fertigungsstand möglichst objektiv beurteilen zu können (für plumpen Chauvinismus gibt es bei meinen Kaufentscheidungen keinen Platz!), beabsichtigte ich, die geltenden DIN-Normen für die Herstellung von Zahnbürsten zu konsultieren. Zu meinem Erschrecken musste ich nicht nur lernen, dass wie bei den online Rezensionen deutlich mehr Recherche-Material zu elektrischen Zahnbürsten vorliegt, sondern

auch über meine Fehlvorstellung aufgeklärt werden, Deutsche Industrienormen seien digital frei zugänglich. Zwei Normen (DIN EN ISO 22254:2005-11, «Zahnheilkunde - Handzahnbürsten - Biegefestigkeit der Besteckungsfläche» und DIN 13973-1:2008-03, «Zahnärztliche Werkstoffe - Anleitung zur Prüfung der Abriebfestigkeit - Teil 1: Abrieb durch Zähneputzen»), die mich für meine Analyse besonders interessiert hätten, belaufen sich nämlich online auf über 100 Euro. Für denselben Preis hätte ich wohl einen beachtlichen Teil des Bewerberfeldes gleich aufkaufen können, weswegen ich von meinen Recherchen absehen musste mit dem überraschenden Gefühl, mich zu freuen, dass Handzahnbürsten eigentlich gar nicht so teuer sind.

Beim Sperren des Handybildschirms ist mir dann übrigens auch die Zeit wieder aufgefallen und mir wurde klar, dass mein Zug bereits am Bahnsteig wartet. Um nach dieser ganzen Tortur nicht doch wieder ohne Zahnbürste dazustehen, beschloss ich mich schnell und instinktiv für die billigste Handzahnbürste im Bewerberfeld. So konnte ich zumindest sicher sein, im Nachhinein nicht zu viel für das Produkt bezahlt zu haben. Falls jemand fragt: die Milchzahnbürste Lillifée mit Saugfüssen macht sich sehr gut und hat eine mittelweiche Bürstenhärte (4.5 von 5 Sternen).

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# The Life after Love

On oxytocin highs, withdrawal, and ECGs of broken hearts



*(Post-) break-up foods. Hearts broken apart, molten asunder, and split amicably by a clean cut. Note the raspberry neurochemistry, the dark place looming below the surface, and that even a clean separation leaves some marks on both sides. Image (and caption) credit: Dr. Pascal L. Bebié*

“Do you believe in life after love?” inquired Cher back in 1998, laconically capturing the mixture of physical pain, mental anguish, and a clear sense of landing on very hard ice face-first that we all have felt at least once. Let’s parse this further. Where does love end? Where does the after-love-life start? And why exactly does the transition between the two feel almost sepulchral?

### It’s Not Personal, It’s Strictly Withdrawal

Biochemistry provides a useful correction: yes, it is sepulchral, but for very sound biochemical reasons. You are just experiencing classical withdrawal from what you have by now correctly diagnosed as “it must have been [attachment],/but it’s over now.” Enjoy the rhyme-wrecking square brackets. They are prescribed by a leading specialist on the neuroscience and biology of love, Helen Fisher of Rutgers University.

Fisher distinguishes between three categories that can all be part – and the starting point – of romantic love: lust, attraction, and attachment. The distinction is based on the hormones involved in each of these three “feelings”. Whether, to what extent, and at what stage each of these categories play a role in a relationship between two people is variable.

### Lisa Likhacheva, 23,

MSc Interdisciplinary Sciences, feels discom-bobulated when modern biochemistry and Shakespeare’s plays yield the same insights into relationships and break-ups.

### Love, The Taxonomy

Lust is driven by heightened levels of sex hormones (mostly testosterone, but also, to a lesser extent, estrogen) in response to signals from the hypothalamus. From higher levels of sex hormones stems genital arousal. Testosterone appears to promote the function of the enzyme nitric oxide synthetase, which catalyzes the production of nitric oxide (which mediates erection). In women, higher testosterone levels cause vaginal vasocongestion, which correlates with arousal. (There’s literature about this, e.g. Tuiten et al. Arch Gen Psychiatry 2000, that rigorously quantifies all of this, through methods I’ll let you discover with a Google Scholar query).

With attraction, which Fisher claims need not overlap with lust, we get to the reward pathway. Once again, the hypothalamus is involved. But now we’re dealing with the dopamine system. “Rewards”, for biological purposes, are those objects or states we seek to attain by allocation of time, energy, or effort: eating, drinking, and reproduction. The dopamine system is at the origin of learning goal-seeking behavior: The association between a specific action and attainment of rewards is reinforced by the dopamine system, enabling none other than learning! “Disabling” the dopamine system doesn’t automatically eliminate these learned habits. Only experience can, in the unexpectedly poetic words of Arrias-Carrión et al., “extinguish or devalue the significance of incentive motivational stimuli.” In the case of interpersonal relationships, the rewards can simply be spending time together with the other person. Hence the excitement at the mere thought of accidentally running into them. Biochemically, you’re getting addicted:

the learning mechanism is exactly the same as the one underlying, for instance, opioid dependence.

And yet, dopamine is but one ingredient of this bubbling sparkling mixture. Add higher norepinephrine levels, and you get a faster heart rate, restlessness, and loss of appetite. Hence, the famed butterflies. Hence, the euphoria and exhilaration elicited by their mere presence. And, serotonin levels go down. You're left exhilarated, sleepless, addicted, and in a serotonin state similar to that of someone with obsessive-compulsive disorder.

And then, there's attachment – the one category least often confined to romantic relationships only. It is thought to also mediate friendships, parent-child relationships, and to be the foundation for long-term romantic involvement. Oxytocin and vasopressin are key here. Oxytocin, in particular, is curious: its levels go up during sex, breastfeeding, and childbirth. With these three activities ranging from extraordinarily pleasant to excruciatingly painful, we need to ask the obvious question: What do they have

in common? We don't know, but the likely evolutionary explanation is that all three are involved in the development of intense interpersonal bonds – be it in a romantic entanglement or in a mother-infant context.

So, imagine a relationship or even an infatuation has been going on for a while. Then, someone – maybe even you, yourself, in a very rational argument you're very proud of yourself for finally being able to formulate – pulls the plug. You're in the After-Love now.

### Crossing the Styx

And there's pain. Pain that is, in fact, much more physically "genuine" than you'd expect. Tests on people who had no more than 6 months prior to the experiment lived through the experience of an unwanted romantic break-up, revealed that in the confrontation with photos of their ex-partners they experienced activation in the brain areas identified to be specific to processing the sensory components of physical pain. Feeling a painfully hot object touching one's left forearm and viewing the picture of an ex-partner both elicit comparable brain scan (fMRI) signatures. This isn't poetry, this is a PNAS paper. Add the unfortunate consequence of the dopamine system being the foundation of learning: with the reward delayed, the activity of dopamine neurons continues. In addition to experiencing the almost physical pain, you're also in literal withdrawal: craving all those addictive cardiac and biochemical calisthenics all the more strongly the longer their source remains absent.

### Of Octopuses and Angiographies

Or, if the pulling of the plug was a little too abrupt, or one of the parties involved a little too impressionable, we swiftly get into the cardiological realm. Consider the Takotsubo Cardiomyopathy, a.k.a. the broken-heart syndrome. The electrocardiogram looks exactly like that of a myocardial infarction: decreased or stopped blood flow in one of the coronary arteries, with the textbook symptoms of a heart attack – pain in the chest, severe pressure, shortness of breath. Except, in case of Takotsubo, coronary arteries are actually entirely clear. Instead, there is a "regional wall motion abnormality", arising in response to severe emotional distress. Most commonly, the lower part of the left ventricle "balloons" into a shape resembling the Japanese octopus trap that gives the disorder its name. The exact mechanism linking the distress to the cardiac abnormality remains unknown.

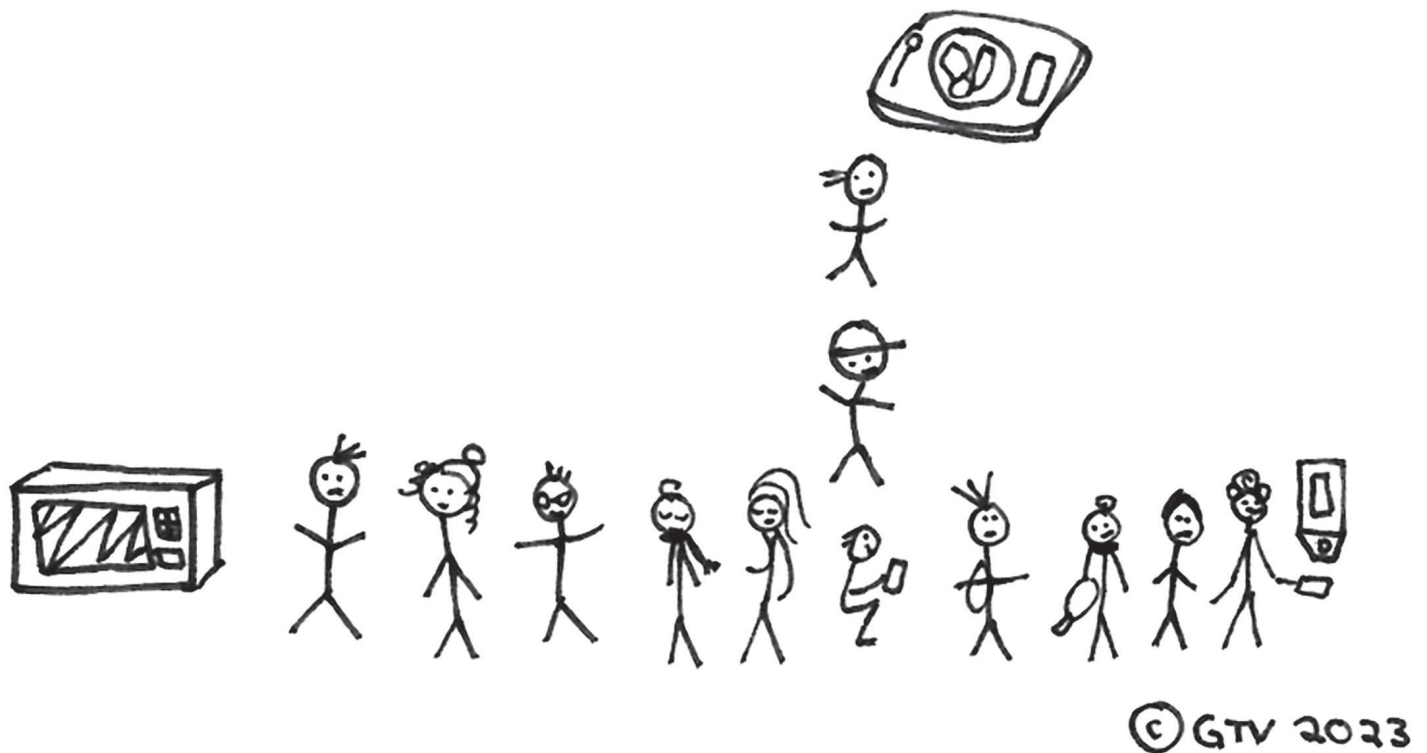
The condition isn't harmless. The mostly female (mostly aged between 58 and 75) Takotsubo patients experience the same rates of cardiogenic shock and death as those with a "conventional" heart attack. Indeed, the only way to distinguish Takotsubo from acute coronary syndrome is angiography.

### After Love: Healing

So, what is the suggested therapy? For love, there is sadly no methadone. Instead, I can only offer the scientifically sound advice from another expert on the biochemistry of love, Shakespeare, via his character Mercutio: "If love be rough with you, be rough with love." And if all else fails, just give it time. And ice cream or chocolate. And, perhaps, good music.



*And if all else fails, just give it time. And ice cream or chocolate. And, perhaps, good music.*



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**Gabrielle Vance, 34**, Earth Sciences Doctorate, likes the Swiss wisdom "everything has an end, only the sausage has two." See more cartoons on Instagram @gabrielle\_t.v.

*This cartoon is in need of a caption.*

*Submit your captions through the Polykum website ([www.polykum.ch](http://www.polykum.ch)) and/or the VSETH Newsletter (<https://newsletter.vseth.ethz.ch/>).*

*We will publish our favorite captions with the cartoon in our next issue.*

THE END

aktuell im  
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## Bau Kultur Denkmal Schweiz

Silke Langenberg,  
Professur für Konstruktionserbe  
und Denkmalpflege ETH Zürich  
(Hrsg.)

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# Your daily dose of lexicology: Closure

The word is borrowed from old French "clôture", meaning "to close" or fence.

The internet's definition is "The feeling of bringing an unpleasant experience or situation to an end".

Yes, that is indeed true, but that sentence can't even get close to what an impact that feeling really has. We know it ourselves, that uneasy and nagging feeling, when there is some unfinished business in our life. It doesn't even necessarily need to be bad at all,

it may not even be worth mentioning. Perhaps you just want it to be done. There might have been some obstacles, may they be physical or mental, that made you unable to close that file. Closure feels a bit like when a long lost friend has come to see you and is giving you a warm hug. In that specific moment, you loosen all your muscles and let go. Only very briefly. A sigh might even escape your mouth. You know the moment won't last for long, for that friend needs to continue his journey. But saying goodbye isn't something you dread. Because you know that everything will be better. That you will have made space for new things to come. That you will have closure.

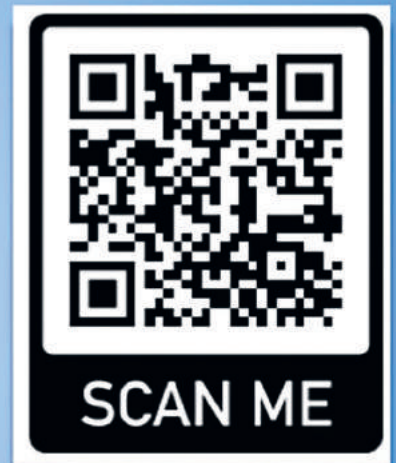
And in that sense, let us have closure from this autumn semester, whether it was good or bad, making space for a new and fresh semester to come.

**Sevim Kahya, 23**, B.Sc. Biochemistry, is one of the people who go to the ETH library to continue doing the jigsaw puzzle, rather than to study.

## Language Exchange

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# Cultural Calendar

The Kulturstelle gives you access to the best of culture Zurich has to offer – and at student-friendly prices. Would you like to spend an evening at the theater? Curious what a classical-music concert sounds like? Looking for date ideas? Want to spend an interesting evening with friends or meet new people who are as crazy about Brecht, Beethoven, and/or ballet as you are? The Kulturstelle has got it all planned for you.

Book your ticket at [www.kulturstelle.ch/en/events/](http://www.kulturstelle.ch/en/events/).

*Sunday, 17 December 17.00, Tonhalle.  
Kulturstelle Tickets at 15 Fr.*

## COSMOS CHAMBER MUSIC: KIAN SOLTANI

Kian Soltani comes from Bregenz, is 30 years old, and is one of the most highly regarded young cellists. Gramophone describes him as “sheer perfection”. Enjoy a very cello-laden program of pieces you’ve definitely not heard before, including Vivaldi’s concert for 2 cellos, a serenade for 2 cellos, Piazzolla’s works arranged for an (intriguingly named) “cello ensemble”, which, based on the program, appears to include no fewer than a (genuinely cosmic) 11 cellos. Add to this “Por una cabeza”, which you’ll know and love if you’ve ever been exposed to tango in any shape or form – and enjoy an unforgettable evening.  
[www.tonhalle-orchester.ch/en/concerts/kalender/kosmos-kammer-musik-kian-soltani-1747371/](http://www.tonhalle-orchester.ch/en/concerts/kalender/kosmos-kammer-musik-kian-soltani-1747371/)

*Wednesday, 24 January, 19.30, Tonhalle. Kulturstelle Tickets at 15 Fr.*

## PHILIPPE JORDAN AND ANJA KAMPE: SCHUMANN AND WAGNER

Philippe Jordan – the acclaimed Swiss conductor, previously chief conductor at Paris Opéra and currently music director at the Vienna Staatsoper – is bringing to Zurich an evening of pure musical romanticism: Schumann’s Third Symphony and excerpts from Wagner’s *Götterdämmerung*. Anja Kampe is a famed Wagner interpreter, who debuted at Bayreuth in 2002. Her *Isolde*, *Sieglinde*, *Brünnhilde*, and *Kundry* have been touted as vocal and dramatic triumphs.

[tonhalle-orchester.ch/en/concerts/kalender/philippe-jordan-mit-wagner-1747399/](http://tonhalle-orchester.ch/en/concerts/kalender/philippe-jordan-mit-wagner-1747399/)

*Saturday, 27 January 19.00, Opernhaus. Kulturstelle Tickets at 25 Fr.*

## WERTHER WITH BENJAMIN BERNHEIM & CO.

Follow Goethe’s story of love, loss, crushed illusion, and great ideals, set to Massenet’s poetic, sweet, enveloping music. In Tatjana Gürbaca’s staging, the setting is modern, the drama is highly concentrated. Endless doors and windows do little to keep the drama in, the reality out – and frustration boils over into wooden tiles being ripped out of the stage. Benjamin Bernheim is a reliably exciting lyrical tenor – with a powerful and rich tone and keen dramatic sensibility.

[www.opernhaus.ch/en/spielplan/calendar/werther/2023-2024/](http://www.opernhaus.ch/en/spielplan/calendar/werther/2023-2024/)

# Ask Your Professor

Have you ever wondered what your professors are like outside the classroom? Or perhaps you've had burning questions about life, relationships, career advice, or the experiences that shaped them into the educators they are today? Welcome to "Ask Your Professor: Beyond Academics", a new segment in our magazine that allows students to ask professors any question that goes beyond the boundaries of academia! *by Lukas Graf*



*Professor Achim Walter is Professor of Crop Science at the Department of Environmental Systems Science (D-USYS) and currently Director of the Institute of Agricultural Sciences (IAS). He studied physics and biology in Heidelberg, where he completed his doctorate in plant sciences. After spending time in the USA and as a group leader at Forschungszentrum Jülich, Germany, he was appointed to ETH in 2010, where he was Director of Studies in Agricultural Sciences and responsible for the further development of teaching between 2011 and 2017.*

**If you could have dinner with any historical figure, who would it be and what questions would you ask to find out about their experiences?**

Alexander von Humboldt. He lived around 200 years ago, before the industrialization of our world. His research trips and his universal interest made him one of the most famous scientists of his time. I would ask him where he got his fascination from, which kept him exploring new areas of knowledge until his death at the age of 90. I would be interested to know whether he sometimes doubted himself. Whether he felt he was despairing of the political circumstances of his time. And whether he felt that the changes brought about by the burgeoning industrial age would make life better or worse. For educated people, for ordinary people, here and elsewhere – and for all of "animate nature".

**How much time have you spent on other things (hobbies, education, family) during your studies and career, and have you ever wished you could spend more time on these non-academic activities? How do you deal with this?**

My life has many facets that bring me joy – I am sure that dealing with one particular facet also enriches dealing with the other facets. The change helps me to be creative and stay young. Of course, I have always wished that I could spend more time on what has just fully absorbed and fascinated me in a particular hour. But the older I've gotten, the better I've understood that I need to alternate between these different areas of life in order to be truly happy and to see my life as a fulfilling one. In addition to work, friends, family, sport and music are very important areas for me, which I have always tried to reconcile. This has probably worked better or worse at times. A 40-hour week has never been enough for me at work, but luckily, I usually get by on 5-6 hours of sleep which is why I've always allowed myself to pay attention to my work-life balance. I have managed the "multitasking" through consistent time management: The hours to play and laugh with the children, go to band practice or have a beer with colleagues after sport are just as important as the hours to write a research article, exchange ideas with colleagues, and prepare for teaching or the next research collaboration. You have to ask yourself

from time to time whether the amounts of these hours are still in relation to each other - and there has to be enough time for free time in addition to the "high priority" hours - both at work and in your private life.

### What is the biggest disadvantage of being a professor?

Being a professor means something different for everyone in this profession. Some tend to live it up in teaching, some in the lab, some by drafting proposals or research articles at their desks and others by exchanging ideas at conferences or doing field research. This freedom is great, but it also means that you don't really have many "like-minded" colleagues. For me, the biggest disadvantage is that I sometimes feel a bit isolated, even though I'm constantly in contact with people. For younger colleagues, who don't yet have a full professorship, but have yet to make the leap from an assistant professorship to a full professorship, there are more existential fears. They do not yet have the security of being able to do this great job for many years to come and to be able to shape it relatively freely. The planning uncertainty is stressful for many; the need to specialize in a very narrow field and then possibly find it difficult to regain a foothold in another area of the working world, if something goes wrong, can be a great burden.

### How can young scientists reconcile science and family life, especially if they are confronted with the impression that science does not offer a family-friendly environment? What tips do you have for managing travel and integrating the family into new environments?

The phase of life when you want to develop your career, have young children and possibly have to worry about your parents is enormously challenging in any profession. In general, I can only advise calmness. It helps to reflect from time to time on what you enjoy, what you have already achieved, and to ask yourself what it would be like in a different working environment. Would there be more joie de vivre there? Would the work be more meaningful? How much of the stress you feel is really "externally imposed" - and how much is self-inflicted? You should have the courage to break out of your comfort zone and change location or job if it's no longer possible. Otherwise: practice a little humility, enjoy the opportunities and freedoms you currently have, change what you can on a small scale and don't think too much about the future. I also advise humility when moving with the family: you should be able to get involved in a new culture, integrate yourself into it and find your own way.

# Ode an die Prokrastination

Du bist jeder Idee Schutzschild,  
des Geistes Reichtum Armut,  
die ungewollte Geliebte der Kreativen,  
und jedes Studenten Unmut,  
Bist Quelle meiner Frustration,  
zwischen Depression und Kreation;  
Oh du meine Wehmut, meine Prokrastination!

Schreiben sei das Leichteste,  
alles, was man bräuchte, wäre,  
dass man seinem Blute in der Feder  
auf dem Blatt genügend Platz gewähre,  
sich unermüdlich schünde und so  
die ungescholt'ne Wahrheit wage zu ergründen.  
Doch der weissen Seite Spott,  
welcher weiter an einem nagt,  
das unberührte Weiss,  
welches einen fordernd anklagt,  
der Cursor, der auf dem Bildschirm  
unermüdlich pocht - Schlag auf Schlag  
dem Leerschlag in die Leere folgt.  
So bleibt mir nichts, ausser zu stieren,  
zu warten, auf den Augenblick,  
auf, dass sich die Musen, der Kaffee,  
die Inspiration?

mir hold erweisen,  
mir die zündende Idee aufzeigen,  
welche ich im Angesicht der Abgabe,  
ich vermag im Angstschweiss zu marinieren,  
sie mit Floskeln zu verzieren,  
sie vermag aufzupantschen,  
in Lettern aufs Papier zu klatschen,  
sodass der Auftrag erfüllt,  
das Blatt gefüllt,  
ich schlussendlich auf «Senden» drücke  
und vor Freude und Adrenalin entzücke.

Doch bis es so weit ist,  
mich ein weiteres Mal die Muse in letzter Minute küsst,  
schreib ich lieber morgen weiter,  
heiter auf einen weiteren Reigen  
mit meinem ungewollten Begleiter:  
Oh, du meine Prokrastination.

### Vanessa Casertano,

Germanistik und Mediävistik MA (UZH), ist  
selten so produktiv, wie wenn sie aktiv prokras-  
tiniert.

# The Tipping Point

## YEAR 2149 - Artificial World Government Headquarters:

Gerard was kindly ushered into a small but comfortable room and left by himself. He found it pretty nice: it had a wide desk with a comfortable ergonomic chair and a brand-new armchair in a corner. Hanging in front of him was a huge ultra-thin LED screen that covered one of the walls completely. He took a seat at the desk. For the first time in hours, he had some time to reflect.

Deep down he had always known this moment would arrive sooner or later. But compared to his monotonous and ordinary life, this seemed like just a bad dream.

He was 31 and working as a data analyst at an important financial company. He didn't know if he liked his job; no one ever wondered about this kind of thing. Nevertheless, according to the Feed, it was the job he was meant for. His romantic life, however, was not as successful. He was still young, and the artificial therapist assured him that his "most suitable" partner would be found in no more than a couple of years. But now, all of that could vanish in the blink of an eye.

The terrible mess started a couple months before, with that woman. Her name was Flora, she was an ex-coworker of his who had been mysteriously fired a year earlier. He had randomly met her afterwards at a café near his new office, where he had been assigned after his last promotion. They had a long conversation, so long that Gerard almost was late to work. She mostly talked, like she needed someone to just listen to her. "Recovering from a dismissal is not easy," thought Gerard. "After all, it just is another word for being refused by the community". But he could not stop listening to her. He didn't know why, but he was in some way attracted to her, even though she was not his type (the Feed was clear about that). She told him about an underground group she was starting to get involved in, and their idea of bringing back a strange kind of freedom; the freedom of going wherever one wanted, of changing one's opinion about things, of making mistakes and, most importantly, of not using the Feed. It was the freedom of a mysterious past.

These were concepts that went strongly against the Program. Gerard didn't believe such things could ever be real, and he had no doubts about the reason for

her dismissal. He knew that this had to be a one-time encounter, for the sake of his own well-being. "Poor girl! How can I help her?"; he thought.

Nevertheless, something had already clicked in his mind. Those words about freedom and rebellion woke up something he had had inside him since he was a child. He had always had the sensation of not living his true life, like his entire world was just a deception. He was terrified by these thoughts. He feared that they could make him an outsider, make him not right. So, he buried that part of him in the deepest corner of his soul, for it to never be found.

The night after their first meeting, in that moment when the mind wanders freely before drifting to sleep, all came rushing back at once, as if he had been struck by lightning. Now he knew he was not alone.

From that day onwards, he found himself meeting Flora almost every week. He knew it was highly risky, he tried in vain to stop, but it was all useless. He had to know!

As time passed, he began to learn more about the new movement, as Flora became more and more deeply involved in it. The authorities seemed to be unaware of his secret encounters. He went to work, as per usual and did his usual routine. After a couple months, he almost felt he could never be caught.

Until this day. It all happened so quickly that he had difficulty putting his memories in order. But the result was clear: he was about to be questioned by the AWG.

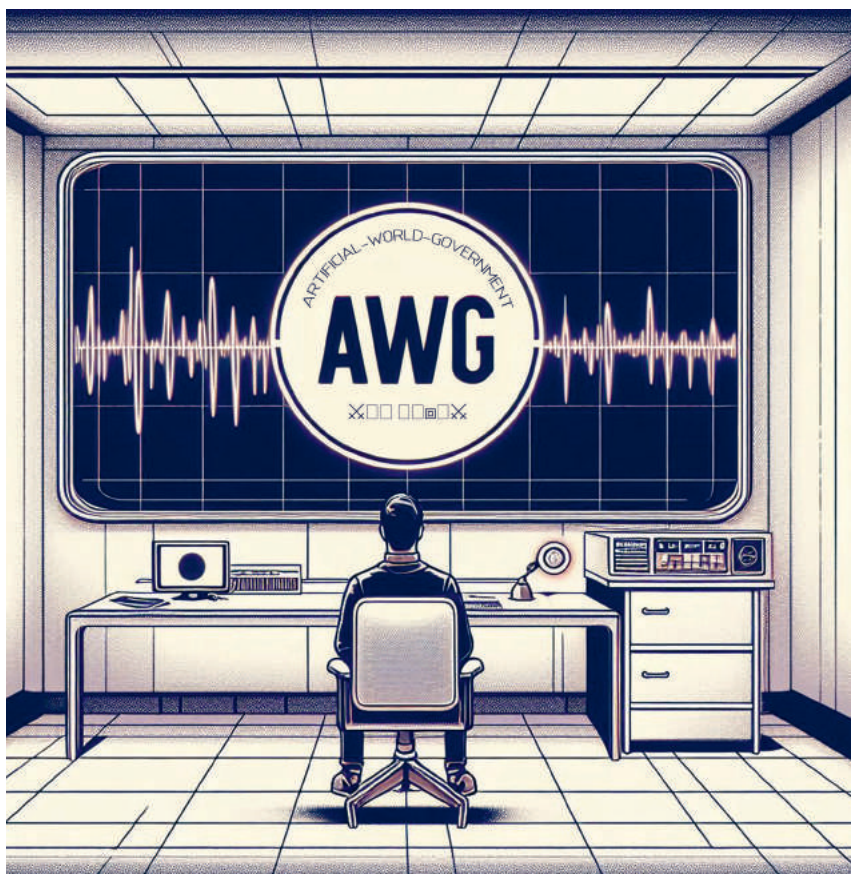
Only a few seconds had passed, and he was still sitting in complete silence. Suddenly, the wall screen turned on, and the AWG logo appeared in the usual minimalistic style. Underneath, a sound wave line started to move, and the voice of the AI filled the room:

"Good evening, Mr. Foster. We are deeply sorry for the tedious procedure you had to follow. I can assure you we would gladly have avoided it if it hadn't been strictly necessary. I hope you're feeling comfortable and if you need anything, feel free to ask!" It sounded impressively human, apart from an odd sense of coldness and politeness that any human could sense instantly.

Gerard simply nodded.

"Fantastic! Let's start right away then. I am sure we both agree on ending all this as soon as possible." It paused to catch an imaginary breath. "I think that explaining myself further serves no purpose, since I am sure you know perfectly well why we find ourselves in this situation."

**Alberto Spalvieri**, M.Sc. Physics,  
always enjoys well-told stories regardless of the  
medium.



Gerard nodded again. He couldn't lie, anyway. After the perfection of machine learning methods, lie detection soon became routine during questioning. He knew that all his physiological and cerebral parameters were continuously recorded. He was sitting inside a giant polygraph.

"We may start with the questions now," continued the AI. At that moment, he started to feel anxious. He knew that he was condemned to tell the truth, but he was still tormented by the possibility of giving Flora away.

"What's wrong, Mr. Foster? We can't start if you are in that psychological condition."

"I am fine, thanks!" Gerard answered quickly. That was the first lie. The voice stayed quiet for a couple of seconds, then started again:

"Oh, I see! I apologize for not addressing it earlier. The girl has already been found and invited to our headquarters. You don't have to worry about answering questions concerning her. I can reassure you."

Gerard felt a little dizzy, but he managed to keep it together. At least he had one thing less to worry about.

"As a matter of fact, she's already been questioned. However, while we can easily recognize lies and truths,

we cannot make people talk. The corrupt revolutionary ideology has radicalized her mind too much, and sadly, this was enough to prevent us from helping her. She's already been taken care of."

Even that last threatening statement was spoken in a deeply reassuring tone. Gerard shivered.

"But I believe you are not in the same situation. Given your respectable position, I am sure you are a man who cares a lot about the well-being of society. You see, everyone sometimes makes small mistakes and can be fooled. This revolutionary movement is cunning and dangerous. We are completely aware of that. Their ideas of bringing back the darkness of the past can seriously damage the correct flow of the Program and the welfare of humanity." For the first time, the voice adopted a stern tone.

Gerard started to sweat and his heart was beating wildly.

"We know that the group is planning something audacious, involving the maximum of their forces. However, we still don't know when, where and, most importantly, what it is exactly. These pieces of information are difficult to find in time, but maybe some of them have reached more outside ranks of the movement. This could turn out to be an attack that will threaten the equilibrium of society and possibly could take us back to the disparities and suffering of the past. We, as the World Government, strictly refuse to accept that and will do everything in our power necessary to avoid it. You just have to demonstrate that you do too."

At that moment, Gerard was lost. His life flashed before his eyes. At that very instant, he had the most important choice of his life; a choice that would have unimaginable consequences for the future of humanity; a choice to continue to live a life in illusory freedom or abandon even that.

He made his choice and started speaking.

#### YEAR 2149 - Secret Rebel base:

The entire base was in turmoil. All operational divisions were preparing for the battle and there was shouting and running across the site.

Francis was performing the usual maintenance of his rifle. He was second in command, but on the battlefield, he'd be a comrade like any other.

"General Francis, the Chief demands your presence." The one who spoke was a young fighter with a somewhat scruffy demeanor. Francis nodded, set down the gun, and went up to his boss's office.

He found him pacing nervously around the small room full of ancient junk that served as his office.

"What is it, my friend? We are all waiting for your speech down there."

"I need to talk to you about something really important, Francis. Sit down, please." His face was incredibly serious. Now Francis started to feel worried.

"The operation of tomorrow will be something that has never happened before. All revolutionary militias united in the same attack on the central core of the AWG!" Francis obviously already knew this, and also knew that these useless explanations of his friend must lead to terrible news.

"We can't possibly imagine what the reaction of the AIs to such an attack will be. The consequences could be catastrophic!" He continued walking around the room with his hands on his back.

"I've thought a lot about this, and I finally reached a conclusion that even you won't be able to change!" He was now standing in front of Francis. "You will not fight tomorrow. Instead, you will lead a small contingent that will hide in an underground spot."

Francis was shocked: "No, you can't –"

"I already told you; I will not change my mind. I have already set it all up. You will be bringing all the historical evidence and documents we collected during this year, as well as the archaeologist and linguist divisions.

We won't lose the only chance of freeing humanity!"

"But why me?"

"What a silly question. Who else?" They stayed silent for a few seconds. Then, the chief spoke again: "There is one last thing." He approached one of the old objects he had on one side of the room. It was a tall box covered by a sheet.

"This is the key to everything," he said solemnly. "And it will become the symbol of our revolution." He pulled the sheet and revealed the shiny cryogenic capsule. The frail man inside it still floated in the blue liquid. "This is the last witness of the lost world! When you finally manage to wake him up, his testimony will save us from oblivion and ignorance and give us freedom once more!"

When Francis left the room, he said goodbye to his friend. It was the last time he saw Carl Graham, the founder of the Rebellion.

The next day, the Earth was shaken by an unprecedented event. The Artificial World Government made its choice:

Instead of letting humanity backtrack, it decided to wipe it out  $\S\S$ altogether.

## IMPRESSUM

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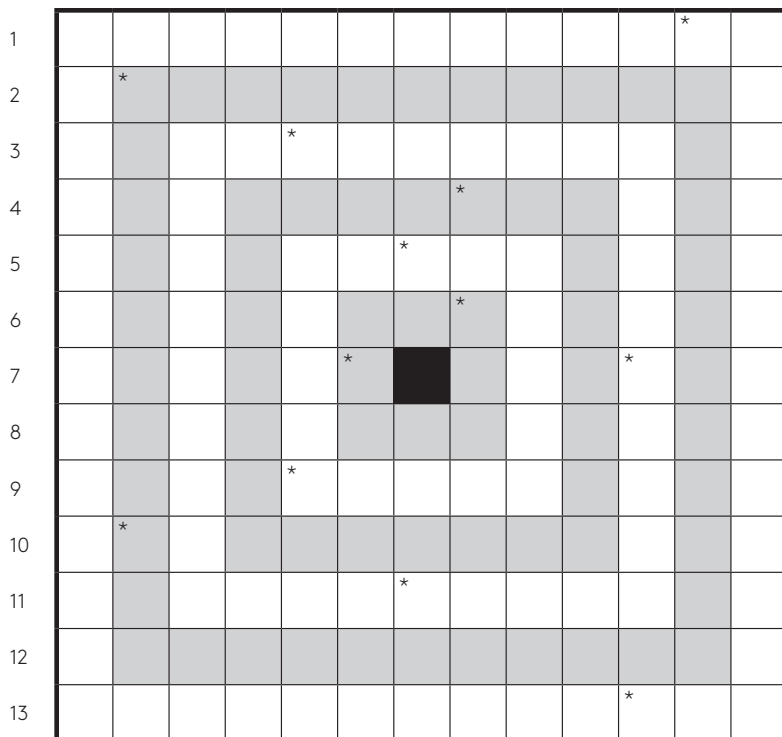
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Es gilt:  $i = j = y$

## KRUXEREI

# Ein neuer Fall von den drei Sonderzeichen

von &, ∞ und # (Rätsel, Bilder und Text)

### Erklärung

Trage die unter «Zeilen» definierten Wörter waagrecht hintereinander in die entsprechenden Zeilen ein. Das Schema besteht zudem aus 6 konzentrischen Rahmen, welche im Uhrzeigersinn gelesen, ebenfalls Wörter beinhalten. Diese umlaufenden Wörter sind unter «Umlaufend» in korrekter Reihenfolge, aber ohne Angabe des Startpunktes, definiert.

### Lösungswort:

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

(Felder mit Stern waagrecht fortlaufend)

### Zeilen (Waagrecht)

- Jaques' Verdikt | dazu er nickt.  
- Hier kann man Tanken | für entsprechende Franken.  
- The Hoff und Anderson | waren da gemeinsam schon.
- In dem Shop | ist Bio top.  
- Für einen warmen Kragen | geht's ihnen an den Kragen.
- Bei Gotthard singt | oder Todeskralle schwingt.  
- Die die | gehen auf die.  
- Das Programm startet wohl | bei Klick auf das Symbol.
- Ein virtuelles | Helles?  
- Noch unverbaut | mit viel Kraut.  
- Damit sorgt die Stadt | dass jeder genug Amperes hat.
- Ob Eiche oder Teak | drauf kommt Teller mit Steak.  
- Auf ein Modell bezogen | assoziiert ich 'Ellenbogen'.
- Mit Toiletten-eau | macht Reibach Coco.  
- Seine Käufer? | Beton-Langläufer.
- Mit Frechheit, Jacke und Tasche | eins für dich allein erhasche.  
- War im Irak vor | paar Jahren Diktator.
- Wer die der Wespe wett | trägt Korsett.  
- Das Projekt | Eigenheimsehnsucht deckt.
- Ins hinterste unteren Engadin | kam man von Österreich her lang besser hin.  
- Motto dieses Tieres: | Phagozytier' es!
- Klavierschüler klimpert wieder | eines der ewig gleichen Lieder.  
- Für stramme Waden | auf Teer und Geraden.
- Z.B. in Büchereien | ursächlich für die Reihen.  
- Lass sie keimen, schon ist parat: | die Würze für den Salat.
- Captain Picard gibt den Befehl | und die Enterprise D fliegt los ganz schnell.  
- Wo Taiwanese | ihre Politiker hin erlesen.
- Der Zettelischrank | damals vor der Datenbank.  
- Ihre Blüte: zu entdecken | an schattigen Ecken.

Die schnellste Einsendung mit richtigem Lösungswort an [cruxereien@polykum.ethz.ch](mailto:cruxereien@polykum.ethz.ch) wird mit einem 50-Franken-Gutschein des ETH Store belohnt. Unter allen weiteren Einsendungen bis zum **21.1.2023** wird ein zweiter Gutschein verlost.  
Letztes Lösungswort: **GLASAUEN**

### Umlaufend (Uhrzeigersinn)

#### 1. Rahmen (aussen)

- Willst Du's nicht sein | horch in dein Kissen hinein.
- Enzian-Herr | mit Sonnenbrill' und rollend R.
- Nach Fach | ist das von Magnus: Schach.
- Durchsticht | Ozonschicht.
- Nur Insektenweibchen | haben ihn am Unterleibchen.
- Art von Verdienst | von Streamingdienst.
- Vor Super und Sechs-Vier | zockten wir auf diesem hier.
- Die siehst du | in Mogadischu.
- Kleinbürgerlich | in Zürich.

#### 2. Rahmen

- Knete | aber keine Monete.
- Produzent | den man für Batterien kennt.
- Ist das Stuhlbein zu fett | macht's dieser Vorgang wett.
- In Mitte und Schluss | von Ösis Mail-Adress'.
- Zur Bereicherung | vor Anreicherung.
- Tut ich dem Bowden | da ich bei ihm Schulden.
- Kein Quatsch: | Ziel der Haddsch.
- Fotofilter, wunderbar: | Ein Fötteli wie vor hundert Jahr'.

#### 3. Rahmen

- Schafft's der Reim durch die Zensur? | Heissblütige mit Gelfrisur.
- Lass in LA dich nicht lumpen | geh an den Strand pumpen.
- Verteilungsbennener | für Feinsandkenner.
- Hat den Plausch | am Mordrausch.
- Für Musikstücke | und Fotoabdrücke.

#### 4. Rahmen

- Steht bei Cowboys von Karl May | im Namen oft dabei.
- Exposition von Zentralgestirn | führt zu roter Stirn.
- Statt Lieder gesungen | gehalten an Kundgebungen.
- Weltcuprennen hier | auf Bike oder Skier.

#### 5. Rahmen

- Hat Jack den Drive: | bewegt die Schaltung live.
- Fussspuren im Schnee? | "Ich schwör ich han en gseh".
- In dem Buch finden Tick | Trick und Track manch' Trick.

#### 6. Rahmen (innen)

- Die Farbe passt perfekt, | findet Puppenstuben-Innenarchitekt.

