THINK *forward*

COMPANION

INTRODUCTORY WORDS

We are proud to welcome you to the fourth edition of the THINK conference, the THINK forward conference.

This year's edition will again feature a highly intense programme of 26 talks and interventions, as well as a varied side programme and socialising events. The proposed contributions come from a vast number of different fields of expertise, reflecting the diversity and the commitment of our speakers. This companion will guide you through the conference and includes a timetable and all submitted abstracts.

What should you expect from the THINK forward conference?
Looking all around us, we realise that we are going through very exciting times. Scientific and technological advances of the past and present continue to leave their mark on humankind, for the better - and for the worse. At the same time, our understanding for the world in which we live better is deeper and more extensive than ever before - and accessing this knowledge has never been easier.
It is the objective of the THINK forward conference to help us access the unfathomable wealth of knowledge that is available to us today, to understand more about the crazy world in which we live in, and to debate how we want to live our lives tomorrow.

This may sound rather ambitious – and it is. There is a lot at stake and there is a lot for us to do. Therefore, we invite you to speak up at any point to share your thoughts, and to pay close attention to other people's interventions. Be *curious*, be *critical*, and do not forget to be *respectful* with those with whom you disagree.

The THINK Team

supported by
Österreichische Hochschüler_innenschaft
HochschülerInnenschaft an der Universität Wien
Land Niederösterreich

www.oeh.ac.at
Bundesvertretung
Uni Wien
WISSENSCHAFT · FORSCHUNG NIEDERÖSTERREICH

THURSDAY

FRIDAY

SATURDAY

SUNDAY

Ruth Falkenberg

Mandatory Medical Age Tests for Asylum Seekers

Against the background of two recent criminal cases in Germany in which underage refugees are suspected to be the perpetrators, demands have been voiced to introduce obligatory medical age tests for asylum seekers whose claims to be underage are doubted. Indeed, in both of these criminal cases, expert assessments have raised doubts concerning the age of the suspects, finding their age to lie above the legal threshold of 18 years. Though several voices are supportive of such mandatory age tests, others, and especially the medical community raise substantial doubts concerning this practice. Not only since medical age tests usually involve practices such as X-ray examinations of the hand, the jaw region, and the clavicle which expose the asylum seeker to an unnecessary health hazard, the German Medical Association officially expressed considerable reservations against the introduction of obligatory age tests. Criticism against the age tests is voiced firstly on a scientific basis, doubting the accuracy of the assessments and pointing out, for example, their large margins of error as well as a potential lack of adequate reference data. Secondly, on an ethical basis, criticisms relate (amongst others) to the general medical principle of acting only in the best interest of the patient, as well as to the assumption that seems to be implied in these demands, i.e. that asylum seekers are potentially lying about their age and moreover might engage in criminal behaviour. Besides outlining this general scientific and ethical debate surrounding obligatory age tests for refugees, I especially want to raise some critical thoughts on the issue from a postcolonial perspective. In particular, I want to draw a relation towards broader contexts of science used as a tool to govern 'the other', to Eurocentric ways of 'knowing the other', as well as to the issue of consent to medical procedures in positions of subordination.

[1] Schmeling A., Dettmeyer R., Rudolf E., Vieth V., Geserick G. (2016). Forensic age estimation - methods, certainty, and the law. Deutsches Ärzteblatt International, 113, 44–50. DOI: 10.3238/arztebl.2016.0044
Comment: For an overview of the mostly medical side of the debate (With respect to this ar ticle, I can also recommend reading the letters to the editor which the article has received in reply - these can be found online along with the article as well and give an interesting over view over some issues in the current debate.)

[2] Zentrale Ethikkommission der Bundesärztekammer (2016). Medizinische Altersschätzung bei unbegleiteten jungen Flüchtlingen. Deutsches Ärzteblatt, 30. September 2016. DOI:10.3238/arztbl.2016.zeko_baek_SN_altersschaetzung2016_01

[3] Wirth, M., Menzel, C.L., Lee, D.C.M., Schmiedebach, H.-P. (2016). Diskussion ethischer Aspekte zahnärztlicher Altersschätzung bei jungen Flüchtlingen durch Röntgendiagnostik. Ethik in der Medizin 29, 7–21. DOI 10.1007/s00481-016-0429-1
Comment: Equally in German, and specifically focusing on dental age tests using X-ray exami nations, yet providing some interesting ethical arguments.

Phileas Lebada

A Crash Course into Community-Driven Spaces

Projects underlying the concept of a Community-Driven Space (CDS) have gone through a popularity phase over the past decade or so. For example almost every city has at least a Hackerspace by now.

Still, there is only little discourse on CDS concepts and governance models between local communities.

Many existing spaces feel left out with their issues and newly created ones are possibly missing opportunities of a decent initial funding basis. This talk aims to provide a general introduction to community-driven spaces. This by reviewing existing projects. Summarizing common organizational, social, and funding issues. Discussing possible solutions by example, hopefully enabling contributes to create more inclusive spaces.

[1] Sarah R. Davies - Hackerspaces Making the Maker Movement (Book & Talk): https://www.kobo.com/us/en/ebook/hackerspaces
[2] Stéphanie Ouillon - Sharing power in our communities (Talk): https://archive.fosdem.org/2017/schedule/event/community_sharing_power_in_our_communities/
[3] Sumana Harihareswara - Comparing CoC to copyleft licenses (Talk): https://archive.fosdem.org/2016/schedule/event/conduct_and_copyleft/
[4] Jono Bacon - The Art Of Community (Book): http://www.artofcommunityonline.org/

Johannes Lahnsteiner

Knots, Physics and the Lot

Knot theory has a long and twisted history. The narrative thread starts in fundamental physics of the 19th century, where people tried to unveil the nature of atoms. Eventually people did it and it had nothing to do with knots, so the subject was discarded. It was thrown in the dustbin of physics.

From time to time, however, mathematicians pass by that same dustbin and pick up stuff. And so they picked up our thread and knot theory suddenly became an academic venture of pure mathematics. It turned out that classification of knots is far from obvious. Actually, it took them until the 1980s to make appreciable headway leading our piece of strand through the whole math department. Someday, ironically, physicists saw it and got interested again, so the thread of knot theory was again guided through the physics department (and still is).

And let's not forget that it is all about these pieces of string that everyone has problems with sometimes. It is quite remarkable, how such a common thing can be that vexing not only in everyday life but also in the most abstract areas of science.
I will present some of that history without forgetting about knotty jokes and magic tricks.

Keywords: TQFT, headphone cable, Jones polynomial, Reidemeister, shoelaces.

[1] Adams, C. C., The knot book: an elementary introduction to the mathematical theory of knots, American Mathematical Soc. (2004).
Comment: A very good starting point. Thoroughly low-threshold, readable and packed with examples. Also contains a knot-jokes and pastimes section.

[2] L. H. Kauffman, Knots and physics, Singapore, Singapore: World Scientific (1991) (Series on knots and everything, 1)
Comment: The classic by one of the founders of the field. Much more of a steep ascent than Adams but still readable and filled with examples. Contains lots of advanced stuff, too.

Florian Schlederer

The Superconducting Qubit. Today's Hot Shit in Quantum Computer Research

In recent years, the quantum computer continues its journey from purely theoretical fantasy to an actual, workable device. High expectations and major investments increase the world's attention to this research field, but none of the several building architectures has yet outdated the others. Undoubtedly, the huge investments in the field of superconducting qubits has fuelled many to believe that they will constitute the first system to prove quantum supremacy. Full-fledged quantum computing may still be decades away from deployment or, as optimists predict, they may come within the next couple years. In any case, one fact seems inevitable: The future is going to hold quantum computers. My talk outlines the architecture and basic working principles of superconducting qubits, focusing on the transmon qubit type, in a simplified, broadly fathomable manner. Every participant will return from the THINK forward conference with a rough intuitive idea for the quantum technology that might soon affect all of humankind.

[1] *Review:* T. D. Ladd, et. al. (2010). Quantum Computing. Nature 464, 45-53
Magazine article: J. Palmer (2018). Here, there and everywhere. The Economist, Technology Quarterly.
[2] *Online source (May 6th, 2018):* https://www.economist.com/news/essays/21717782-quantum-technology-beginning-come-its-own
[3] *Paper:* C. Neill, et. al. (2018). A blueprint for demonstrating quantum supremacy with superconducting qubits. Science Vol. 360, Issue 6385, pp. 195-199
[4] *Neat mathematical description:* S. Bader. The Transmon Qubit. Unpublished project thesis. Online source (May 6th, 2018): http://sambader.net/wp-content/uploads/2013/12/Transmon_Paper.pdf

Augustin Vanrietveldi

A Graphical Understanding of Quantum Mechanicn

Quantum Mechanics (QM) and the fundamental shifts it implies in our understanding of the world are still today very badly known by the general public. The idea is largely spread that these problems cannot even be grasped, let alone understood, without total expertise of the mathematical formalism through which they are usually expressed. Consequently, attempts at outreach usually insist on the weirdness of the quantum world, focusing on its inaccessibility rather than on the knowledge we can have of it, as exemplified by their most well-known illustration, Schrodinger's cat. This view is, in my opinion, regrettable.

In this talk, based on an article published in a student-led Philosophy journal1, I will try, on the contrary, to present the pivotal conceptual problems arising in QM to the non-physicist in an elementary yet rigorous way. My method will be to show that simple situations in QM, in which the conceptual issues appear clearly, can be fully understood without the maths, only using elementary graphical representations that are equivalent to it. With this method, I will present two of the major issues arising in QM: the superposition principle and the non-commutativity of measurements. Based on those presentations, and especially on the fundamental role played in them by the concept of projection, I will then conclude on some remarks on how to make sense of these conceptual shifts.

[1] *Vanrietvelde, A. (2017). Projections et paradoxes : comprendre graphiquement la mecanique quantique. Opium Philosophie, 5, 64-69.*

Chiara Cardelli

Science Communication Workshop

The importance of science and of scientific applications is well established in the society, but science is still not accessible by the vast majority of the population. To fill the gap between non-specialists and science, the scientific community feels the urge to involve society through science communication, in particular through events and fairs have been recently increasing and have shown to be very successful [1, 2]. The public participation into science through science communication is important to gain scientific information for sound public decision making [3] and to help to re-establish a relationship between the general public and science based on trust between science and society [4]. In particular, being involved in science from an early age, can help to understand that science can bridge the gap between existing issues and possible solutions in everyday life.

Do you want to communicate with non-scientists about your research interests? In this workshop we discuss and reflect on concepts of interactive science communication. What is science communication for you? What are the aims of science communication? Who can do science communication? We talk about how to build a two way communication though inquiry based learning. We get an inside into good practices and try out practical methods to encourage curiosity by engaging people in interactive activities.

[1] Jensen, E. and Buckley, N. (2014). Why people attend science festivals: Interests, motivations and self-reported benefits of public engagement with research. Public Understanding of Scien ce 23(5), 557–573
[2] Revuelta, G. (2014). Impacts of science communication on publics, cities and actors. JCOM 13(01), C01
[3] Dietz, T. (2013). Bringing values and deliberation to science communication. Proceedings of the National Academy of Sciences 110(Supplement 3), 14081–14087
[4] Fischhoff, B. (2013). The sciences of science communication. Proceedings of the National Aca demy of Sciences 110(Supplement 3), 14033–14039

Julian Posch

Applications of Machine Learning in Scientific Research

Machine learning has become popular parlance over the last few years. As a way of deriving insights from data and improving performance on widely differing tasks it is used across diverse sectors, including corporate, industrial, military and governance as well as academic research. Various public figures have proclaimed a new era of progress to follow in its wake or have strongly advised against its dangers. However, keeping away from prophetic claims and sweeping generalizations, this talk aims to be of practical nature.

It will portray different areas of machine learning and how they have been effectively used in scientific research in the fields of chemistry, physics and medicine. Drawing an example from each of these disciplines we will be discussing the topic of dimensionality reduction in the form of principal component analysis [1], optimization algorithms in the particular case of evolutionary algorithms [2] and optical imaging improvement via deep neural networks [3].

By the end of this talk we will have developed a more tangible notion of machine learning, gained an insight into its practical applications and will be able to discuss whether machine learning could be something worth looking into in your own field of research.

[1] Shlens, J. (2014). A Tutorial on Principal Component Analysis. ArXiv e-prints, 1404.1100,
[2] Gottwald, D., Kahl, G. and Likos, C. (2005). Predicting equilibrium structures in freezing proces ses. The Journal of Chemical Physics, 122, 204503
[3] Rivenson, Y. et al. (2017). Deep learning microscopy. Optica, 4(11):1437-1443

Johannes Stangl

Neural Network Programming in the Natural Sciences

Artificial neural networks have come from being a niche project in the early days of computing machines to one of the main buzzwords floating around when talking about the ongoing digital revolution. Neural networks underpin major services such as search engines, recommendation systems and image classification systems and are said to revolutionize the field of artificial intelligence as a whole. But besides the craze about potentially conscious machines and the ever-growing profits of Netflix: are neural networks actually good for something?

In my talk I will update your biological neural networks about the latest projects undertaken to bring the power of neural networks to the natural sciences. First, I will give an outline of how neural networks function and introduce you to the main ideas of deep learning. I will then talk about scientific research that makes use of neural networks by showing examples from medicine, biology and physics including my own bachelor thesis in which I study the magnetic phase transition of the two-dimensional Ising Model using a deep neural network.

Further readings about neural networks and their application in the natural sciences:
Articles:

[1] Machine learning phases of matter: https:/www.nature.com/articles/nphys4035
[2] Machine learning applications in cancer prognosis and prediction: https://www.sciencedirect.com/science/article/pii/S2001037014000464
[3] Deep learning for computational biology: http://msb.embopress.org/content/12/7/878

Books:

[4] Ian Goodfellow, Yoshua Bengio, Aaron Courville: Deep Learning: http://www.deeplearningbook.org/

YouTube Channels:

[5] 3Blue1Brown: https://www.youtube.com/channel/UCYO_jab_esuFRV4b17AJtAw
[6] Two Minute Papers: https://www.youtube.com/channel/UCbfYPyITQ-7l4upoX8nvctg

Matthias Gusenbauer

Scientists going Mental – Why User Experience is not Enough for Security

If something breaks engineers tend to think that it is the user's fault – a so called layer 8 error. The mindset is that the user has to learn how to use a system in order to use it correctly. In the past few decades some computer scientists intended to use an inclusive approach with the goal of making computer systems usable. Usability and nowadays user experience became a buzzword. When designing secure systems this approach seems to have sever shortcomings. Since 1999 it has been known that usability of privacy enhancing tools is bad and academia has worked hard to remedy this [1, 2]. Nonetheless, after the Snowden revelations a researchers drew a sobering conclusion.

Even with improved security and ease of use, users still seem to be reluctant to adopt secure communication tools [3,4]. Scientist started to analyze user motivation and why willingness to adopt secure and usable tools was low [5]. Recent studies show that for adoption of digital self defense tools, users have to understand on a conceptual level how information systems work and what dangers lie within them. These studies also identified that, while users have mental models of a system, these mental images are generally too simplified. Due to this simplification users fail to understand what can go wrong and how their information is in jeopardy. Several levels of ignorance and mental models have been identified [6]. Based on this information a battle plan for a more secure and privacy preserving future in the digital age can be thought of. The goal of this talk is threefold. For applied research and engineering it aims to sensitize the audience that user understanding is important. Second, it gives a brief outlook into areas where research in this area could benefit the emerging technology immensely. Lastly, it also tries to show the audience that in such a globally connected world, digital self defense is necessary to ensure a thriving society.

[1] Whitten, Alma; Tygar, J. Doug (1999). Why Johnny Can't Encrypt: A Usability Evaluation of PGP 5.0. In: USENIX Security Symposium.
[2] Sheng, Steve, et al. (2006). Why johnny still can't encrypt: evaluating the usability of email encryption software. In: Symposium On Usable Privacy and Security. S. 3-4.
[3] Herzberg, Amir; Leibowitz, Hemi (2016). Can Johnny finally encrypt?: evaluating E2Eencryption in popular IM applications. In: Proceedings of the 6th Workshop on Socio-Technical Aspects in Security and Trust. ACM,. S. 17-28.
[4] Ruotti, Scott, et al. (2013). Confused Johnny: when automatic encryption leads to confusion and mistakes. In: Proceedings of the Ninth Symposium on Usable Privacy and Security. ACM. S.
[5] Volkamer, Melanie; Renaud Karen. (2013). Mental models–general introduction and review of their application to human-centred security. In: Number Theory and Cryptography. Springer, Berlin, Heidelberg. S. 255-280.
[6] Renaud, Karen; Volkamer, Melanie; Renkema-Padmos, Arne. (2014). Why doesn't Jane protect her privacy?. In: International Symposium on Privacy Enhancing Technologies Symposium. Springer, Cham,. S. 244-262.

Fabian Arno Dietrich

Socio-Technical Interaction Interfaces

The current functionally diversified industrial societies are increasingly shaped by interactions between mechanical and social systems. Machines are getting better and better in processing many kinds of communication (though they don't necessarily understand it). As a consequence of the increase of socio-technical interactions, more and more explorative interfaces take shape. Recent examples include 'smart' megacity infrastructures, cryptographically secured decentral transactions, swipe gesture recognition algorithms, and various machine-learning systems. In the first part of the talk, the theoretical principles of the topic are outlined – based on Luhmann, Tanaka, Langton, and others. The second part of the talk consists of the presentation of practical projects dealing with automated information processing (Rubin & Hansen), as well as textual and visual machine learning (Karpathy, Nvidia). The talk finishes with a hands-on demonstration of a self-created socio-technical interaction interface.

[1] Karpathy, Andrej (2015). The Unreasonable Effectiveness of Recurrent Neural Networks [online]. url: http://karpathy.github.io/2015/05/21/rnn-effectiveness/ [07.06.2018]
[2] Langton, Christopher G. (1995). Artificial Life [online]. url: http://90.146.8.18/de/archiv_files/19931/1993_025.pdf [07.06.2018]
[3] Luhmann, Niklas (2002). Die Gesellschaft der Gesellschaft. Frankfurt am Main: Suhrkamp.
[4] Nvidia (2017). Growing faces using progressive neural nets [online]. url: https://www.youtube.com/watch?v=_KI50AOLSPY [07.06.2018]
[5] Rubin, Ben & Hansen, Marc (2015). Moveable Type [online]. url: https://vimeo.com/113247884 [07.06.2018]
[6] Tanaka, Tomoyuki (2016). Selected works [online]. url: https://www.wired.com/2016/07/losetomoyuki-tanakas-x-ray-illustrations-tokyo-train-stations/ [07.06.2018]

Alexandra Iasmina Laza

Implementing the Supranational Environmental Regulation against Invasive Alien Species at National and Subnational Levels

This talk will present the main aspects of the new European regulation [1] against invasive alien species (IAS) and how it is implemented on national and sub-national levels, with examples on Austria and Romania. For this study in-depth literature review, data from expert interviews and surveys were used. Within this implementation, the European Member States, Austria and Romania, are free to use their existing distribution of competences and administrative structures or to modify them. While Austria is considered a federally organized state, Romania is a centralized state. This different precondition has shaped also the distribution of competences and administrative structures that are now relevant for the implementation [2]. In addition, we will follow how biodiversity and ecosystem services are used in a law document versus legal practice [3]. The main goal of this talk will be to discuss how the national competence distribution influence such supranational environmental law enforcement, which stakeholders are involved, and what are the challenges countries (especially European Member States) face implementing this regulation against IAS.

[1] The Regulation (EU) 1143/2014: http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R1143&from=EN
[2] Ongoing Master Thesis at the University of Vienna entitled „Influence of different nature con servation power divisions in Austria and Romania on the implementation of supranational protection obligations and regulations against invasive alien species" coordinated by Dr. Volke Mauerhofer
[3] Mauerhofer, V. (2017), Ecosystem Services, http://dx.doi.org/10.1016/j.ecoser.2017.07.006

Michèle Frottier

Does Nature Need to Be Intrinsically Valuable to Be Worthy of Preservation?

What does it mean to claim that something has intrinsic value? What is the difference between intrinsic and instrumental value? Does something with intrinsic value automatically have a higher worth than something with instrumental value? (How) Does attributing intrinsic value to nature change our responsibility towards preserving it? In this talk I am going to present different interpretations of the 'intrinsic value' term and explain how they might affect how we feel about conservation and sustainability. Arguments that deem it unnecessary to value nature for its own sake in order to support environmental protection will be compared to points of view that moralise environmental action and thus want to accredit intrinsic value to it.

[1] Batavia, Chelsea; Nelson, Michael Paul (2017): For Goodness Sake! What Is Intrinsic Value and Why Should We Care?. In: Biological Conservation., p. 366-376
[2] Doak, Daniel F.; Bakker, Victoria J.; Goldstein, Bruce Evan; Hale, Benjamin (2014): What is the Future of Conservation?. In: Trends in Ecology and Evolution, Vol. 29(2), p. 77-81
[3] Justus, James; Colyvan, Mark; Regan, Helen; Maguire, Lynn (2009): Buying Into Conservation: Intrinsic Versus Instrumental Value. In: Trends in Ecology & Evolution, Vol. 24(4), p. 187-191
[4] McShane, Katie (2007): Why Environmental Ethics Shouldn't Give Up on Intrinsic Value. In: Environmental Ethics, Vol. 29(1), p. 43-61
[5] Sagoff, Mark (2009): Intrinsic Value: A Reply to Justus et al. In: Trends in Ecology & Evolution, Vol. 24(12), p. 643

Gratzer Daniel

The Role of Meditation in Transformation Towards Sustainability

When viewing the progression of the climate crisis during the years after the Paris agreement, far too little response is observable, so that the targets agreed upon seem unlikely to be achieved and negative developments continue to prevail. A profound change in our response to this challenge is therefore necessary. As the UNESCO states in its 2016 „Global education monitor report “, „ […] human development lacks meaning without a healthy planet. This view requires people, communities and nations to reconsider basic values of daily living and change the way they think “.

The principle of over-exploiting resources (for ones own solitary benefit) on the cost of future generations (others) is driven by short-sighted self-interest, which thereby becomes an underlying cause for the anthropogenic climate crisis. In finding effective solutions to it, a cooperative approach that considers the interconnected earthly ecosystems and their actors comprehensively and puts them before short-term individualistic profit (which is only possible by including a degree of altruistic motivation) is therefore indispensable. Luckily, the potential for such altruistic behaviour is already rooted within human behavioural patterns, as findings in psychology and evolutionary biology show [1].

Can such positive qualities be increased? In the „contemplative traditions“ that originated in Asia, this is said to have been done for centuries by way of meditation [2]. And indeed, a growing number of recent psychological and neurobiological studies show, that traits such as compassion, equanimity and awareness can be cultivated by consciously utilising neuroplasticity through different meditative techniques [3,4].
In my talk, I will discuss these findings and explore if meditation is an effective method to develop altruism and compassion, which strengthen the possibilities for sustainable actions. I will further tackle the question wether focusing on mental fitness could contribute to the profound transformation towards sustainability so urgently required.

[1] Hauser Oliver P. , Rand David. G., Peysakhovich, Alexander, Nowak Martin. A. , (2014): Coope rating with the future. Nature Vol 511, 220-223
[2] Weng Helen Y., Fox Andrew S., Shackman Alexander, J., Stodola Diane E., Caldwell Jessica Z. K.,Olson Matthew C., Rogers Gregory M., Davidson Richard J. (2013). Compassion Training Al ters Altruism and Neural Responses to Suffering. Psychological Science Vol 24(7) 1171–1180
[3] Goleman Daniel, Davidson Richard J. (2017). Altered Traits. Science reveals how meditation changes your mind, brain, and body. New York: Penguin Random House LLC
[4] Lim Daniel, Condon Paul, DeSteno David. (2015). Mindfulness and Compassion: An Examinati on of Mechanism and Scalability. PLoS ONE Vol 10(2)

Laura Porak

Sharing as Solution for Limited Resources?

A major part of the population is living in cities nowadays, leading to new challenges for the planning of urban areas, as many very different people tend to live together in a close environment with limited space and resources. Politics should aim at ensuring that the needs of the population are met, this was traditionally done by redistribution within the framework of a modern welfare state. Redistribution cannot be reduced to a monetary dimension, equally public institutions as for example schools and also ensuring the accessibility to goods have to be taken into account.

Considering the current challenges arising from climate change governments have to ensure that citizens can meet their needs while taking into account that our resource use has to be lowered considerably. Our mode of living is very much dictated by material goods, they seem to be necessary to ensure a certain living standard. Many of those goods do not have to be owned by individuals to allow them to be used, so that the question of ownership could be reformulated.

The solution to those problems seems to be a new way of sharing goods of everyday use, in practice this is already imposed in many ways, not only our public transport system is such a model, also things like car-sharing between private persons or websites that offer the lending of tools which are not necessarily needed on a everyday base but can be shared seem to become more popular. The sharing of goods is in many cases compensated by monetary transactions, so that a new economy seems to develop. This trend is also very much supported by the European Union, which emphasize the possibilities of economic growth in this context, leading away from the original aim of achieving a different way of life.

These developments show that action takes place on a public, but also a private level. I would like to show different approaches for solutions to the problem of limited resources and the aim to ensure that everyone can meet their needs within a city.

[1] Attac. 2017. Entzauberte Union. Mandelbaum: Kritik und Utopie.
[2] Gig Economy. http://www.gig-economy.at
[3] Hermann, Christoph. (2007). Neoliberalismus und die Europäische Union. In Kurswechsel 1/2007. S. 27-37.

Katharina Rogenhofer

Whose Planetary Boundaries? Recognizing our Share of the Ongoing Environmental Destruction

Economic growth has always been tied to energy consumption and when fossil fuels decoupled energy supply from biomass this lead to enormous economic development in some parts of the world. The rise in GDP coincided with many other socio-economic variables, but also environmental destruction, the rise in CO2 emission and destructive chemicals [1]. Agricultural production causes soil erosion and nutrient run-off, impacting adjacent habitats and water systems. Fossil fuel combustion and land-use change contribute to green-house gas emissions, which disrupt and influence many ecosystem processes. That we are breaching planetary boundaries is not new [2]. But who is we? Many scientists see these problems as global and overpopulation as exacerbating the severity. However, it is mainly the Global North that is contributing to environmental destruction and climate change. Instead of using the "crisis" narratives to justify global intervention that ignores the differentiated responsibility [3], I will try to tease apart the narrative from the facts and introduce research on possible solutions and future trajectories.

[1] Steffen, W., Broadgate, W., Deutsch, L., Gaffney, O. & Ludwig, C. (2015). The trajectory of the anthropocene: The great acceleration. Anthr. Rev. 2, 81–98
[2] Steffen, W. et al. (2015). Planetary boundaries: guiding human development on a changing planet. Science (80-.). 347
[3] Lorimer, J. (2015) Wildlife in the Anthropocene: Conservation after Nature 1–34

Nikolaus Kandolf

Carbon Dioxide: Guilty as Charged?

Given the small share of Carbon Dioxide in our atmosphere (only one particle in roughly 2500 particles of the troposphere is a CO2 molecule), it may seem quite arbitrary to charge it with the very serious crime of being the main driving force behind man-made Climate Change. And the defendant molecule is even right in stating that we find other climate-active gases, like water vapour, at significantly higher concentrations, or other rare gases, such as methane, to be much more potent climate killers.
In this context, the idea of a CO2 equivalent to measure the harmfulness of gases in the earth's atmosphere should appear like the targeted character assassination of a simple compound which perhaps would rather deserve our veneration for making life on this planet possible in the first place.

Nevertheless, in this court of justice I will attempt to prove beyond reasonable doubt that is indeed the indicted molecule which must be named as the head of a global conspiration which is putting the life of billions of animals at risk.
The argument of the prosecution will walk us through what is considered by many the very essence of physics today. Starting from the basic problem in the natural sciences, namely the harmonic oscillator, we will demonstrate how the defendant carbon dioxide molecule can reach a very excited state indeed, in which it moves about in a very wild fashion and in which it can cause serious distress to its environment.
In a second step, we will rely on precedents from the early days of quantum physics, in the form of Planck's radiation law, to understand how the wicked compound abuses a very peculiar property of an otherwise innocent celestial body like earth to fulfil its criminal purpose.

The prosecution will argue in favour of a strict limitation of the release of carbon dioxide to prevent further catastrophes.

Carina Karner

Hack Your Way into Climate Change Research

In this presentation I intend to show how we can use online resources to conduct our own climate change research. In contrast to many other fields of science, climate change research data is largely available online as open data. This opens up the possibility for people trained in science/tech to hands-on analyse climate data.
In his Phd thesis "Unflattening" Nick Sousanis stated that "Concrete experiences serve as the primary building blocks from which we extend our capacity for thought and give rise to more abstracted concepts".

Very much in this spirit, the intention of my presentation is to empower the audience to hack their way into climate change research and to experience scientifically what "climate change" really means for our everyday lives. The data analysis will be conducted during the presentation using open data, python and jupyter notebook and will be made available afterwards to anybody interested.

My hope is that concrete scientific experiences as these can serve as building ground for becoming an active observer or even participant in climate change politics.

[1] Nick Sousanis (2015). Unflattening, Harvard University Press
[2] H.v. Storch, F.W. Zwiers. (2003). Statistical Analysis in Climate Research, Cambridge Uni versity Press
[3] R.E. Thomson, W.J. Emery (2014). Data Analysis Methods in physical oceanography, El servier
[4] ESA open climate data portal

Thomas Zauner

Imagining New Futures

Based on the work of developing new conceptions of possible futures by Peter Frase, Steve Lambert and Shalev Moran, which I encountered at the re:publica conference 2018, I will first present methods and examples of how to imagine new future scenarios for society and then apply them in a workshop with the participants. These techniques employ two simple axes of future societal or environmental aspects spanning a range from positive to negative developments, e.g. from climate change catastrophe to climate change solved. Combining two of those axes creates four quadrants of possibilities that ask for new and often ambiguous imaginations of possible futures in them. One then can back-cast into these futures' pasts to find out how society would have arrived at there.

This exercise in imagination tries to enable us to think outside the box of stereotyped utopias and dystopias and to strengthen our positive outlooks into a collectively shaped future.

[1] Peter Frase, Four Futures, http://www.peterfrase.com/
[2] Mushon Zer Aviv, Speculative Tourism, https://www.shalevmoran.com/speculativetourism
[3] Steve Lambert, Building Fearless Futures, https://www.youtube.com/watch?v=DeLq7aMVOPA
[4] re:publica conference, Cancel the Apocalypse Talks, https://18.re-publica.com/en/topics/cancel-apocalypse

Markus Hoffmann

University Rankings and What They Mean for "Quality"

University rankings are supposedly there to provide better comparisons between institutions of higher education and measure their quality. Their appearance (on an international level) and prevalence in the last twenty years has led not only to a more public and harsh level of competitiveness [2]; but also to changes in university administration and to different notions of what "quality" of higher education is. This tendency towards standardization and quantification of (and a perceived more objective) measurement of quality can also be seen in other areas (for instance [1]) and has, as I will argue, performative effects on what is supposed to be "measured" [3]. I would like to give some examples of how certain university rankings are produced, what they value (and what not) and how that can affect universities.

[1] Gorur, R. (2016). Seeing like PISA: A cautionary tale about the performativity of interna tional assessments. European Educational Research Journal, 15(5), 598–616.
[2] Hazelkorn, E. (2015). Rankings and the reshaping of higher education: the battle for world-class excellence (2. ed.). Basingstoke: Palgrave Macmillan.
[3] Woolgar, S. (1991). Beyond the citation debate: towards a sociology of measurement technologies and their use in science policy. Science and Public Policy, 18(5), 319-326.

Simon Rella

Reduction in Analogy

Nature presents a wide range of phenomena at the scales of galactic clusters as well as on the microscopic stage of fundamental particles. While both of these extreme sizes are rather well understood using modern physical theories, scientists are struggling with the complexity of objects that are actually part of our daily life. Phenomena at this scale range from the size of protein interactions to the formation of human settlements. The situation becomes even harder to juggle with, once interactions take place within an abstract space, such as the internet or words within this one. Materialists usually take a point of view, that increasing the accuracy of computation will finally allow to break down the complexity of our daily life, letting us arrive with the very fundamentals lying within some small physical entity.

While this approach has reasonable theoretic support, practical advances within scientific fields of macroscopic objects cannot afford to go all the way down to the scale of atoms in order to explanation my running nose this morning. Furthermore, some scientist in contrast argue that certain emergent macroscopic properties could not be found in their microscopic components. This might lead to the question what reduction then actually means.

In this talk I will propose a pragmatic view of the world, which tries to capture structural similarities, analogies, as a basis of reduction. This fight against the notion of fundamentality of a certain scientific discipline, will be presented along alternative theories, examples and criticism.

[1] plato.stanford.edu/entries/scientific-reduction/
[2] plato.stanford.edu/entries/reasoning-analogy/
[3] R. Laughlin, (2005), A different universe
[4] Santa Fe Institute's complexityexplorer.org: Introduction to Renormalization Tutorial by Simon DeDeo (May 10, 2018)

Flavio Del Santo

The Political Engagement of Physicists: Some Historical Examples

It is not rare to meet politically active scientists. We are quite familiar with (more or less radical) grassroots associations of students in scientific disciplines who fight for important socio-political causes. However, in the opinion of who writes, it is today exceptional to see scientists directly making use of their scientific background in the context of scientific activism and even to discuss political matters related to scientific endeavour. Without the pretence of providing any systematic account of different approaches to political engagement of scientists, the present talk aims at describing some historical instances of physicists who engaged in the political discourse directly within their discipline, eliminating the drastic separation between their scientific practice and their political involvement.

[1] Angelo Baracca, Silvio Bergia and Flavio Del Santo. (2016). The origins of the research in the foundations of quantum mechanics (and other critical activities) in Italy during the 1970

Ella Felber

Take a Breath before You Break!

A major deadline coming up, a difficult relationship, or the death of a loved one – sooner or later, all of us will face life challenges like these. They will force us to deal with stress in order to avoid further harm on ourselves. No matter if the stressful events are big or small, acute, episodic or chronic, finding your own way of dealing with stress is a key step in your personal development. Unfortunately, I do not have a magical recipe for that, but within the last years I came across some exercises to release stress, which do not require regular practice (which would be just another task on your to do list, which is far too long already anyways) nor any equipment despite yourself. I will share some of them with you in a hands-on, or rather a breathe-on session.

Eva-Maria Fuchs

Theatre in The Nazi Camps

The present paper examines two drama texts that were written and performed in concentration camps during National Socialism. They are both stories about knights called „Die Blutnacht auf dem Schreckenstein“ and „Ludmilla oder Leichen am laufenden Band“ that seem like innocent texts on the outside but are actually – recognizable with the means of parody – two highly critical texts of the politics of their times. Thus, they both serve the purpose of survival for the camp inmates. With a text analysis and an analysis of the performances the meaning of both components shall be investigated. Firstly, the texts are placed in the wider context of the possibilities within the camps and are then categorised according to this context. The personal components of camp life are considered as well as the highly significant time and place of the production. At last, the moral implications of theatre performances in the camps are discussed in order to fianlly conclude that theatre was indeed a means of survival for the prisoners.

Primary sources:

[1] Kalmar, Rudolf. (1943) „‘Die Blutnacht auf dem Schreckenstein‘ oder ‚Ritter Adolars Brautfahrt und ihr grausiges Ende‘ oder ‚Die wahre Liebe ist das nicht‘. Ein komisch-schauriges Ritterstück in 3 Aufzügen mit Musik. KZ Dachau, 13. Juni 1943“. Dokumentationsarchiv des Österreichi schen Widerstandes, Signatur: 20480.

[2] Rosen, Willy. (1944) „Ludmilla oder Leichen am laufenden Band“. Archive of Jetty Cantor Copyright: Theatre Collection of Bijzondere Colleties Universiteit van Amsterdam. Referen ce:200000353.000. theatercollectie.uva.nl/Details/archive/110000291 (05. Okt. 2017)

Secondary sources:

[1] Geschonneck, Erwin. (2009). [1984]. Meine unruhigen Jahre. Lebenserinnerungen. Berlin: Ver lag Das neue Berlin.

[2] Klüger, Leo. (1998). [1996]. Lache, denn morgen bist Du tot. Eine Geschichte vom Überleben. Übers. von Reichel, Verena. München: Piper.

[3] Kühn, Volker. (1989). „Deutschlands Erwachen. Kabarett unterm Hakenkreuz 1933–1945“. In: Kleinkunststücke. Band 3. Weinheim: Quadriga Verlag.

[4] Zaich, Katja. (2001). „‘Ich bitte dringend um ein Happyend‘. Deutsche Bühnenkünstler im niederländischen Exil 1933 – 1945“. In: Freytag, Wiebke; Henkel, Nikolaus; Köster, Udo; Müller, Hans-Harald; Schönert, Jörg; Segeberg, Harro. (ed.). Hamburger Beiträge zur Germanistik. Frankfurt am Main: Peter Lang.

Thomas Kronschläger

Phettberg's Degendering: A Usable Form of Gender-Neutral Language in German

Over the past few decades, the issue of gender-fair and gender-neutral language has been widely discussed in the German-speaking world. Since the late 1970's, several forms of gender-fair language have been established, which focus on making women visible in language by drawing attention to the MAN(Male As Norm)-paradigm [2, p.10]. Gender-neutral language, in contrast, is a way of talking about people without talking about their gender.

After Germany's Highest Court acknowledged inter- and transsexual persons in a groundbreaking verdict in 2017, the question how to include people who cannot or would not be integrated into a binary gender system into language becomes more and more urgent. As of yet, apart from some avoidance techniques (cf. www.geschicktgendern.de), there have been made several suggestions by a working group around lann hornscheidt in Berlin (AG Feministisch Sprachhandeln) for degendering language forms, i.e. forms of person reference that do not ascribe a gender to a certain person. These forms (e.g. Studierx, Student_innen, Student*innen) have been criticised widely in the media for their complexity and their difficulty to use them in oral communication.

There is, however, a form of gender-neutral language that exists in the public discourse since 1992, in the columns of Hermes Phettberg, a Viennese performance artist and columnist in the weekly Falter that has not yet been discussed for this matter. Compared to other gender-neutral forms, Phettberg's degendering can be used easily in oral communication and is unambiguous while still drawing attention to the topic of heteronormativity.

The proposed talk will sum up the linguistic discussion of gender representation in language, will contrast different versions of non-binary forms of person reference and provide the listeners with a new form they can easily use in oral communication as well as in academic and other texts.

[1] AG Feministisch Sprachhandeln der Humboldt Universität Berlin. (ed.) (2014/15). Was tun? Sprachhandeln – aber wie? W_ortungen statt Tatenlosigkeit. Anregungen zum feministischen Sprachhandeln. http://feministisch- sprachhandeln.org/, last access 4/26/2018.

[2] Hellinger, Marlis, Bierbach, Christine. (1993). Eine Sprache für beide Geschlechter. Richtlinien für einen nichtsexistischen Sprachgebrauch. Deutsche UNESCO-Kommission. www.geschickt gendern.de, last access 4/26/2018.

Hanja Pisa

Is It Racism or Is It Feminism?

New Year's Eve in Cologne, honor killings in Vienna and a ban on headscarves in France…

The Europewide debate about Muslim immigration and its impact on our society is exceptionally emotional when it comes to gender equality. Discussions on that matter seem prone to intransigent positions and unobjective arguments.

But what are some experts' opinions on whether multicultural immigration is a danger to the equal rights of men and women in the EU?

Is the fight for gender equality harmed by an increasing diversity in Europe's society?

Is feminism concerned by Islam? How should activists respond to it?

While this talk can obviously not answer these questions, it will be a journey through literature, statistics, interviews and feminists' opinions.

Simon Nagy

The Poetics/Politics of Boredom

"No one is bored, everything is boring". In his essay of this title, cultural theorist Mark Fisher names the paradoxical state of boredom one of the major predicaments of life under neoliberalism: on the one hand, the culture industry is extremely successful in making leisure time equally dull as wage labour and our lives therefore more boring than ever before; on the other hand, although being permanently surrounded by boring things, hardly anyone is any longer able to voluntarily enter a state of boredom by themselves.

In the last hundred years, boredom has been devalued both by advocates of the ruling system and numerous of its opponents. The logic of neoliberalism presents boredom as the opposite of productivity, engagement, and creativity, and even radical leftist thinkers like the Situationists affirm this conception by positing: "L'ennui est contre-révolutionnaire".

My talk aims to question this predominant devaluation of boredom. By presenting the work of artists of the past century who embraced the idea of boredom (such as Gertrude Stein, Andy Warhol, and Kenneth Goldsmith) I wish to sketch out a poetics of boredom and examine the potential of boredom as a radical critique of neoliberal ideology. In addition to the talk, I will host an optional workshop in which we will try to find ways to collectively bore ourselves by creating boring and uncreative art.

[1] Mark Fisher, 'No One Is Bored, Everything Is Boring': http://visualartists.ie/articles/markfisher-one-bored-everything-boring/
[2] Kenneth Goldsmith, 'Being Boring': http://writing.upenn.edu/library/Goldsmith-Kenny_Being-Boring.html
[3] Tom McDonough (ed.), Boredom, Documents of Contemporary Art (Cambridge, MA/ London: MIT Press/Whitechapel Gallery).