Mr Nagler, ladies and gentlemen, colleagues, students, bonjours mes chers amis,

thank you so much for coming today! I feel very happy and privileged to be standing here and to see so many familiar faces before me. Actually, the timing of this inaugural lecture, after just over a year of BTU, is perhaps just right, as I'm already involved in discussions at various levels with many of you and we've had a chance to get to know one another a little better. Also, though, the Technoscience Studies team has had a chance to come together, which I'm really glad about – I'd like to express my thanks to the university administration and to the President's and Chancellor's office for making this possible.

We see our projects as a contribution to research in technology, science and philosophy, the idea being to facilitate the creation of a network within BTU, both in research and teaching. On the research side, we address issues to do with the philosophy and history of the technosciences and the philosophy of technology, with research on visual culture, the heuristics of technology and climate ethics. In terms of familiar catchwords, you could say we are interested in cognitive commons and combinatorial design, in *Gemüt* (mind / soul) and unsocial sociability as elaborated by Kant and his successors, in gardening practices and built landscapes in the Anthropocene, as well as in socio-technical machines and projects. In terms of teaching, we are endeavouring to establish a degree course that is transdisciplinary and problem-oriented, procedures that are open and transparent, and research and teaching that are more closely interwoven with each other. As part of the reform process in the Culture and Technology degree courses, we are planning a new Master's in "Environmental Humanities"; the summer lecture series in IKMZ is dedicated to exploring this field of research.
Against this backdrop I'd like to invite you to join me today in considering the technology-environment nexus as one specific focus within Environmental Humanities at BTU.

What is the heart of the matter (the *punctum saliens*)?
*Punctum saliens* is a phrase and figure of thought that goes back to the very beginnings of the history of philosophy in the West, that is, to Greek Antiquity around 350 B.C. It is the term Aristotle gave to that dark spot that becomes visible after about four days in a fertilized bird egg, appearing and disappearing repeatedly in a constantly pulsating rhythm. In his *History of Animals* Aristotle writes: "…the heart is visible like a red spot in the white of the egg. This spot palpitates and moves as though it were imbued with life."
In Aristotle, then, the *punctum saliens* refers to the dramatic leap from nothingness into life; it is – quite literally – the heart of the matter, its inner kernel or core. A leap of this kind is the

opposite of continuity – it is not micro-evolution or gradual, step-wise progress but a sudden and unexpected development. Such a leap is always and necessarily linked with uncertainty and risk; a leap has something to do with energy, with overcoming conventions, habits and run-of-the-mill routines. If no leap occurs – be it in terms of content (i.e. *what* is being told), be it in formal aesthetic terms (i.e. *how* it is being told) – then there is no forward movement: we are stuck in a pre-existing pattern and are at a standstill, so to speak. If a leap *does* occur – no matter whether it is in technology, science or art – it implies a very high degree of innovation which, just like the leap described above in concrete phenomenological terms, enables a leap out of one field into a new one, to a new location.

So what is the heart of the matter when it comes to Environmental Humanities? What is the intellectual location, the new field, into which we are leaping? What kinds of "audiences" are being generated and what issues are being discovered – or, to put it in a nutshell: what heuristic game is being played when we begin to think about the relational nexus of technology and the environment, viewed from the perspective of Environmental Humanities? In the following I will discuss a range of such technology-environment nexuses which, at first sight, may appear to have little or nothing to do with Environmental Humanities. This impression will arise especially when "environment" is conceived of in the sense of environmental problems and thus as something where technological acts lead to changes in the environment, either locally or globally, that are perceived as problematic. The reference here is to problems that are described and explained by the natural sciences and for which solutions are sought in the engineering sciences: the 6$^{th}$ mass extinction, the reduction in biodiversity, the contamination of groundwater by nitrates, the phenomenon of climate change.

The Environmental Humanities are about more than just understanding and discussing environmental problems from the point of view of history in general and the history of ideas in particular. The idea is to take one step further back, a step that enables the structures of relationship between humans and the world around them to come into view. It is about a perspective that can illuminate the ways in which people act and thereby place themselves in a relationship to the world around them: to artefacts, to other creatures, to space, to man-made and natural structures. In short, it is about how they relate to the things they make into their environment. It is about the issue of modes of existence, forms of life and living, relational constellations, an exploration of the *conditio humana* in the conditions of the present and the near future. The fact that these conditions, and thus the conditions of possibility of the technology-environment nexus, differ dramatically from previous historical conditions

becomes apparent in many phenomena in our technicized worlds. The potential of Homo faber to shape and re-shape the world has become a force with global impact. The proclamation of the onset of the Anthropocene just under twenty years ago shifted the radical and total nature of these shaping processes into view. The technological capacity of human beings has become a force of nature – not least because (indeed, precisely to the extent that) the phenomena brought into being by it cannot be controlled or can be controlled only to a certain extent, and this over periods of time into the future that far outstrip our imagination; meanwhile, we are already living in the midst of these changes.

This is an almost classic case of a constellation described by philosopher Günther Anders as a Promethean gap. Anders asserted that humans are antiquated in terms of the possibilities of their thinking because they are equipped with a primitive capacity for imagination. He argues that our capacity to create technologies outstrips our capacity to imagine their consequences. Technologies and techniques are not value-neutral means to certain ends; rather, the very design of machines and instruments establishes a certain set of relationships. Machines produced under specific economic, social and political relations give rise in turn to specific economic, social and political relations. A technology-environment nexus comes into being which could not be imagined as such when the machines themselves were built. Technology switches from being the object to becoming the subject of history, and as a result of the ever greater perfection of machines, humans experiences themselves – emotionally and cognitively – as inferior beings in contrast to the structural power of machines. According to Anders, having once been the Promethean shapers and designers of objects, human beings have become mere guardians of their machines and devices.

This aspect of guardianship and care has been taken up in contemporary philosophy of technology as well, though less in reference to humans as inferior beings than associated with an appeal to humans to be aware of their responsibility in a positive sense when dealing with the formative potential of technology. What is called for is not an attitude of shame but rather one of modesty and humility as is found, for example, in the discourse of responsibility found in research on the technosciences or again in current debates about the decentering of the subject, in the so-called material, post-colonial or post-disciplinary turn. In the philosophy of technology, global nexuses of relations are addressed in the context of the discourse of responsibility, serving to evoke the language game around stewardship of planet Earth and to discuss the turn to gardening as a praxis that offers a model for technological action.

The term "companion species" has likewise been proposed in connection with extending the conditions of possibility for relational nexuses[1]. This term, introduced by Donna Haraway, biologist and feminist researcher in Cultural Studies of Science, posits a fourth "narcissistic injury" experienced by humans in addition to the trinity of injuries popularized by Sigmund Freud: the Copernican revolution, Darwinism and Freud's own theory of the Unconscious. All these insist that the human subject is neither at the centre of the world nor has sovereign access to the world. Haraway's "fourth injury" refers to the limits of the human race, which in her view is disintegrating in an entanglement of technological and organic relations. She is not positing a post-humanist negation of all differences between humans, animals, other living beings or artefacts. Instead, she is thinking of a broader, relational understanding of agency with which the specific relationships between humans and animals or other entities are taken into consideration. These relationships are understood as radically processual; what is crucial is the result of the encounter between companions of the human race and those belonging to other species – and not the above-mentioned theory about relational nexuses between humans and animals. What follows from this for Haraway is that the partners involved repeatedly encounter one another and come together anew in a dance, as she puts it, in the course of which the subject-object relationship is shaped.[2] It is only in each current situation-specific nexus that cultural and natural constellations and power structures are formed.

At this point, I might easily spend the rest of my time in this lecture presenting you with yet more contemporary and historical examples of relational nexuses, analysing and comparing the consequences for constellations of subject-object, culture-nature and technology-environment, and finishing up at the end with a neatly wrapped package of concepts relating to the technology-environment nexus. The way I see it, though, this type of strategy would not only be rather boring but could also be quite risky. If the aim in working with broad-brush terms such as technology and environment is to clarify terms and perhaps even to come up with a few definitions, there is a considerable risk of getting stuck in conceptual rambling, or – just as bad – ending up with ultimately rather random definitions and caveats.
Instead I would like to suggest that we understand technology and environment as terms to reflect on.[3] When we talk about technology or the environment, our talk generally draws on a non-defined set of preconceptions; we talk about technology and the environment in a rather vague and associative manner. Technology and the environment are present everywhere in

our lifeworld; the very words themselves provide orientation in our everyday lives and establish relations to rule-based structures, types of behaviour and expected functions. As soon as we start to reflect about technology, we depart from this mode of preconception and enter a mode of more general and thus conceptual considerations. An example chosen more or less spontaneously from our daily experience – a computer, the internet of things, medical infrastructure – suddenly becomes a model or a kind of symbol[4] for what technology can mean. Reflecting about the model character or about the symbols themselves serves to distance our thinking increasingly from the concrete things or processes we experience, leading us instead to generate ideas about how we place ourselves in relationship to these things, what they mean to us, in what political context they exist, how malleable we think they are and in which sense, and whether or not they harbour danger. Questions about people's sensibilities towards new technologies, fears and hopes, come into focus just as much as questions regarding the destiny of humans in their technicized environment.

What I am proposing here, then, is that we follow very closely these reflective movements from the concrete thing that we can experience with our senses to the abstract concept. In other words: how, using the terms "technology" and "environment" do we move from our unreflected preconceptions when we encounter technical things to an understanding of the relational nexus involving technology and the environment and thus ultimately to a discussion of the relationship between humans and their technicized world?

In terms of methods, this means always referring back to the concrete ideas and relationships around technology and environment and, starting from there, reflecting generally about technology and the environment. So when, in the following, I offer you stories about cycling for women in the late 19th century, about a key invention at the start of the 20th century, about artistic interpretations of a climate model and about gardening practices in the 21st century, then the point of doing so is always to define more precisely the relationships between technology and the environment contained in them, to examine the ways in which they are intertwined with one another and to learn something from this for more general discussions about the way we experience the world. The *punctum saliens* of Environmental Humanities at Cottbus is thus to research and demonstrate how structural relationships between technology and the environment can be understood and made use of in a praxis of thinking and actively shaping the world.

The first thing indicated most clearly by the title of the self-help book "Cycling for women from a practical and technical as well as a medical and health-related perspective" (*Radfahren*

[4] Nordmann 2008, 12

*der Damen vom technisch-praktischen und ärztlich-gesundheitlichen Standpunkte*) is that in the year 1897 women cyclists were by no means a taken-for-granted sight. There was indeed a change in the way society viewed and came to accept women on bikes around the turn of the 20th century. Up until that time, cycling was considered to be immodest and unhealthy for women as well as being seen as completely inappropriate in aesthetic terms. Bending one's body parallel to the ground (*Katzbuckelhaltung*), an alleged enhancement of the libido, and the distorting effects of "bicycle face" (exertion shown in a person's facial expression) were considered to be utterly unsuitable for the fairer sex.

A pamphlet written by a Dr. Fressel breathed new life into the debate. His patient surveys had shown that cycling has beneficial effects on sleeping patterns and appetites, and that it does not have any adverse consequences, even during pregnancy. Riding a "velocipede" became from that time on a universal remedy: it helped against bronchial illnesses, green sickness, weak muscles and the most typical of all women's illnesses at this time, hysteria.

Accordingly, doctors recommended the following therapy: "A ride on the steel horse … strengthens and steels not only the body but also has a refreshing effect on the mind and mood a reinvigorating impact on too highly-strung nerves. ... If a lady is hypochondriac or ill-tempered in nature, cycling proves to be a remedy that cannot be recommended often enough" (ibid. 50).

Gender research has pointed out that all these recommendations still occur within a traditional understanding of gender roles, namely, the importance of maintaining and promoting the ability of the female sex to bear children. Nonetheless, once women had started cycling something was set in motion that ultimately changed women's roles and, with them, the rest of society as well.

For example, women cyclists started to wear clothes that covered their legs – long, baggy trousers – while the usual tight skirts and especially the breath-taking (!) corset gradually disappeared. The woman cyclist's trousers became a matter of political dispute: they were considered so immodest that they were referred to by the euphemism "the unmentionables". Condemned by conservative women's groups as immoral and as pushing society "to the edge of the abyss" (ibid. 65), the trousers were celebrated by progressive ladies and gentlemen as a vademecum for women cyclists.

Something that may at first appear to be a "sideshow", i.e. the introduction of "bicycle fashion", proves upon closer inspection to be associated with a shift in the very image of women per se: with the new-found mobility afforded by the bicycle, women also came to access spheres of agency beyond the domestic sphere – a literal liberation from constraints

which, in the form of the corset, extended even into the realm of body shaping. The bicycle thus opened up not just new possibilities of more or less physical exercise, of seeing and being seen, but also and in particular extended the potential radius of activity of women. The bicycle as a mode of transport contributed to profound changes in the understanding of women's role in society, to the democratization of mobility and toward the interconnectedness of industrial production and mass consumption. It was seen as a mode of transport for the future and also as a European phenomenon.[5] The bicycle was *the* symbol of innovative transportation technology, even surpassing the train to the extent that it enabled individualized mobility independently of timetables and railway stations.

With the dawn of the 20th century the bicycle was to become the most successful industrially mass-produced item – an elevated status it shared only with the sewing machine. This "new machine" became a fixed part of the bourgeois culture that was developing especially in English towns during the first two decades of the 20th century. As a vehicle that was available at any and all times and allowed individuals to choose the route they wished to travel, the bicycle virtually become the epitome of exploration of new regions and countries and was also used accordingly for touristic purposes. Historically speaking, the freedom and personal mobility usually associated with the motor car appeared first in connection with bicycle tourism.[6] In other words, riding a bicycle prepared the way for the spread and establishment of such key 20th-century bourgeois values as individuality and mobility.

In philosophy, the bicycle became a symbol of technology that stands in opposition to the traditional understanding of "science and technology": in the case of the bicycle, construction came before theory, which provided an explanation for already existing practical results only after the fact. It is not from theory that we learned how the bicycle can be used but from its actual use.

If we look at the bicycle in its cultural context, in literature, in expert discussions, in fireside story-telling, in art, it becomes transformed into a sign, or a symbol. As such, the chronology of the invention, production, cultural diversification, dissemination and marketing of the bicycle can be established to a certain extent. The bicycle is an example of the development of a technology which has been not only strongly influenced but also initiated by particular societal factors. The bicycle is a set of relationships made up of technology and the environment, one which gave women more freedom of movement and greater scope for action, which established the idea of individuality and mobility in society, and which became

a symbol of the distinction between "thing knowledge" (*Dingwissen*) and narrative knowledge (*Erzählwissen*) in the philosophy of technology, between implicit embodied knowledge and explicit theoretical knowledge.

What we see here is a key with two symmetrical bits. This is somewhat confusing, as most of us are familiar with keys that have a bit and a "bow" for easier handling, i.e. for inserting the key into the lock, turning it, pulling it out and stowing it away again. This so-called "Berlin key" has two bits, each of which can also be used as a bow. Upon closer inspection it becomes clear that both ends additionally have a groove, above the notches, on the other side in each case.

This key fits the lock to the door onto the courtyard of a rented apartment block. We insert it and turn it anti-clockwise as far as it will go. We try, as we are used to doing, to pull the key out again, but it will not budge. The door is now open, the bolt in the lock mechanism flipped back, but we cannot pull the key out. We can only do so by turning the key back again anti-clockwise through 270° – and being faced once again with a locked door. Leaving the key in the lock and simply going into the courtyard is not an option, and neither is locking the door without closing it, because the bolt that now sticks out stops the door from closing – so what are we to do? The solution to the conundrum is that this key, once it has unlocked the door, has to be pushed through the lock to the other side. We follow the key to the other side of the door and are about to take it out of the lock, convinced that we have found the right answer and proud of having done so. But the key still can't be pulled out of the lock: we can only do so after we have closed the door again from inside the courtyard.

So this key is not just part of a locking system for a door but also demands of its user that they act in a particular way, namely, by moving from one side of the door to the other side. The key imposes a collective discipline: all those who rent an apartment in this block have to keep the door to the courtyard closed if they want to get to their apartment. The notice placed beside the front door to the building, "Please make sure that the door is always closed behind you at night", has acquired material form in the key.

The key contains a programme of action which in turn relates to an entire social network, and as the keys have different functions (the caretaker/janitor and the landlord have a different key than the tenants, for example), they exercise different forms of control.[7] The function of mediating different social relationships is one these keys have not simply on account of their construction and materiality, with which they exist over against the social sphere as a non-

material sphere. Rather, mediation here means that the technical medium of the key and the action it demands are viewed as a single whole. Accordingly, then, the dual-bit design and the notches are not an expression of disciplinary relationships, nor do they symbolize or reflect or reify them; rather, they are what creates this set of relationships in the first place.

Adhering rigorously to this argument, Bruno Latour insists that the key is not simply an object but is rather a project, one linked to actions, behaviours, habits, heuristics, know-how, and sets of practices. Objects here are merely a link in the chain of a long series of associative chains, at most a somewhat resistant part of a chain of practices (ibid.). Exploring technology, then, means inquiring into connections (in the sense of associations) and into substitutions (ibid., 40). Symbols and materials, indeed people and things per se, are regarded first of all as provisional states or conditions in a chain of practices, without making any prior decision as to what is social and what is technical (ibid.). The practices, or activities, are the common denominator of all these various categories such as things, behaviours and symbols.

All this is not entirely new, having already been stated in similar terms elsewhere, only with a different purpose in mind. Ludwig Wittgenstein, for example, believed that language is an activity, just like crafting skills or the manufacturing and use of technical artefacts and infrastructures. For Wittgenstein the speaking of language is "part of an activity, or a form of life".[8] And in Marxist terms, too, words and things likewise become means of production: they give our activities shape and form, as we can read in Marx and Engels' text "The German Ideology". What Wittgenstein considers to be a form of life becomes a mode of life in Marx and Engels when they describe the way in which humans produce the means by which they live, namely, as "a definite form of activity of these individuals, […] a definite *mode of life* on their part. […] What they are, therefore, depends on […] the material conditions determining their production".[9]

This connection between the Marxist "mode of life" and Wittgenstein's "form of life" has been established by US philosopher of technology Langdon Winner, who has re-interpreted it in relation to technology. If language as a form of life brings forth activities such as giving commands, speculating about events, guessing riddles, making up stories, forming and testing hypotheses, then technical acts, according to Winner, not only influence these intellectual activities, they are what bring them about in a particular form in the first place.

This happens whenever everyday devices and techniques become a part of human modes of existence. We become, says Winner, "the beings who work on assembly lines, who talk on telephones, who do our figuring on pocket calculators, who eat processed food, who clean our

homes with powerful chemicals".[10] These are the patterns that change in any given historical context, even if people have been working, eating and living in houses for a very long time. As a form of life, technology repeatedly adjusts itself anew in the interplay between things and humans. Our actions in the environment "household", for example, can be accomplished by using very different technologies, but whether we wash our dishes by hand or in a dish washer will determine "what washing the dishes is in each instance", notes philosopher of technology Alfred Nordmann.[11]

Conceptualizing technology as a form of life and locating this form of life in a reciprocal interplay between humans and things – making the surroundings into an environment – seems to come quite close to Latour's notion of mediation between technical means and action. The Berlin key has a mediating function between different social relationships, not just on account of its construction and materiality but by being viewed as a single whole consisting of technical medium and action. "Please bolt the door behind you during the night", says the key; meaning that it is an educational programme and not merely a means to an end. It does not simply lock a door; it structures a set of activities and needs – going out late in the evening, safety, controlling behaviour, community, a sense of security.

Conceptualizing technical things and processes as an action programme apparently means something different than attributing a social dimension to technology – and it also means something different than, conversely, implying that society has a material aspect. Here, the key is conceived of as a tool-like object with which human subjects carry out an action. Conversely, though, the key can also be thought of as a subject, in that it gives instructions for action and thus transforms its users into performing (implementing) objects, into part of a door-lock-world situation – of a specific technology-environment nexus. Viewing the key as a script that contains a programme of action according to which an entire set of residents in an apartment block is organized, certainly has a certain rigour to it.

Here is Bruno Latour again: "…things do not exist without being full of people, and the more modern and complicated they are, the more people swarm through them. […] A dialectic relation? If you like, but only on conditions that we abandon the mad idea that the subject is posed in its opposition to the object, for there are neither subjects nor objects […]".[12]

It is the key as script that brings about the dialectical relationship, that creates connections between different users, between lock and key, between time and place. The Berlin key becomes a cypher for an understanding of technology we can use to describe the mode of cooperation between things and people. Understanding technology as a form of life means, consequently, seeing technology as something which encompasses and permeates individuals' thinking, acting and feeling as well as society's scope for action – its political, social and economic reality, in each case being characteristic of a specific set of relations between technology and environment.

In this sense too, technology and culture are not simply closely related to one another; they mutually give rise to one another. US historian Thomas P. Hughes (2004) elaborates this notion by referring to the development of cities in the United States around 1900, when the nation was regarded around the world as "technology's nation". Rapidly emerging American metropolises, according to Hughes, demonstrated the creativity and energy brought forth in the consciousness of a nation that saw itself as a shaper and builder of a new world in a kind of second act of creation. American engineers, managers and scientists believed that, in view of the environment that had been created by human hand around them, they were in a position to create this new world with their mighty technological creativity, just as it existed in their imaginations and plans. In the process of endeavouring to do so, the natural environment became a resource to be exploited, regarded at most as a backdrop or even held to be completely dispensable. Technical systems such as railway lines, highways and telegraph / telephone lines now connected the hinterlands with urban centres, ensuring an exchange of communication and goods. Chemists and physicists provided ways of transforming matter and extracting additional energy from natural resources. Electrification meant that industrial developments could be pursued away from energy production centres, while artificial fertilizers and large agricultural machines brought farming under the control and shaping influence of urban authorities.[13] All this became an expression of what has come to be known as the "American way of life" in the sense of our discussion about technology as a form of life, though perhaps it is better described as a particular technical form of life of a man-made environment.

Climate models suggest that in the year 2020 the amount of $CO_2$ in the atmosphere will be around 400 ppm and that around the turn of the next century the sea level will have risen by up to 89 centimetres. These figures, provided by scientists on the basis of their complex

models, are impressively exact. They are poorly suited, however, for spelling out the significance of climate change in the everyday life of a society: too abstract, too full of ifs and buts, and in a certain sense too hermetic – this goes for figures and diagrams just as it does for concepts and postulates, for visual and propositional representations.
The key question then becomes this: how can climate change be represented as a technology-environment nexus and how can we explore and operationalize options for concrete action?

Eric Corriel's work is an example of experimenting artistically with scientific climate models. It demonstrates a future in which Brooklyn lies underwater. The artist confronts us in images and sounds with climate change – about which, as he stresses, most of us have no idea, even though for many of us it "will happen in our own backyard and during our lifetime".

In his work Corriel is making us aware that climate change is not so much a problem of the future than one that is immanent to our present-day existence. A large number of engaged citizens, scientists, artists and also politicians agree on this. Gathered beneath the rubric "Anthropocene", expertise in theory and practice is being developed through a wide range of very varied projects, beyond the internationally institutionalized climate-related forums of science and politics. Examples include art exhibitions, as in the case of Eric Corriel's video installation "Water will be here", exhibitions in technology and science museums, such as "Welcome to the Anthropocene" in the *Deutsches Museum* in Munich. Then there are projects in which scientific and artistic research are being brought more closely together institutionally, as with the Anthropocene project initiated by the *Haus der Kulturen* in Berlin. The Anthropocene is studied here as a hypothesis and phenomenon using the resources of art and Cultural Studies. The project sees itself as a "pilot project about knowledge production" that is experimentally exploring ways of building a transdisciplinary culture of knowledge and education. One of the key questions defined by the project is how a corpus of so-called earth-connected (*erdverbunden*) knowledge should be put together and what forms of communication are appropriate. Reinhold Leinfelder, geoscientist and head of the project during its initial phase, puts it more specifically thus: "What we need is a practical approach similar to a gardener's (*gärtnerisches Gestalten*) – one that enables us to understand the complexity of the system as a whole." In his blog *Der Anthropozäniker*, Leinfelder takes dualism to task, in which all things good are attributed to nature and all things evil to humans. The important thing instead, he says, is to "learn to comprehend humans and their activities as a part of nature".

Now whether or not we want to fall in with semantic offerings such as "earth-connected" or "a gardener's approach" can be left as an open-ended question for now, but the last sentence could easily appear in the Environmental Humanities programme at Cottbus.

What seems to me interesting with regard to an interpretive analysis of texts and images relating to the production of the future in the project is the semantics of an experimental and practical intervention, which makes the boundaries in climate discourse between science, technology and art porous. Artists medialize climate change on the basis of scientific theories, while scientists create material models, concrete objects or even conceptual models which exist in distinction to theory, as it were, and develop a life of their own – they do not simply represent theory.

Over the last few years this "new independence" and the materiality of models has been taken up in the philosophy of science as well, for example in the debate about the status of epistemic objects, about the production rather than the representation of phenomena, and about genes as tools rather than concepts. Philosophers of science Margret Morrison and Mary Morgan have introduced the concept of models as mediating instruments. Our attention is shifted here from models as controlled representations of data and theories to the uncontrollable behaviour of models, something that characterizes them as so-called autonomous agents[14]. The exploratory aspect of models is thus emphasized over against the justification and representation of theories and data; here, models turn into search engines.

From a Technology and Media Studies perspective prediction as an instrument for shaping society is likewise of limited usefulness, in that it proposes only one possible future and shows itself to be not especially open to parameters that cannot be translated into algorithms. Media Studies scholar Richard Grusin has therefore countered the notion of prediction with the term "premediation", which seeks to encourage us to imagine "as many futures as possible"[15] and points to the fact that these anticipated multiple virtual worlds – just like the single prediction – are to be regarded as real to the extent that we are already interacting with all these worlds in the present.

These comments are by no means intended as criticism of the technosciences; rather, they are meant as an appeal to understand efforts to get to grips with climate change as partly being a matter of interpretations and narratives, of artistic research and of reflexivity. We need to inquire into interests and strategies, into cultural ties, historical geneses, material, epistemic and social dynamics – in short, into the conditions of possibility of the technology-environment nexus in climate discourse.

A range of scholars have stated insistently that the phenomenon of the Anthropocene and the necessity of shaping it here and now in models of the future will occupy us for quite some time to come – and that it will do so in a radically different way than occurred when envisioning, implementing and dealing with the consequences of nuclear research or nanotechnology. Philosopher Clive Hamilton from the Centre for Applied Philosophy and Public Ethics (CAPPE) in Canberra, for example, states:

"[I]t will take many years for us to grasp the full meaning of the announcement [regarding the advent of the Anthropocene] made by Crutzen and Stoermer. […] Nothings humans have ever done approaches the momentousness of this fact. Our activities have so changed the climatic future that we have over-ruled one and perhaps several ice ages."[16]

Natural and cultural history are thus inextricably intertwined for an unimaginable period of time into the future, probably several tens of thousands of years. This and the concern expressed in a wide variety of contexts about shaping and taking responsibility for the "future" make the Anthropocene a natural object of comprehensive scholarly analysis in Environmental Humanities, while consideration must be given equally to cognitive, normative, and historical-cultural dimensions of the issue.

In our disciplinary studies of the Anthropocene we are working on a number of projects, including one that addresses the issues hinted at in Reinhold Leinfelder's call for a "gardener's approach". This call has something to do with responsibility for technological action and for developing an appropriate attitude towards technology and the environment, mentioned in the early part of this lecture. Thinking about and discussing gardening practices and garden theories, I believe, can help to prompt more general reflections around technology and the environment. They can also help us, I think, to step beyond the established yet, as Bruno Latour calls it, "mad" idea of the opposition of subject and object, nature and culture, technology and environment, and to create space for reflection dedicated to a relational understanding of action. This also means working more closely with interpretations based on cultural history and artistic research, as well as with concepts such as "citizen science" and "participatory citizen scientists"[17] (i.e. scientific praxis outside the usual academic forums). Gardening practices are embedded in a broad social and technical context; gardens are epistemic objects. They embody practical and theoretical knowledge about current nexuses of

technology and environment as manifested in climate change as it unfolds: the history of gardens and gardening makes historical nexuses accessible. The *hortus conclusus* (closed garden) offers proximity and familiarity; every gardener knows that a garden entails worry, pleasure and satisfaction as well as humility, and that it induces structure – particular rules and lifestyles. Finally, gardening practices are also future-oriented: designing a garden means embarking on a challenging, long-term project that manifests as diverse in precisely the sense intended by "premediation", and that also, and above all, points with confidence into the future.

Wrap up

Why pursue Environmental Humanities in Cottbus?

Because

- a technical university is predestined to research technical forms of life
- under current societal and political conditions, a focus on the mutual production of technology and environment is imperative
- the "Anthropos" in Anthropocene requires expertise in the Humanities
- at BTU we have a tradition of "crisis = opportunity"
- the region is an ideal real-life laboratory for the technology-environment nexus
- we are able to do so