

## Artist-in-Residence: Christian Kosmas Mayer

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*Abstract: In the first part of the interview, we take a closer look at what Christian Kosmas Mayer has got up to as artist-in-residence at the Schaufler Lab@TU Dresden and discuss his conviction that recent developments in genetic engineering and AI actually have their roots in the timeless human desire for immortality. The second part of the interview focuses on Mayer's latest project Maa Kheru, which has attracted considerable attention. The artist initiated a scientific research project with the ultimate goal of recreating the voice of a 2000-year-old mummy using data from CT scans and then composed an 8-channel sound piece from audio recordings of its vocalizations.*

### **Christian Kosmas Mayer, you have been the artist-in-residence at the Schaufler Lab at the Technische Universität Dresden since September 2020. How did that come about?**

There was an open call for the residency that, as far as I know, well over 100 artists applied for. It listed AI as one of the Schaufler Lab's main research areas, along with a series of requirements potential candidates had to meet, including the submission of a detailed project proposal.

### **To quote from the open call:**

**“At the Schaufler Lab@TU Dresden, researchers and artists investigate cross-fertilization between the fields of technology, art, science, and commerce. Our main focus is on technology as a resource, a means of distribution, and a subject for scholarly discourse. During the first phase of funding (2019-2022), the Lab will explore the topic of *Artificial Intelligence and Social Change*.”**

### **I would like to find out more about the plans for this collaboration between you, an artist, and the other participants - and how it actually functions in practice. What is expected of an artist-in-residence at the TU Dresden?**

An exciting aspect of this residency is having access to the pooled resources of scientists and thinkers at the Schaufler Kolleg. At present it consists of nine scholars from a variety of disciplines in the humanities and social sciences, who are researching the huge topic of *Artificial Intelligence as a Factor and Consequence of Social and Cultural Change*. Intellectual exchange between the artists-in-residence and faculty members in the Schaufler Kolleg is part of the curriculum. The program also encourages contact with other academics at the TU who can support the artists in developing their art projects. The organizers place great importance on communicating the process to the public, too. So, in addition to the final exhibition, the artists are meant to host regular lectures and talks that are open to the public.

### **What have you done so far to meet these program requirements?**

My work is essentially based on my own process of creative research and discovery. To this end, I established contact with several academics at the TU who agreed to collaborate on the project. I regularly take part in seminars and workshops held by the Schaufler Kolleg to maintain close contact with other research scholars from the sciences and humanities. And I have put together a few formats aimed at the public, such as a lecture at the *Hochschule für Bildende Künste Dresden* and a public talk

with Christoph Neinhuis, Professor of Botany at the TU Dresden. Because of Covid restrictions, what was meant to follow next had to be scrapped and in winter 2020 we decided to put everything on hold until it was feasible to host some form of in-person event in Dresden again in the summer of 2021. We started that June with a symposium on my research topics, and since then we've been able to resume our close collaboration in Dresden.



Christian Kosmas Mayer: Lecture *Chronopolitics of Form in Uncertain Times* (2020). Photo: André Wirsig.

## Research Topics

### **What research questions have you chosen to explore during your residency?**

Starting with myths about immortality that can be traced back to the dawn of cultural history, I am exploring manifestations of the human desire to attain eternal life through modern technology. Two areas are of particular interest to me, especially in terms of where they intersect. The first is related to the field of biology and encompasses the material or organic level of recent attempts to attain immortality. This involves current developments in genetic engineering and stem-cell research, but also cryonics for example, a method of artificially preserving corpses at extremely cold temperatures in the hope that they'll be revived at some stage in the future.

My second focus is artificial intelligence and the idea of using the data accumulated about a person during their lifetime to facilitate a kind of *digital resurrection* after they die, through the use of deep-learning algorithms. The resulting *digital ghosts* could then be carried around with us on our mobile devices. All of these endeavors are fueled by the wish to dissolve the concept of time that has always

governed humanity's relationship with the world. I want to trace this transition and make it more tangible.

## Myths on Immortality

**What did you concentrate on most? Did you analyze any of these myths yourself, for instance, or did you read research literature on the subject? What was the primary focus of your study?**

I took a closer look at several ancient myths that deal with the subject of immortality, going right back to the Epic of Gilgamesh, one of the oldest stories known to humankind. I found the reports from the life of the first Chinese emperor, Qin Shi Huang (259–210 BCE), fascinating. You could say he was obsessed with attaining immortality. But modern narratives which take the idea of immortality and think it through to its logical conclusion helped me a lot too, such as the short story *The Immortal* by Jorge Luis Borges.

**What important insights were you able to glean from your studies? Was there any specific researcher of mythology that you largely agreed with? Or did you end up arriving at a position of your own?**

I was determined to gain my own understanding of how the desire for immortality has always accompanied and driven humanity and human endeavor. At the same time, I was interested in the psychological aspect: why does the very idea, the promise of immortality, have such a strong hold over us? The book *Immortality: The Quest to Live Forever and How It Drives Civilization* by Stephen Cave (New York 2017) was a great help in this respect. The author poignantly describes what he terms the “mortality paradox”: on the one hand, we are fully aware that we all must die someday. Yet on the other hand, it's impossible for us to imagine the world without us in it. We simply are not capable of imagining the state of nonexistence. There is only one escape from this insufferable conflict, as Sigmund Freud recognized: the concept of immortality. And to give substance to this concept, we humans have been making up stories about it since the dawn of time. Some researchers even propose that the quest for immortality has in fact been the major impetus behind *all* of our cultural achievements. In the words of author Bryan Appleyard in his book *How to Live Forever or Die Trying* (New York 2007): “Everybody dies. Therefore I must die. This being inconceivable, we invent immortality and these inventions are civilization” (15). According to this line of thought, there is a direct relationship between the desire for eternal life and our concept of progress.

**What do you see differently when you interpret academic propositions of the kind described above against the background of myths about immortality and other cultural-historical documents of our yearning for eternal life? Are you interested in tracing a continuous line running down through the ages of cultural history or is there more at play here?**

I believe that the conceptual link between the prevailing thought today and the *original myths* is crucial to gaining a better understanding of the real impulse behind current technical and technological innovations. These stories also bring up several problems that humanity could face as a consequence of such aspirations. What I'm also interested in is identifying the differences between these new, technologically driven attempts to attain immortality and those of earlier times.

## The Quest for Immortality in the Natural Sciences

**So what are the differences in your opinion? You mentioned recent science-based projects that are essentially driven by the quest for eternal life.**

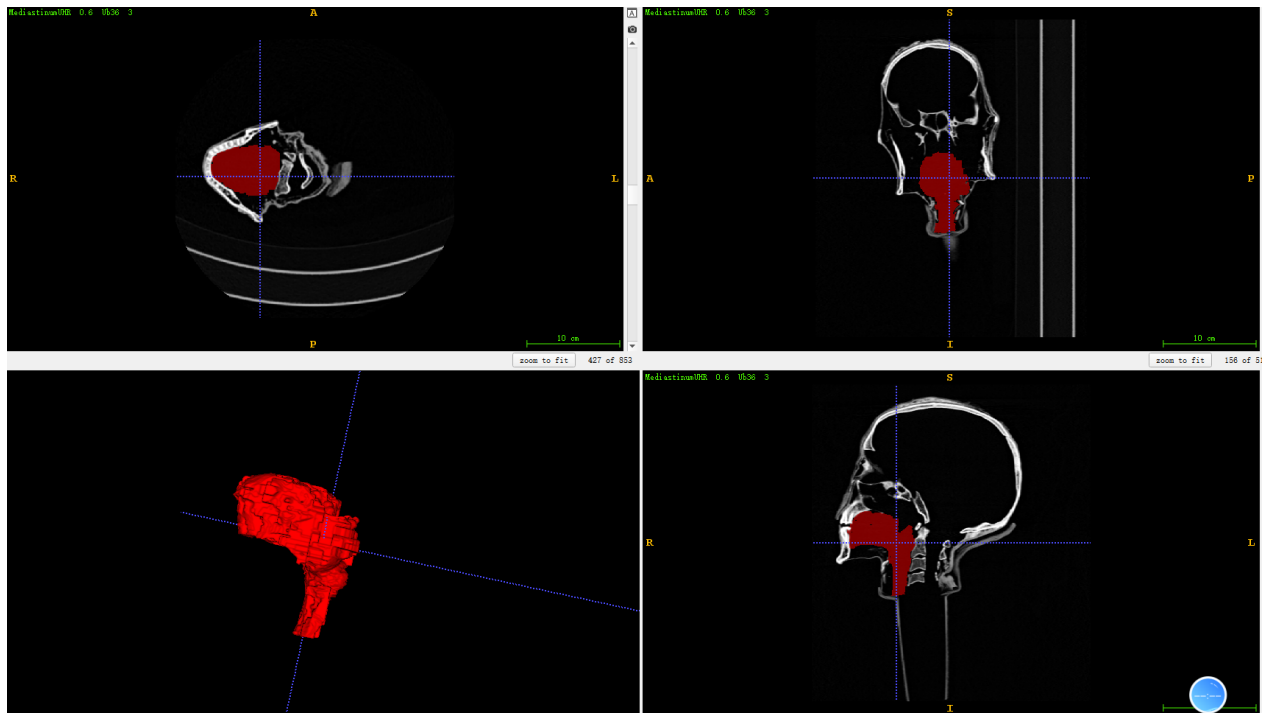
Basically, we can say that the desire for eternal life is indeed timeless, but in every era there have been new interpretations of immortality and attempts to attain it through technology. Since the advent of the modern era at the latest, people's relationship to death in so-called Western societies has become increasingly tied to scientific and technological narratives. And this has been accelerated by the decline in our faith in religious narratives of an afterlife. The logic behind this shift is strongly influenced by capitalism and sees death as a disease that has to be fought. Within a relatively short timeframe, innovations in biotechnology and artificial intelligence have spurred the hope that immortality will be achieved through technological breakthroughs in these fields.

**Like what exactly?**

Well, there are many areas I could mention. In the field of biotechnology, it's the hope that our lifespan can be prolonged considerably – for instance, through the activation of an *immortality gene* that some researchers believe exists. It reminds me of the old myth of the Fountain of Youth. Cell repair with nanotechnology is another area that is being extensively researched at the moment. But cloning and cryogenics are also, in effect, just other forms of the search for immortality. In the digital realm, there is much speculation that an *artificial superintelligence*, or *super AI*, might someday be able to create a space where we could apparently live forever as digital clones with our own consciences, even without bodies. For my research with the Schaufler Lab, I was particularly interested in learning how the data accumulated during our lifetimes could be used after we die to create a type of animated ghost. In this scenario, it's not so much about consciously experiencing immortality but rather a way of keeping an impression of ourselves alive for those we leave behind, a type of lingering *presence of the absent*. And rudimentary examples of this type of immortality can already be found today.

**Is there a critical element to your intervention as an artist? For instance, would it be better for research driven by the immortality question - in this or any other form - to pursue, say, model a rather than model b? Do you think we're seeing the emergence of *miscalculated innovations*, where you think we're heading down a dangerous path?**

Overall, I am critical of many things related to the wish to attain a state of immortality with the help of technology. Even just the fact that the *pioneers* in this area are all rich white men of a certain age is problematic for me and very telling. I am interested in the ethics of it all: how will we deal with the fact that technology offers these possibilities to push the boundary between life and death? Comparing various scientific methods for achieving this goal is not my concern, but rather our relationship with death and how it seems to be changing at the moment, even if we don't quite (consciously) realize it yet.



Processing of the 3D model of the vocal tract based on the available computed tomography data of the mummy.

**In the first part of the interview, I wanted to identify some of the underlying convictions that have guided your work as artist-in-residence at the Schaufler Lab. Now in the second part, let's take a closer look at your mummy project. What's it about?**

My aim was to synthesize a voice using digital data from a mummy and to compose a multichannel sound piece out of the audio recordings of this voice. In my sound installation *Maa Kheru* you can hear vocal sounds that originated in the body of a 2000-year-old Egyptian mummy.

**It's clearly a very complex project. An important aspect of w/k is defining the interrelationship between art and science as accurately as possible. With this in mind, I'd like to talk to you about the individual components of the project and work out the actual connections between the disciplines. Component 1: the artistic proposal to create a singing mummy is dependent on the ability to reconstruct *the voice of a mummified person* through scientific means. Were you able to support your proposal with findings from previous research?**

British researchers had just presented their reconstruction of a mummy's voice a few months earlier. I found the idea fascinating but, truth be told, was disappointed with the actual result. What they presented was a one-second recording that didn't really sound like a human voice to me. Clearly the way the British team decided to tackle the technical challenges was not the right one or they didn't follow it through to the end. My sense of disappointment made me resolve to come up with a different way of synthetically reproducing the voice of a mummy in order to achieve a more scientifically convincing result. My goal was to then work with the sounds in a creative way.

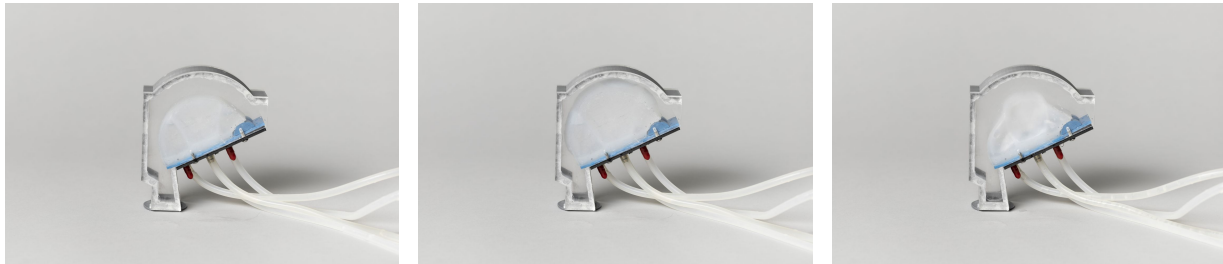
**What mistakes did you identify? What had to be altered?**

The British Researchers had reconstructed the vocal tract of a mummy, that is, the part of the body between the larynx and the mouth that forms the human voice. However, a voice's timbre is largely

determined by the moving parts of the vocal tract, especially the tongue and its various positions. The British researchers ignored this completely so they were only able to produce a single, unchanging tone that was lacking in human qualities.

**So the second component of your project involves the development of an artificial tongue?**

Yes, exactly. The tongue is what makes it possible to produce variable tones and vowel sounds such as A and I. To enable the mummy to do the same, a flexible, manipulable tongue had to be placed inside the vocal tract – it's also known as a *fluid* tongue. Like the vocal tract of the mummy, this tongue had to first be constructed in a process using both scientific and technological means.



Simplified model of the vocal tract of the mummy with built-in tongue model in different tongue positions (2021). Photo: Adrian Sauer.

**Such a collaboration between art and science is unusual: an artist has a particular artistic goal (in this case, getting a mummy to sing). In order to realize the artist's project, science and technology are needed in two instances: firstly, to reconstruct the vocal tract of the mummy, and again to equip the mummy with a manipulable tongue. As artist-in-residence, you have access to scientists that are prepared to work with you to realize components 1 and 2 - thereby making it possible to realize an art project. It would be worth to see if there have been any comparable collaborations between art and science. Staying with the mummy project for now, however, what exactly did you work on with the scientists and what did these collaborations achieve?**

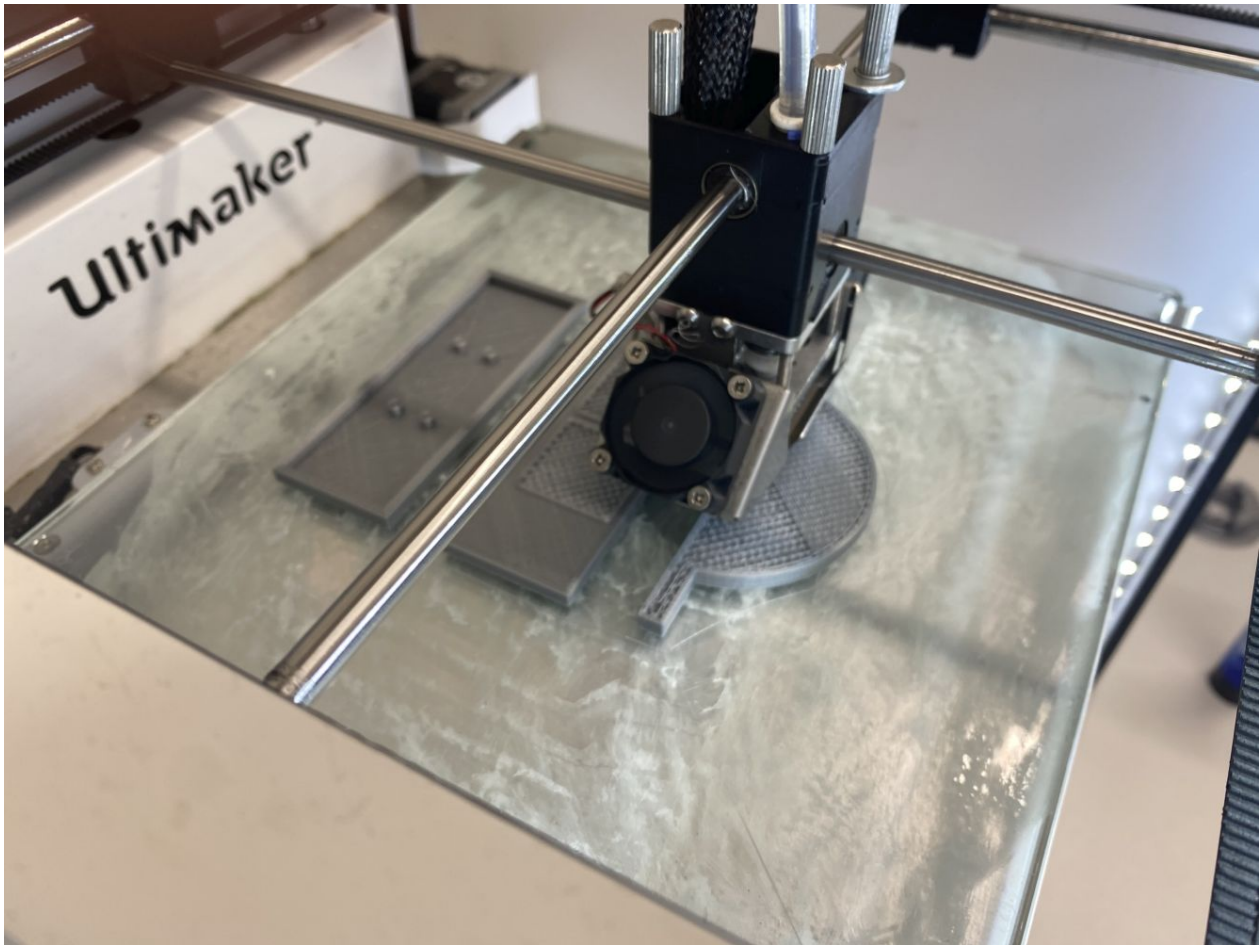
First of all, I asked the supervisors at the Schaufler Lab to introduce me to Professor Peter Birkholz, Chair of *Speech Technology and Cognitive Systems* at the *Institute of Acoustics and Speech Communication*, and was then able to present my idea to him. In further discussions, he suggested that we could get closer to my goal with the help of a scientific experiment. We invited undergrads at his institute to take part in a project we devised that would count toward their Bachelor's, and three students applied. Under the direction of Professor Birkholz and myself, and supervised by Patrick Häsner who was engaged as a research assistant for this project, the group spent a semester working on component 2. After five months of experimental research, we finally got to the stage where I could record the sounds in a studio that were used to create my sound installation.

**Did you collaborate with any other scientists?**

Yes, after Professor Birkholz agreed to join the project, I contacted Professor Wilfried Rosendahl, director of the Reiss-Engelhorn-Museen in Mannheim and supervisor of the German Mummy Project, which has examined numerous mummies with state-of-the-art technology to gain new insights. After I'd won his support for my project, we were given access to the data from CT scans of some of these mummies. We chose one whose vocal tract was particularly well preserved. On the basis of this data, Patrick Häsner created a printable 3D model that is an exact replica of the mummy's vocal tract. Only then was the



experimental part of the research able to begin.



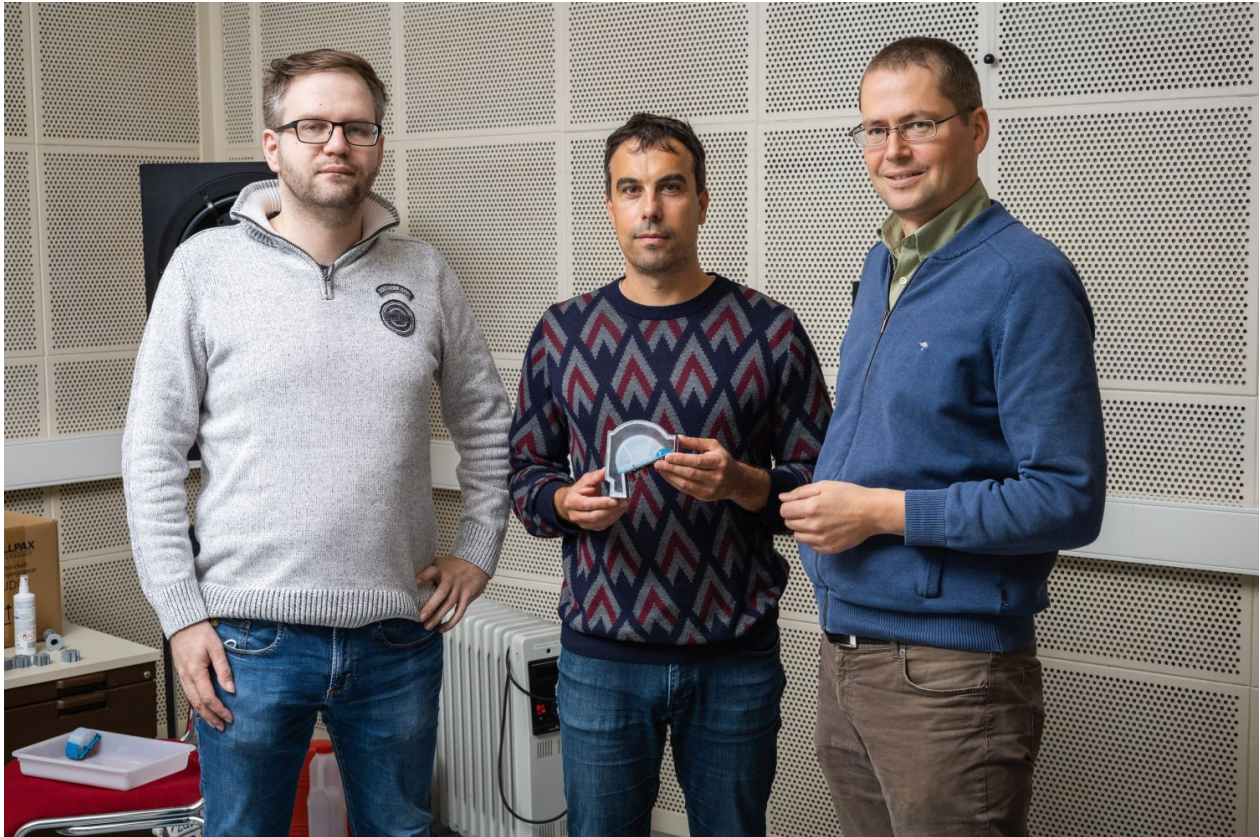
3D printing of individual parts for the tongue model (2021). Photo: Patrick Häsner.

**I would like to go into the collaboration in a bit more detail. You approached scientists to help you with an art project that you couldn't realize on your own. You outlined the scientific and technical aspect of the project that involved developing components 1 and 2. The experts accepted the challenge and worked out a detailed plan with the means available to them within their respective disciplines. This leads me to the question: were you involved in the scientific and technical research process beyond formulating the research problem and, if yes, how?**

I was a full member of the scientific team that took on the challenge of equipping a mechanical model of a vocal tract with a fluid tongue for the first time. As this had never been attempted before, we had to experiment and test materials in order to find the best solution. We discussed the results at weekly meetings and proposed new solutions that the students then tried out over the following days. Our experiments culminated in the creation of a tongue made of pliable silicone, consisting of three chambers that can be filled with water. Each chamber can either be expanded by water or contracted through negative pressure, which has worked very well. Because this had never been tried in the area of acoustic speech synthesis before, it was a significant achievement for all of the scientists involved.

**Although you were working on this project together, would you say you both had the same goals?**

The fact that the vocal tract came from a mummy was secondary to the scientists. They made their own recordings at the end that were always just one-second long and had a particular purpose in mind – to generate a specific vowel sound, an A for instance. For them it was paramount to provide concrete evidence that the goal had been achieved with the help of the tongue. My main concern, in contrast, was the *musical* sound that can be produced with this synthetic voice in order to create a space that resonates at both an intellectual and an emotional level.



Patrick Häsner, Christian Kosmas Mayer and Professor Peter Birkholz (2021). Photo: Adrian Sauer.

### **Wasn't it exciting for the scientists to work with a mummy at all?**

At a personal level it probably was, but from the scientific point of view it was even problematic for them. We had to complete the shape of the moving parts of the vocal tract intuitively, as they had not survived intact in the mummy. As scientists, they are therefore reluctant to claim that it is an exact replica of the voice of a 2000-year-old mummy. Conversely, for me as an artist, this speculative element is appealing, as I am not concerned with presenting an objective truth. Art gives me certain tools that allow me to unpack this complex, essentially scientific theme, be it in the form of poetry, aesthetics, philosophy, or even subtle humor, which I often find very productive.

### **Has the project had a lasting impact in the domain of scientific research?**

Professor Birkholz has just submitted a scientific report about our project for publication in a specialist journal. I am listed as co-author, which is the first time that I have appeared as an author in a purely scientific context.





Audio recordings with the vocal tract of the mummy in the recording studio of the TU Dresden (2021). Photo: Adrian Sauer.

**How did you proceed once the scientific and technical problems were resolved, in other words, how did you realize your artistic goal?**

My goal from the outset was to make audio recordings of the mummy's voice so that I could create a composition out of them. With the help of an artificial sound source and the manipulable tongue, I was ultimately able to play the mummy's vocal tract like an instrument. Depending on the origin of the sound and the position of the tongue, the tones that were produced didn't always sound human, and I had to first get a feeling for how I should best play this new instrument. The many hours of recordings that resulted became the basis for what is presently the last phase of my art project – the composition

of a multichannel sound piece for an exhibition space.

**Can you describe your approach in more detail?**

It was important for me to create the impression of a vast space from where these sounds emanate and can be heard in *our* space. Being able to use each of the eight loudspeakers separately allowed me to make the sounds come from different directions or seem like they're wandering across the wall. The result is a seven-minute composition in which the voice can sometimes be heard solo and sometimes in a chorus reminiscent of spiritual laments. These cries are accompanied by sounds also made with the model of the vocal tract that resemble simple brass instruments. My aim was to create a complex sound composition in which the *cold*, matter-of-fact technology that facilitated it is eclipsed by a sense of poetic mystery, and the listener feels as if they are being sucked into the depths of time.



Installation view: *A&I*, Altana Galerie der Kustodie der TU Dresden (2021). Photo: Adrian Sauer.

**How is the mummy project related to your thoughts on the subject of immortality that you described in the first part of our interview?**

Egyptian mummies are physical relics of an advanced ancient civilization in which the quest for immortality was a defining cultural force. I found the ancient Egyptian belief that eternity was only attainable when the voices of the dead were resurrected particularly interesting. With modern technology it is now possible to let these voices be heard once again, even if only as a speculative approximation. This connection between an ancient, premodern belief system and modern technology fascinates me. Then there is another, forward-looking aspect to this work – in the future, speech synthesis of the kind we used will be able to replicate the voices of the dead when their bodies are no longer with us. In combination with AI, it is conceivable that we'll be able to hear conversations with the *ghosts*

of the dead that will sound deceptively like our lost loved ones, and they'll be capable of really talking to us.

**The subject of time has come up several times in this interview. Can you tell us more about your own perspective on the matter?**

I would like to answer this question with the somewhat altered words of philosopher Rosi Braidotti who has contributed an essay about my work for the exhibition catalogue. In her book *The Posthuman* (Cambridge 2013), she writes (in a different context):

“[This voice] is simultaneously from the 1st century BC and the 21st century, both archaic and hypermodern; it is a compound of multiple anachronisms situated across different chronological axes; it inhabits different and self-contradictory time zones. [This voice] shatters the linearity of time and exists in a continuous present [...]. Thinking about [this voice] blurs the categories of thought we have inherited from the past – it stretches the longitude and latitude of thought itself, adding depth, intensity, and contradiction.” (79)

**Don't you yourself strive for immortality as an artist?**

At least since antiquity the thought has been passed down to us that eternal life awaits the hero who has managed to secure a place in our cultural realm. That is why Achilles would rather die as a hero on the battlefield of Troy than live a long life. He hopes to achieve everlasting glory. This *legacy narrative* has persisted right up to the present day, and we artists keep it going when we dream of our work outlasting our own lifetimes.

**Christian Kosmas Mayer, thank you for having this informative discussion with me.**

Post picture above the text: 1:1 scale model of the vocal tract of a 2000-year-old mummy with a built-in silicone tongue model (2021). Photo: Adrian Sauer.

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