Beyond and Within: AI Talks

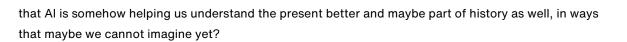# Episode 3 | AI All Around Us

As an essential part of *Ether's Bloom: A Programme on Artificial Intelligence,* the new podcast *Beyond and Within: AI Talks* invites experts, artists and researchers to dive deeper into the world of Artificial Intelligence (AI) and some of the vital questions it raises. It takes the listeners on a journey of questions, analyses and knowledge, while exploring the many sides of the fast-growing technologies around AI.

In the third episode, *"AI All Around Us",* podcast host Eliane Eid talks to writer, speaker and musician K Allado-McDowell, as well as Robert Maharajh, who is the Editor at Larger for the [Gropius Bau Journal](#), about AI as a tool and in the context of wider earthly species. What will its presence mean for us, and for planetary existence in an entangled interspecies world? Is it a threat to humanity or can we learn from – and with – it? Can its hallucinatory abilities work with our own imaginations, and help us to understand the complexity of combined earthly futures?

(As this transcript is based on a conversation, it contains colloquial phrases. It has been edited for better readability.)

Eliane Eid: Hello everyone, and welcome to our podcast *Beyond and Within: AI Talks*. I am Eliane Eid and I will be moderating the episodes of this podcast that was developed by the team here at the Gropius Bau. What is *Beyond and Within*? This limited series of five episodes will take you to a journey of reflection, curiosity and conversations regarding AI with a focus on a more artistic perspective. Within this format, we are discussing points of accessibility, fears and possibilities that come within this technology. We wanted to create this podcast as we had a lot of questions, concerns and ideas about how AI is changing our daily and artistic life. So, we decided to jump on this ride and open up the conversation with experts, artists and researchers who have been studying and working with AI for quite some time and asked their opinion and knowledge about all those questions that are emerging. This podcast is part of *Ether's Bloom: A Programme on Artificial Intelligence*, where we are hosting different artistic presentations and diving into the topic of AI on different levels, through a Writer in Residence, workshops, and discussions. The thoughts of this programme will inform the development of an app which we will launch in 2024.

Today, I would like to welcome K Allado-McDowell, who is a writer, speaker and musician and also known as the AI guru, as well as Robert Maharajh, our Editor at Large here at the Gropius Bau Journal. Thank you for joining us today. I would really like to jump into the conversation and talk about AI and hallucination and how we can create with it. Maybe I can start with one question that I have in mind – it has been circling a lot in our conversations, because usually when we focus on AI, we're always talking about the future, which is correct because AI is predictive. We're always trying to predict the future with AI. But do you think

that AI is somehow helping us understand the present better and maybe part of history as well, in ways that maybe we cannot imagine yet?

K Allado-McDowell: I think it's absolutely correct to say that AI is concerned with the present, or even maybe more with the past. You mentioned how AI is predictive. My work has been largely [concerned] with language and writing with AI. AI language models are considered sequence models, so they predict the next character or token in a sequence. So, within the structure of a sentence that would be a word you put in a sentence and then it predicts more words. It is predictive but the way that these tools are made, they're trained on large sets of data that obviously have to exist already. When we think about predicting language from these data sets, we're talking about predicting language from a lot of data that comes from the internet. That is within the larger context of history, a very present slice of history. They are also trained on older documents. But the irony, I guess, when it comes to the relationship between predicting the future and understanding the past or the present through AI, is that the predictions are always coming from the past. It's predicting a token or a sentence that's likely to occur based on what came before. So that prediction is predicting something to come. It's predicting the next sentence. And in a more metaphorical sense, we can talk about imagining the future, but it does so through the past. In that way, this raises the question of whether or not AI systems can truly make creative leaps if they can truly produce novelty, and if they can, what that actually means for us. What is creativity? What is novelty? Is it just the unexpected thing? Is it just the unlikely thing, or is there more to it than that? But I think this is where AI gets a little bit uncanny or introduces some strange experiences, because we are talking about things that are trained on the past that seem to be able to generate novelty, but we don't really know if that is what novelty is if that's the case.

Eid: When I think about AI, and also how it can be used for the past and for history, I always wonder if at some point it can predict or even tell us histories that were forgotten, or that we're not used to see within our history books, or how we're being taught at schools or on different platforms. Do you think AI can also help us understand each other better and our environment better when it comes to this?

Allado-McDowell: I think we have to be really careful when we talk about understanding concrete material reality and actual histories that occurred through AI because of the thing that you mentioned earlier, which is hallucination. We've been talking about prediction – another way of describing that is hallucination. It imagines something. It hallucinates from within the structure of the neural net, from within the structure of the AI. It generates some possible responses to a text. That can be something that's true and it can be something that's not true. If I were to ask a chatbot for medical advice, it can tell me something that it learned from the data set, something that's actually in there. But it could also generate a totally novel or unlikely combination of words that could be untrue. I could get bad medical advice from it. And right now, there's no way to really check without validating it ourselves by looking it up, by consulting an expert whether or not that advice is accurate or not. This is the danger that they introduce – they're quite good at creating realistic language. Language that seems like it would have come from a human. But whether or not that language is true is uncertain and it always does have to be validated. In the current moment, people refer to that as hallucination, that it's making something up and they say it's hallucinating because when we often experience hallucinations, it's because it's something that's not happening, but we're perceiving it to be real. The actual historical use of that term in computer science is that all predictions, all things that AI generates are hallucinations. There's a funny parallel with that in neuroscience, which is that

actually all of our perceptions are also hallucinated. They're coming from within our own brains based on sensory input, but we're reconstructing it through the patterns in our nervous system and in our bodies and brains. It's getting a little bit philosophical about the nature of hallucination, but just the point of raising it is to say that right now, hallucination is being used in common parlance to mean an AI saying something that's not true. But really, all things that AI says are hallucinations.

Eid: How would you define hallucination in different formats, as writers, or as editors, or even as artists in general? Is it different from what a dream is? I think there's this notion between what a dream is and what hallucination is, and how we can use them, maybe within artistic practices.

Allado-McDowell: I think it's a really good point about art. Art has been the place where this hallucinatory capacity of human imagining and dreaming and creating novelty has existed. For that reason, I have often thought, at least with the previous AI models, that perhaps they're better suited for art than they are for anything else, because that's the place where it's okay to be wrong, to hallucinate, to make something up. And that's the place where it's encouraged. You know, the fact that they do make things up, they do get things wrong. It's okay in the context of art – if you're writing a fictional novel, it's okay if you make up a historical climate disaster and build a story out of that. But if you're doing reporting, clearly it's not okay. I do think there's an interesting question there about what these models should be used for, given the fact that they do this and it's treated now as a problem to be solved. I think that's an inevitable step in integrating the technology into more useful and pragmatic applications. But the closer you get to the system, the more you understand that it fundamentally is making things up, and that's its strength.

Eid: Actually, I tried to experiment with ChatGPT on a short film. I had the dialogue before the script, and I asked ChatGPT to write the script because I was blocked, I didn't know what to write or how to proceed. For some reason, I had in mind that the script or the dialogue is read or said by one person, but ChatGPT had this whole imagination of creating two people. The same voice or the same poem that I wrote was translated or turned into two different voices and then it created a whole scene and a whole script regarding just one small paragraph that I had. In that moment I felt that it's functioning exactly like an artist, but in a more digital space, let's say. It made me think: Isn't this like a reflection or a mirror of how an artist thinks, or the brain of an artist, let's call it?

Robert Maharajh: K you co-author novels with AI and I remembered you saying that there were points where you would write a chunk and then the AI would pick that up, but it would sort of unlock some unconscious kind of fragment or memory or whatever that was there without you maybe having consciously noticed it. And the AI would pick that up and run with it.

Allado-McDowell: What you're describing in my mind, has to do with pattern recognition and the unconscious. When I write something, there are patterns in the text, there are tendencies, there are ideas, and some of those I'm aware of and some of them I'm not. By giving the text over to an interlocutor, whether it's a human or a machine, they're able to see something in the text that I wasn't aware of perhaps. I might be subconsciously writing towards a certain topic that I can't see because of my own biases, but an outside observer would be able to say: "Oh, this is actually about that." When that outside observer is given the opportunity to continue the text, they might pick up those threads versus other threads. I'm curious what your experience writing this story was like, because one of the things I found is that ChatGPT is much more constrained in the kinds of outputs that it has. The typical problem in writing with an AI model is that

it's generally going to give you the most likely outcome, the most likely next step. If I just say: "Here's the beginning of a story", and then ask it to complete the story without intervening, it will write a story that's most like the other stories that already exist, which may not be what you're after. It sometimes is, and sometimes it's not. If I say: "Write another sentence," and then I write the next sentence and then ask for a sentence after that, I'm introducing more change, I'm introducing more opportunities for my own voice to change the direction, but also for the model to change the direction I'm moving. What I've found is that being in a tight feedback loop with the AI tool, where we're completing sentences or paragraphs, enables more navigation and more fluidity and more emergence of ideas between the two parties. Rather than saying like: "Write this, here's a prompt, complete it." The chat model is very oriented towards the user interface itself is designed for: "Do this, here's the output. Now do this, here's the output." Rather than starting a sentence and then having the model complete it. I mean you could do that, but it's not easy. Whereas the earlier interfaces like OpenAI's playground (which still exists) and like some of the other tools that people have made, you can simply write half a sentence and then it will be completed by the model. That I found more useful just because there's more feedback and you're in more of a dance with the writing system. I'm curious if you've tried something like that or how you felt the output came back in the dialogue, because sometimes it gets a little bit generic, I guess, for lack of a better word.

Eid: In my case, I had the entire dialogue already done, focusing on one main character with different inner voices. What the person was supposed to say was written, but in my mind I wrote it for just one person to say those words. When I asked ChatGPT to just write the script and put it in different scenes and different spaces or different times, I don't know why, but it kind of took two different characters. I was interested in the fact that my one paragraph or my one dialogue was divided into two different people. It made the entire script so interesting because I didn't even have in mind that it's two people that can say the same thing or something similar.

Allado-McDowell: I think that's part of what's, I guess, fun and productive and exploratory: when you get a response it may not be the response that you're expecting and that gives you an opportunity to move what you're doing in different directions. I found that writing that's more exploratory or writing without a strict idea of where I'm going, that's when the AI tools are most helpful because they open up different possibilities. Now, the danger there is is the kind of "classic" danger of AI, which is bias: the possibilities they open may be actually pushing you towards something that is predetermined or is biased in a certain direction, or is missing some other possibility. I find the most interesting areas of this space are the ones where the model is really the most random, where I'm giving it the most range of possible outcomes. That's called temperature. You can change the degree of randomness of what comes out. The higher temperature means the things that are less likely to occur will sometimes get selected. Sometimes you get really strange outputs. In some of my books I'll be writing an essay and I'll throw something in and it will turn into a poem. I just like to follow those paths, because to me, that's a really interesting aspect of this tool and this process. When it's really random like that, it can take you in extremely surprising directions. The flipside of it is that there may be some limit to those directions that is biased by the data, or that is more predetermined and we may not be aware of it. One example would be, like I said before, that a lot of the language that it is trained on comes from the internet. When you're writing with it, you're writing kind of through the vernacular of the internet, which is largely [in] English. A lot of the training data comes from places like Reddit and things like that. It's a casual, conversational kind of "poster English". And that's a bias in writing.

One thing I've been doing recently is experiments, training models on different texts from different authors and trying to see what kind of language comes out and how the style of an author is learned from the text. Sometimes it's the contents of the texts, too. I trained a model on Italo Calvino's *Invisible Cities* and it just kept talking about cities, which of course, naturally makes sense. But it also had certain structures and types of repetition and a certain ornate sentence structure that were very Calvino like. I think that the next step maybe for literary and artistic uses is to start pushing against those biases in the data set, or to build models with different priorities or different stylistic influences.

Eid: When I was reading *Air Age Blueprint* at some point -– I don't know if this is good or bad – I felt like I couldn't distinguish who's talking anymore because you get so intrigued and so into the text that you start questioning who's talking. I lost track a bit because it kind of merged together. I found that very fascinating in the book.

Allado-McDowell: That's definitely one of the layers of the reading experience for that book and for *Pharmako-AI*, the first book I wrote with ChatGPT-3. I also wrote a romance novel called *Amor Cringe* – there's no differentiation between voices and the reason that you're able to determine which voice is which is because of how those two books are typeset. My words are in bold, the generated text is in regular weight font and those two books use that convention. The other one I mentioned, *Amor Cringe,* is just one font. There's just no way to know who wrote what, but that was an intentional choice. In the two books where the voices are distinctly visible through the typesetting, that was a choice that I made so that readers could see how influence was moving from voice to voice. It incidentally created this secondary reading experience of being aware of who said what. But then watching your awareness of that dissipate as you kind of get pulled into the ideas, or as you follow the flow of the language itself, it sometimes becomes hard to remember which voice was which. Is it the bold? That's the human. Is it the regular? I think that's maybe an experimental literary approach that adds a secondary layer of meaning to the process, which takes a certain part of your consciousness and that changes how you read. At least in the first book where I had very strict rules in *Pharmako-AI* I would not go back and change any sentence once it was set down on the page. I would write something and maybe I'd revise it. Then I got a sentence that I liked, or a paragraph I liked that I wrote. I would put that in as a prompt and then generate a response. Maybe I didn't like the response and I generated a new one. When I had a response that I felt was good and I wanted to continue, I would never change those. It's almost like a tape recording of a conversation. In *Air Age Blueprint* I gave myself some more freedom to edit and recompose, but the point of doing that was also to show the process of thinking, because it was the first time I'd really written with that model. I was really just making a record for myself of what happened and that ended up producing the style of the book.

Eid: Is there any certain criteria you follow in order to make sure that it's also accessible to the general public? I would be interested to know more about writing with ChatGPT or any other AI module, because they can also generate terms that are not familiar to the public. Do you also gatekeep a bit of what's being published or rephrase or change when it comes to this? Or is there something you follow, like a certain rule you have when you're writing?

Allado-McDowell: I think in *Air Age Blueprint*, the most recent book, I was more conscious of this aspect of it, although there are a few chapters that get pretty out there in terms of the language and the ability for the model to generate new language is one that I pushed on. I would define a certain idea and then ask the model to produce a term for it. An example would be the term "symbiontocracy" – I was talking, writing,

thinking about what kind of forms of governance would be necessary to represent the interests of more than human species in policy and in how we structure technology and social relations. Would it be possible to imagine a kind of governance where the interests of non-humans were represented? I asked the model to produce a term, I simply typed: "we might call this..." and then let the model fill in what came next. The term it came up with was "symbiontocracy". So "symbiosis" and "governance": a governance for and by symbiotic species. That was one example where the ability for the model to hallucinate or to create unfamiliar terminology is a strength. There are some other chapters where I really leaned into the ways that it can create confusing meanings or meanings that have multiple readings and that was a very specific, intentional literary device in those chapters within a certain narrative structure and conceit within the book. But in general, I have tried, especially in the newer books, to write with language that is accessible, but to try to also tell stories and to try to write a book that you would want to read. To be honest, I think it actually is kind of difficult because there's a short context window. The context window is essentially the memory of that system. It can only remember about two to 3000 words depending which version we're talking about. There are new bots that can remember up to 10.000 words. So, there's a limit on how much context it can have as it's generating text. It actually is hard to...you know the Chekhov's gun[1] thing: if there's a gun in the first act of the play, it needs to go off by the third act of the play. But the AI will forget that the gun was there and it may never go off. There are things like that where the memory is really important to creating a coherent narrative structure, or to creating a coherent story. And that's where as a collaborator, I'm also providing that. The uses are somewhat limited and they are idiosyncratic in the sense that you might want to use the thing that it does that is not legible. You might want to use it to be avant-garde, but you need to create a construct for that to make sense. Otherwise it will alienate some people. I think my first book, *Pharmako-AI*, really plays with genre – essays, will turn into poems that will turn into dreams and that was part of the fun of working with it. But it doesn't necessarily make it easy to follow.

Maharajh: It's interesting you say that. The way I read *Air Age Blueprint* – it may not have a three-act-structure, but it reads like an old fashioned quest novel, but to me it is just set in these visionary episodes. That's something that presumably came out of, as you say, almost the constraints of the form. But it ended up feeling like this kind of a quest that's set in terms of these visionary chapters and in these kind of sequential forms. It's quite interesting that something goes back to quite an old form of narrative.

Allado-McDowell: Yes that's definitely a trajectory I feel like I'm on. I like to refer to myself as a feral writer in the sense that I don't have a degree in literature. I studied art and I've worked in computer science and technology for decades. I did write, but I had never written a novel. I tried – I actually took several months off of work to try to finish writing a science fiction novel that I had gotten fairly deep into a couple of different times. In the two weeks before my time off was to begin and I was going to really dedicate myself to writing, I ended up writing *Pharmako-AI* in this engagement with ChatGPT-3. I find myself returning to more conventional structures of writing because they're helpful. They have a very functional purpose, the narrative form keeps people's attention. The quest novel is a simple structure – it's easy to keep in mind what the protagonist is motivated by in something like that. Having that conventional structure or these well-known mechanisms of literature present, while also incorporating elements of experimentation through technology was important for me – to make something that you would actually want to read. I actually did find when I was going to write the book *Air Age Blueprint*, that the strategies I had used in the past didn't really work anymore. In the first book I encountered it and I think other people encountered it as a series of shocking possibilities – and that's enough to keep the momentum going. But once you're

familiar with that, it's not enough. You need more conventional narrative structures. I'm finding myself really appreciating those well-developed techniques in writing that enable other, more experimental forms to be digestible.

Eid: I would also like to know Robert's viewpoint when it comes to the editorial process, especially after handling text, for example, with AI generated content. Does this change how you deal with content and how you provide it to the general public?

Maharajh: The pieces that K has written for the journal, I believe, are entirely without AI, and K is such a good writer that I don't think much editing is required. Perhaps one thing that's vaguely useful is that we had a bit of a different remit from K's fictional works. As I said, there's a huge amount of bandwidth going on there. Those works fold together different belief systems, different modes of technology, different species worlds. For the purposes of these articles for the Gropius Bau Journal, we wanted to create something that was much more accessible to a general reader. It was helpful to get a kind of beginner's perspective on AI and be able to separate out some of those strands and just say: Maybe this is what we focus on for the first piece. One of the beautiful things about K's work, I think, is that they really try to use the possibilities of AI not only as a mirror, but as a potential solution within a non-prescriptive way of looking at the crises and the cascade of crises that are sort of unfolding around us. That is a hugely complex and dynamic process – to look at the different actors in those crises and potential ways forward that we could adopt. It's a huge undertaking and something that we tried to kind of approach in an accessible way for these pieces.

Eid: Do you also think that after everything we are encountering, especially with the programme here at the Gropius Bau: Is AI becoming a species? Maybe a digital species that we see and deal with?

Allado-McDowell*:* I think in a strict scientific sense we probably shouldn't try to answer that question. But I do think what's helpful is thinking about AI through the lens of interspecies relations. Rob was talking about these concerns in the pieces that I'm writing for the Gropius Bau Journal about how different technologies can intersect with the different crises like extinction, climate, mental health crisis and crises around how to deal with technology. That's been my objective in writing: to try to think with AI and ecology at the same time. It comes from a very basic insight, which was that when I first started traveling to conferences to speak about AI and art and the projects that I was working on, it became clear that people were very fascinated by the idea of non-human intelligence, which felt very ironic because there's a lot of non-human intelligence besides AI that already exists. The fact that a machine could perform feats of intelligence in a way shouldn't be exceptional. We have a model for that already, which is other intelligent species. So when you say: "Should we think of it as another species," I don't know if we necessarily need to think of it as a species per se, but it is something that acts in an ecosystem, a physical ecosystem, but also an ecosystem of language and an ecosystem of meaning. The notion of thinking with interspecies relations or thinking ecologically can apply, in particular, when we think about ecologies of information or ecologies of meaning through language, but in a larger sense also the way that the automation of certain kinds of intelligence can play a role in our relationship with the ecosystem. Some of the work I've done in the last couple of years has been around how we might apply AI towards ecological ends, towards understanding non-human species better. There's a lot of momentum in that space. There's a lot of motivated people working to apply language models to understanding non-human communication and expression. For example, the CETI project is looking at cetacean communication (so whales and dolphins) and trying to

use AI to map and understand what is being expressed there. I think that there's already examples of human language, automated intelligence, and non-human interactions. It's helpful to think through those frames of relationality, of interdependence, of predator-prey dynamics. All those things are helpful because we're dealing with something that does already exist across an ecosystem.

Maharajh: One of the things that you say in the books that really fascinates me is the way that in a forest, different creatures and life worlds are kind of folded into each other. A butterfly might have markings on its wings that look like an owl's eyes to scare off the small birds that might be its natural predator. In a similar way, AI is folded into our world now and will only be more so. There is the famous example of the woman who realised she was pregnant through her Google ads or whatever it was and we've all experienced some sort of uncanny valley in that sense. Clearly we couldn't define it as an organic species or something, but it's folded into our life worlds, just as we're folded into the life worlds of nature with all the plastic we put in there in the oceans and so forth.

Allado-McDowell: Yes, exactly. I think the strict boundaries around our categories are going to have to be renegotiated somewhat because of this. I think looking at processes like making meaning, it can be really helpful to think about the different forces that are influencing how we construct meaning or how we understand things. A good example would be if you search for something online to try to understand it, to learn about it, you may now be encountering text and definitions of things that were generated – synthetic data, things that could be hallucinated. As you say, these things are folding into our lives through language and through the ways that we encounter language and through the meaning of things and the definitions of things, they are a different kind of intelligence that is beginning to influence us in our intelligence. In *Pharmako-AI* it has framed the concept of the Pharmakon, which is a poison that can also be a cure, which is also a scapegoat. But this relation between poison and cure, I think, is very relevant because we're talking about something that could poison our information ecosystem. It could poison our sense of the world with hallucinations or falsehoods or unreal data or things that are generated that are incorrect. Or it could also solve problems. When you deal with a poison, a lot of it has to do with what is the right time and place and what is the right amount of poison. I think the question of whether or not we should be using AI, is not a binary question, but it's a question of where, when, how and how much and what are the proper guide rails. Art is one of the places where maybe we can absorb a little more of the poison and learn something about it without the risk of derailing our entire infrastructure. That can happen in this kind of safe space of art, where we can take on a little bit more hallucination and play and imagine things that aren't true. Whereas if we were to deploy something hallucinatory to a critical piece of infrastructure, that might be a little more dangerous.

Maharajh: I think one of the really interesting, fascinating things that K touches on in their article is the fact that AI, its intrinsic nature, comes out of its essentially higher dimensional nature. Perhaps you could just very quickly explain that and then we can very quickly talk about the ways that that might have effects on ourselves.

Allado-McDowell: The concept of high dimensionality is really important in understanding the mathematical structure of neural nets, which are the computational structures that enable AI. Right now we're dealing with so many layers of interfaces like chat interfaces and filtering and reinforcement learning with human feedback, a type of training based on human responses. All these layers are sitting on top of a fundamental structure, which is a bunch of nodes, a bunch of connections in a network that are designed to function like a human brain or a sort of cartoon version of a human brain. Within that structure, there's a high degree of dimensionality, meaning all these points are connected to each other. When a piece of information is absorbed, it's filtered through all these different dimensions of pattern recognition. I think it's important to understand that structure, because the structures of the technology around us influence how we think. When electricity was discovered and used for inventions people began to think with the idea of electricity. It was perceived that part of our consciousness comes from electrical activity in the brain. We start to see these things in ourselves. When the internet existed, we started to understand networks in a much more felt way. Our social relations became formed by network structures. We participate in different kinds of social relations because of networks, because of the deployment of that geometric structure. I believe we're going to see the influence of this multi-dimensional neural net architecture indirectly. Like you said, sometimes it feels like it's an extremely accurate prediction by an advertising model that's uncanny, that tells us something about ourselves or picks up on a signal that we are expressing, maybe consciously or not. I think these types of phenomena are part of that new structure, and it's slowly being fed into our technology. It's slowly starting to become part of the world around us. But we will have a very different understanding of the world because of these technologies. If we understand what's happening inside them and where the inspiration for those structures came from (which was from our own brains, from images of our brains, but very reduced images of our brains, cartoon like abstractions of what a brain is) then we might get a better sense of what AI is. It's a cartoonish abstraction of intelligence that operates in a multidimensional space. One of the easiest ways to sense what that's like is to look at the kind of art, especially some of the older forms of AI art, like generative adversarial networks (GANs) and early neural net hallucinations. Right now, we're in a world where things are a little more packaged up and it feels very different. But I still think it's important to understand the fundamental structures because they will influence us.

Maharajh: One of the things that really fascinated me is that you talk about how that might mean us thinking about ourselves and about other people in less binary ways. It might make us conceive of subjectivity in ways that are not the norm in Western rational materialist cultures. We might start to think in more relational ways across ideas of something like gender.

Allado-McDowell: Yes, that's exactly it. When you think with a higher dimensionality... the lowest dimensionality is binary, it's either on or it's off. A two dimensional structure has a length, it's a line, a three dimensional structure has space inside of it. If we think with a more multi-dimensional structure, one way of thinking about it is through parameters. I saw some early research around gender based on rather than a specific binary identity, actually looking at the properties of how it's expressed, whether those are physical or cultural or sartorial. Even just producing a model with more dimensions to it gives you more space to inhabit that construct. There's also this aspect of relationality, interconnectedness between different properties or different dimensions of a space. If we can start to think with those, we start to see how our position with regards to meaning or with regards to identity is also constructed out of a multi-dimensional network of other forms of meaning. This structure is inherently relational and has a sort of ethological

implication in that when you start to think relationally, you start to see (much like that example of the moth that begins to look like an owl) that the meaning is happening across entities in a space. We're getting into a little bit of an abstract philosophical territory. But the point is really that inherent in these structures is a different kind of perception. My prediction is that it will influence us indirectly, whether we're aware of them or not. Being aware of the possibility of modelling something like gender through a complex, multidimensional space rather than a binary space gives more possibility. Being aware of how these structures work will give us a better handle on dealing with the future.

Eid: The last notion that I want to mention, which is part of the book, is that you mentioned how we as humans are born in certain codes either by our language or our ethnical background or where we're from. We're already dealing with those codes in our daily life. I started to wonder – isn't that what AI is at the same time? It's kind of like a reflection to our human life, but in a more algorithmic sense.

Allado-McDowell: Yes, in one sense it can encompass maybe more different kinds of information. It's possible that the codes that it can contain are bigger. But this idea of encoding…My family comes from two very different places ancestrally. My mother's from the Pacific Islands, my father's family is from Europe and I grew up with different codes. So, the idea of code switching, for example, between two different cultures, is another way where dimensionality produces more meaning. If you're moving between two different sets of codes, you're having to negotiate a more complex cultural space which produces hybrid meanings and produces relational meetings between the two and a sort of dimensionality that exists above both of them. The thing that AI is doing is also learning encodings or learning from data sets. Those are really large in one way, but they're also really small in another way. There's a lot that's excluded. First of all, they're all in written language, which means that not just nuance but entire languages are outside of that. I do think there needs to be more of a proliferation toward these specific ends. If the things are missing, we actually can add them into the training set and that's what some of this interspecies work is: taking a large language model and saying: "Can we add non-human expression to it?" What comes out when we look at that?

Maharajh: I'm from the Caribbean, so could we add Caribbean vernaculars? Because presumably, as you said, it's been trained on certain languages. I'm thinking of this from the perspective of power relations of what languages predominate and what social codes predominate.

Allado-McDowell: This has been one of the classic questions around bias: if a language is not present, are the ideas or the people that created that language present? Of course they won't be. You could add those back in. I've seen some really great examples of poetry that was trained on Black writers and it definitely has a different feeling and it comes out in a different way. I did that Calvino model that probably was in the training set already. But refocusing the top layer on Calvino gave a different thing. I think it's a really important and interesting direction that is now more accessible to people than ever before, too. It's really not that hard to do and I would hope that more people will be doing that kind of work.

Eid: I really need to thank you, dear Robert and K, for joining us today and for opening up the conversation around Artificial Intelligence. I also need to thank everyone who helped develop and produce this podcast. Madeleine Köberlein, our co-producer, Luis Kürschner, our sound designer and editor, Çağla Erdemir for all the assistance, and of course, Clara Meister, our supervisor and Programme Lead of the AI project here at the Gropius Bau, along with the institution for providing us with this space to take the audience into this

journey.

The Gropius Bau and the programme are funded by the Ministry of Culture and Media. As for our next episodes, we will be diving deeper into topics related to AI, hallucination and different artistic practices. So stay tuned.

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[1] The term describes a narrative principle which suggests that every element mentioned in a story must be relevant to the narrative.