

Center for Humane Technology | Your Undivided Attention Podcast
Episode 48: [The Invisible Influence of Language](#)

Tristan Harris: Hey everyone, it's Tristan. If you're new to Your Undivided Attention, welcome. And if you're a long-time listener, welcome back. And just a quick note to say that our back catalog of this podcast goes back to 2019, but our episodes are really as relevant today as ever. So if you're interested in the causes of addiction, for example, go back to our conversation with Johann Hari. Or if you're curious about how technology can strengthen democracy, we have a really great episode with Taiwan's digital minister, Audrey Tang. And if you want to hear about social media's big tobacco moment, go back to our recent interview with Facebook whistleblower, Frances Haugen. So you can find those episodes and many more at humanetech.com/podcast. And with that, here we go.

Tristan Harris: The immigrants scurried across the border. Or I could say that another way, the immigrants crossed the border. But notice that when I use the word scurry, I'm conjuring the thought of vermin or insects without actually saying that. And if that shifts public opinion on immigration by 25% or even 2%, then I've changed your opinion in a way that you can't even see, which also means that becoming aware of how words shape the way that we think can help inoculate us from their undue influence. And further, consciously choosing the words that we use can help us think in the complex ways that we need by helping us practice systems thinking or enabling us to act on the drivers of climate change.

Tristan Harris: I'm Tristan Harris.

Aza Raskin: And I'm Aza Raskin.

Tristan Harris: And this is Your Undivided Attention, the podcast from the Center for Humane Technology. Today on the show we're grateful to have Lera Boroditsky, a cognitive scientist who studies how the languages we speak shape the way that we think. Lera is an associate professor of cognitive science at UC San Diego and her research combines methods from linguistics, psychology, neuroscience, and anthropology. Lera Boroditsky, welcome to Your Undivided Attention. It's a real pleasure to have you here.

Lera Boroditsky: Thank you so much for having me. I'm looking forward to our conversation.

Tristan Harris: I would love our listeners to really understand your work because I could just say from the ground up, a lot of our time on this podcast and in our public work is about examining how social media constructs our reality, the way that we see the world, the way we think of events, the way we think of what's happening, how it selects certain things for our attention and not others. And so in thinking about what does it mean to have a humane social media environment that is giving us a more accurate and less distorted view of reality, we wanted to hopefully explore some ways in which language is a piece of that process.

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- Tristan Harris: Would you mind telling our listeners a little bit about your background? You were born in Belarus. English is your fourth language. Could you talk a little bit about how you got interested in how language creates thought?
- Lera Boroditsky: Well, I was a very argumentative kid and I would love to argue with people about big questions, about truth and justice and freedom and things like that. And I started noticing how many of those discussions really hinged on the way someone would use a word like freedom or justice. And you could use it one way in one sentence, and a different way in another sentence and it bothered me so much. I just thought, "Oh man, we could really answer these big questions if we just really got to the bottom of what these words really mean." And so that was one of the things that drew me to being interested in language and trying to understand truly the meanings of words.
- Lera Boroditsky: And of course, as you study language in a scientific way, you move further and further from the idea that words really have set meanings. Instead, you discover that words have shared, jointly created, constantly shifting meanings that mean different things in different contexts.
- Lera Boroditsky: So I went into the topic with the idea that I was going to answer these big philosophical questions that were bugging me by looking at language and what I came away understanding a lot more is just how much language is used to create the reality that we experience and how much language is a living dynamic thing that we all co-create together.
- Aza Raskin: What I'm hearing you say is that language, in some sense is a kind of psycho technology. It's a tool that we can use to change the apparatus by which we see and understand the world, which is sort of funny because often we just think of language as a thing, we don't think about its sources or its effect on us.
- Aza Raskin: I'm thinking about other psycho technologies. There's pharmacological psycho technologies like caffeine or cannabis that changes the lens by which you view the world. There's embodied technologies like yoga and music and breathing. There're mental ones like numeracy and literacy and mindfulness. Technological ones like neurofeedback and transcranial stimulation. And then we have language. What I'm hearing you say is by choosing or being aware of the language we're using, it can fundamentally alter what we view as true.
- Lera Boroditsky: I certainly think of language as a technology. It's a very old technology. And one thing that's maybe a little bit different between language and the other things that you mentioned is how universal of an experience it is. So if you grew up in a particular cultural community, you might play music or you might not play music, you might participate in certain drug rituals, you might not participate in those rituals, but if you're going to be a useful member of that community, the

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chances of you acquiring the language of that community and linguistic practices of that community are very close to a hundred percent.

Lera Boroditsky: And then you're acquiring, without realizing, also all of the ideas that have been built into that language by thousands of years of humans before you. And a lot of those ideas are really smart, fabulous things. We inherit so much free knowledge from our ancestors through the language without even realizing it. But it also comes with habits of thought and trenches for your mind to travel.

Lera Boroditsky: Since it sounds like we're having a nerdy conversation, I can use this phrase, I think of language and culture as reducing cognitive entropy. When you're participating in a particular linguistic or cultural community, you're being guided into thinking in particular ways. And those could be wonderful, smart ways that you never would've come up with on your own or have been really, really hard to come up with on your own. But at the same time, there're so many other ways to do it and you're unaware of those ways because you're stuck in these little trenches that your language has made for you.

Tristan Harris: I just realized we didn't ask you, could you define the Sapir-Whorf hypothesis?

Lera Boroditsky: Sure. In general, there's an idea that the languages that we speak shape the way that we think. So of course we know languages have different sounds and they have different words, but they also have different structures and they require their speakers to include some information and not other information, or to package information in particular ways. Some languages may make some ideas really easy and compact to express, and other ideas may be harder to express. And so the general idea is that whatever structures your language has, create habits of thoughts. So the habits of the language become the habits of thought.

Lera Boroditsky: And people have many different interpretations of what the entailments of that hypothesis are, but generally it's that from the habits of language, you should be able to predict at least some of the habits of thought. Not that language of course is the only input into cognition, there're many, many other inputs, but it is one of the contributors to our patterns of thinking.

Lera Boroditsky: One thing that we can do is look within a language group and look, for example, at the kinds of metaphors that people use to talk about social problems or give people metaphors to use to talk about crime or immigration. So let me give you an example from our work. We looked at metaphors for crime. So sometimes we talk about crime as if it's a virus and we say, crime is virus infecting our cities or plaguing the neighborhood, things like that. Other times we talk about it as a beast or an attacker. So you could say, crime is lurking in all the neighborhoods, crime is a beast attacking the city, and so on. And these metaphors invite different ways of reasoning about what you should do about crime.

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Lera Boroditsky: So if you're talking about something as a wild beast, that's attacking, you're more likely to think of solutions that would capture and contain the beast. So we give people a paragraph about increasing crime statistics in a fictional city and the two paragraphs differ literally by just one word. We say either crime is a beast attacking the city or crime is a virus. And after that, everything else that they hear is exactly the same.

Lera Boroditsky: So if we tell people crime is a beast attacking the city of Addison, and then we give them a bunch of crime statistics there and we ask them what should Addison do, they're more likely to come up with enforcement and punishment options and say things like, we should increase the police force, we should make harsher prison sentences, we should send out more patrols, things like that.

Lera Boroditsky: Whereas if you say it's a virus, people are more likely to think about it as if it were a literal virus and then they say, "Well, we need to diagnose and treat the problem and we need to inoculate the population and make sure everyone is healthy." And so they start saying things that are more reform-oriented like, "Well, maybe there should be more after-school programs so that people have something to do after they get out of school. And maybe we need to address poverty and improve education and improve all of these other systems that are making people vulnerable to this disease of crime."

Lera Boroditsky: And the thing that's remarkable to me about what we see in these studies is how big of a difference a single metaphor can make. The difference that we can get as a result of this is sometimes as big as the difference in opinion between Democrats and Republicans on the same question. And we tend to think of a topic like crime as this very politicized topic where Republicans and Democrats are very different in their opinion, but just by changing this frame of getting people to think of it as a virus or getting people to think of it as a beast, we can get as big of a shift in opinion.

Lera Boroditsky: And what's even further interesting to me is that people don't realize they're being influenced by the metaphor. So if we ask them, what was most influential in your thinking about this and your reasoning, why did you give the suggestions that you gave, almost everyone will go back and say, well, look at these numbers that you gave me, these rising crime statistics, that we all want to think that we're making these very rational decisions that are based on facts and numbers. Almost no one ever says, well, this metaphor is the thing that changed my mind.

Lera Boroditsky: And to me, that points out this very common experience that we have. We think that we're being rational, we think we're making decisions based on facts and numbers, but in fact, there are these other vehicles, these Trojan horses that guide our thinking in particular ways and a sly metaphor can lead you into a particular reasoning path without you realizing it.

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Aza Raskin: I think this is brilliant and it shows how language can slip in below the belt of the mind, that you're not even aware of the frame that your mind is being pre-led down a path to come to a conclusion. Sometimes I think we focus a lot of attention in the tech space on fact-checking when in fact what I think we really need is frame checking. And I can imagine how, when you select some text on your computer and you can hit a command and you bring up a dictionary, we need that, but for a frame, so like a frame-thaurus. So you bring it up and you see all the different frames, which groups use those frames. Instead of just knowing, check your source, you want to check your word source, like where did that language originally come from.

Aza Raskin: I'm also thinking about, I think to quote one of your papers, it appears that abstract thinking is built on representations of more experience-based domains and not necessarily on the physical experience itself, which makes me think of Elizabeth Loftus's work on eyewitness testimony where you show a witness a car hitting say a stop sign and you ask them to recall that event. And if you say, "The car tapped the stop sign. Was there glass?" They'll say, "No." If you say, "The car crashed into the stop sign. Was there glass?" They'll say, "Yes." Even though they saw the exact same thing, it was the language that changed their memory.

Aza Raskin: And one of the things that really struck me from your work was your description of passive versus active voice really changing morality judgments and punishment judgments. And I'd love for you to walk through that example.

Lera Boroditsky: Sure. So in English, we can talk about accidents as if things happened. So you can say, the glass broke, or you could say, he broke the glass for the same event. In English, it sounds a little bit evasive if you say the glass broke or the toast burned or the necklace unfastened. It sounds like the sort of things that little kids say or politicians say when they're trying to elude responsibility, but it turns out that this matters a lot.

Lera Boroditsky: And I want to go back to the example you started with, of Elizabeth Loftus's work on eyewitness testimony because we really believe we can believe our eyes and we can trust our memories. And we even have this phrase in English, let's go to the tape. So if you can go and review the video of the event, then you'll know exactly what happened. And so we wanted to really push on this idea of what does it mean to go to the tape.

Lera Boroditsky: And so at the time when we were doing this research, we needed a famous accident or a famous event that could be described two different ways. And at the time, the most famous event like that was the Super Bowl wardrobe malfunction of Janet Jackson and Justin Timberlake. So Janet Jackson and Justin Timberlake performed at the Super Bowl halftime show. In the last dance move, he reached across her body and one of her breasts was partially revealed for nine-sixteenths of a second on national television.

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Lera Boroditsky: And this created a huge uproar, people were so incensed that it quickly became the most TiVo'd event of all time. And the FCC attempted to fine CBS \$550,000 for this. And so we knew that all of our participants in the study would have seen the event already, and we could show them the video of the event again.

Lera Boroditsky: And we thought, "Okay, well, we can give two different descriptions of this event." So we say, okay, they were performing in the Super Bowl halftime show, and in the final dance move, one group hears he unfastened the snap, the other group hears a snap unfastened. So we just change whether it's agentive or not agentive. And then we ask how much is Justin Timberlake to blame and how much of the \$550,000 should he have to pay?

Lera Boroditsky: What we discovered is even if people could look at the video themselves right in the moment, they could go to the tape, they were still incredibly influenced by the way the event was described. So people who heard he unfastened the snap wanted to charge him 53% more than people who heard the snap unfastened, even though they were watching exactly the same video, and they blamed him more, if they heard the agentive version.

Lera Boroditsky: So to me, that really pushes on this idea, again, of how much we believe we are perceiving reality the way that it is and how much of what we're making judgments on we think is based in a rational, clear perception of physical reality, as opposed to how much of it is constructed by all of the ideas that we have surrounding whatever it is that we see. And those ideas of course come, not just from our own minds, but from the minds of other people, through language, through cultural practices and so on.

Tristan Harris: Ultimately, I think what you're bringing up is we've built our society, a liberal democratic society on the authority of human feelings and human choices, because we think that choices and beliefs and perceptions arise inside out, from inside the human, pouring outward into society as a judgment, as a perception in the court of public opinion.

Tristan Harris: And what you're pointing to is that depending on how much this ends up being true, the degree to which the word choices and the language that we use to describe reality has a determining effect on whether we think someone's to blame or not, or whether we should take this route or not, or whether we should punish someone with this penalty or this penalty. If that is located in the word choices that we use, in the language layer, in the psycho technology layer, then we don't really live in a democracy, we live in a colonization of those psycho technologies that are in an arms race to control our perception of reality.

Tristan Harris: And I think about contemporary examples of saying someone consumed horse dewormer versus saying someone consumed ivermectin. This is conjugating the feeling I would like someone to have, and the judgment. If I'm saying you ate

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horse dewormer, I want you to judge that person. If I say you took ivermectin because it was prescribed to you by a doctor, you might have a more positive view towards it. If I say, oh, you're going to buy a pre-owned car, you would feel positively towards buying a pre-owned car, but if I say you're buying a used car, well, who wants a used car?

Lera Boroditsky: Just because we can influence each other's thinking through language and through other ways of communicating, that's not necessarily a terrible thing. It's also a wonderful thing. I would hope that my thinking could be influenced by other people, that I don't have to be limited by only the things that my own mind can produce. We benefit tremendously from that. And you can see just how quickly human thinking culturally evolves over time. So language is a technology like any technology that has good applications and bad applications and it's a matter of realizing the power of it to harness it for the things that you want to happen.

Aza Raskin: Our technologies, let's say social media because of its business model points us at some kinds of language and not at other kinds of language. So an example being that for every moral, emotional word that you add to a tweet, it gets, I think 20% more retweets. And so there's a kind of pre-conjugation that Twitter then does on entire societies' minds, so it's this kind of frame war that's happening. I'm curious, if you were to redesign language to be more humane, so we can be better to ourselves, how might you do that?

Lera Boroditsky: I think we're constantly in that project. So people are constantly redesigning language when it doesn't suit them. So a lot of the efforts around the world right now to change language related to gender are an example of that where people might feel stuck in this language that has two genders and I have to pick one or the other obligatorily, and that doesn't fit the way that I think about myself or other people, and I feel trapped in it, they're trying to change that.

Lera Boroditsky: Some people feel the opposite way. They feel okay, I'm stuck in this language that has these two genders, but then there's so many things that we say only in the male form and not in the female form, so I want to add more gender marking. So in France, for example, they just approved a bunch of new feminine forms of professions as official French words, whereas in other languages, they're trying to take gender out so as to not introduce gender bias when you're talking about people.

Lera Boroditsky: So these are all fascinating conversations and it's all people advocating for a language that suits the way that they perceive their reality better. And it's a normal age-old function of language is that it changes as our culture changes, as our circumstance changes, as our thinking changes. And there's always some kind of struggle or compromise or give and take, a conversation in communities where language is changing, because there're always some people who want it to stay the same and there are some people who feel like it could improve.

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- Lera Boroditsky: And so I wouldn't take it upon myself to be the grand emperor of language change and design a language just for me. I think it's really nice that there is a conversation and a back and forth, and you can have lots of input into what language should represent for people.
- Tristan Harris: Going back to this picture that I painted earlier, I'd like to push on that a little bit more. I think one of the things that is a truism about what it means to be living in the 21st century with our pulling back the curtain of how our own mind works, a lion can't study how all lions' minds work and build fMRI machines, and then put lions in fMRI machines to understand more about how lions think. We have a unique level of intelligence and complexity of intelligence that we can build tools, and then use those tools to actually study ourselves, to do science, to then really uncover facts about how our own minds work.
- Tristan Harris: We have this unique ability to actually literally decode fundamental structures and build optimization functions, like if I said it this way, in this context, it would work better. I could be aware that if I say the immigrants are scurrying across the border, without even saying that they're vermin or that you should not treat them as human, or I want you to hate them, just by invoking the verb scurry, I'm actually controlling the political and policy outcome.
- Tristan Harris: If I'm only swaying it by 1 or 2%, then maybe it's not as consequential. If it ends up swaying it by more than 50% or something like that, then we might decide to say, okay, if the language choices that we make through this uncovering process ... I mean, we're seeing it everywhere. Is technology surveilling us, is it spying on us, or is it just personalizing things?
- Tristan Harris: To make that example concrete, when I go into Google Maps and I type in only the first three letters of a place that I've been to before, first three numbers of an address I've been to before, and it auto completes where I want to go, was it spying on me or surveilling me to do that thing. I would certainly use that word if I don't want you to think about Google personalizing or storing my information in a positive way. If I want you to like the fact that it's giving us this benefit, I would use a word like personalized. Is it censoring our speech? Well, I would want to use a word like censor if I want you to be very suspicious of the technology platform's motives.
- Tristan Harris: But I just wanted to give a few examples. I mean, even one I saw on Twitter is the FDA is restricting treatments for monoclonal antibodies, which is, for people who don't know, a powerful treatment for COVID and they're actually banning that treatment. I think it's in Florida. The way that that was framed on right-wing Twitter is this, the FDA wants Republicans to die because it wants to take away this treatment that we know works and is so effective. On left-wing Twitter, they're highlighting the fact that monoclonal antibodies don't work really well

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for Omicron and so they're simply trying to conserve a treatment that works for the cases that it works.

Tristan Harris: And I'm just curious how you see that as you're one of the researchers who is actually pulling back the curtain and helping us decode more and more of the predictable ways that our minds will respond to things?

Lera Boroditsky: It's certainly fascinating to watch. Certainly, trying to frame things in those ways is not new. You can find strong examples of different frames being contested in Shakespeare and lots and lots of historical texts where people are exactly playing with the framing. The amplification of frames and the rate at which one can discover what is a most incendiary frame, for example, it may be shifting now.

Lera Boroditsky: But I think what's really important from our understanding of how reasoning works and how framing affects reasoning is that it's almost impossible to engage with someone in a productive discussion if you engage inside that frame that they have created. So you're certainly not going to win an argument, if you accept the frames of the opposition. You need to first make the frame apparent, and then you need to move away to another frame.

Lera Boroditsky: So to give you an example of this kind of restructuring. So let's say if you're thinking about getting your slice of the pie than someone else, there's only so much pie to go around, it's a zero sum game. If I get pie, that means someone else doesn't get pie. If you get pie, that means I get less pie. Instead, all boats rise with the rising tide. And that is a frame that they're just completely incompatible. You can't have an all boats rise with a rising tide mentality and way of reasoning through economic growth, for example, and also have a fixed pie metaphor in your mind.

Lera Boroditsky: And so acknowledging what frames people have, being able to see what the implications of those frames are, and then also being able to talk about why those frames are either incomplete or incompatible with some of the information that you have. So any frame that you could choose is a very incomplete description of the situation. So there's no such thing as a perfect or accurate frame.

Lera Boroditsky: But when we find these disagreements, when we find these conflicts of frames, that gives us an opportunity to understand in what ways both frames are deficient, in what ways does each frame focus us on some elements of the situation, but not others, what are the things that one frame makes obvious that the other frame obscures and vice versa.

Lera Boroditsky: So I know it's super frustrating to feel like there's all this incredibly misleading framing and information happening, but all of those miscommunications and all of those moments are also opportunities to examine what is it that those frames are capturing, what is it that they're hiding. And those are opportunities to

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understand those issues better and to arrive at hopefully a more rich and nuanced understanding of any issue.

Tristan Harris: To me, I think the degree to which that optimization, that knowledge about how to use these frames, has increased in the last few years. And especially, I think social media creates implicitly a feedback loop, because people are testing things. They try using this verb versus that verb. They notice they get a hundred more likes if they use that word than this word. And our colleague, Guillaume Chaslot, who's a YouTube recommendations engineer we had on the show, actually did an analysis of the top 10 verbs that appeared in YouTube titles. And the verbs that were most successful were hates, obliterates, destroys. These are essentially the conjugations of language, Ben Shapiro Destroys Social Justice Warrior, Russell Brand Obliterates CDC. These are the kinds of titles that we're increasingly living in.

Tristan Harris: And what I was excited to be able to bring, through your research and everything that you're doing, an awareness for our listeners about, what does it mean to inoculate ourselves from these frames? How does it mean to have a shim, like a heads-up display for how our minds are being conjugated to see reality and hopefully in gender a little bit more humility about how we might be seeing things.

Lera Boroditsky: Humility is extremely important here because none of us have a perfect understanding of COVID. None of us have a perfect understanding of the economy. None of us have a perfect understanding of all of the implications of immigration. And by none of us, I really mean none of us. There's not a single expert in the world that has complete knowledge on any of these complex societal issues.

Lera Boroditsky: But maybe more generally, I want to return to this idea of naive realism, that we all believe that we see the world the way that it really is, that ultimately we are perceiving reality. So George Carlin had this joke, he said, "Have you ever noticed how, when you're driving on the highway, anyone driving faster than you is a maniac and anyone driving slower than you is an idiot, as if each one of us has figured out exactly the perfect speed to drive in any given situation, and then everyone else is wrong?"

Lera Boroditsky: And so when you enter into disagreements, you can keep in mind that all of the people that you talk to are also believing that they are experiencing reality as it is. If you have the patience to go through why it is that they believe what they believe, you might also learn some things.

Tristan Harris: So we're going to take a quick interlude here and Aza and I are going to pull out some of the humane technology themes of Lera's research, and then we'll go back to the interview.

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Aza Raskin: Tristan, did I ever talk to you about Interlingua?

Tristan Harris: I don't remember.

Aza Raskin: It's a language. So there's Esperanto, actually, interestingly enough, was created to try to fight fascism under the idea that if we all spoke one language, we wouldn't break up into nationalism. It didn't work, but the language that came after that was Interlingua and it was a little bit more logically created. And so words that appear in it can only appear if it's in three Indo-European languages, that it is a cognate that's shared among three Indo-European languages.

Aza Raskin: And what's fascinating to me about this language is they taught it to Swedish college kids for one year and after one year of studying Interlingua, the college kids could read a Russian newspaper, a Spanish newspaper, a Portuguese newspaper, a German newspaper, an English newspaper. And so I don't actually think of Interlingua as a language, I think of it as a technology, a boot loader that if you learn this one thing, it makes it really easy to learn many other things because it's representations are just so good.

Tristan Harris: But that's the thing that makes it empowering is the notion of leverage. What is a tool? Leverage. I put in less, but I can get way more out of it. And so what I hear you say with Interlingua, and I don't know the details, but it's a lever that I learn a little bit, but when I pull the little bit that I learned, I get on the other side this measured optimization of unlocking many other languages, because you're just statistically finding the areas of the most common overlap.

Tristan Harris: And in the same way there's these examples where you use AI to develop a new material, or you develop a new staircase, or a new building structure, and you let the AI try to solve a constraint satisfaction problem, and it comes up with a totally different design that no human would ever come up with, but it actually is more aerodynamic or is more efficient or is more sustainable or whatever, because it's solving that problem.

Tristan Harris: And I think that when I think about there is a problem, a meta problem, which is the complexity mismatch between the level of complexity of say, what do we do about climate change, or inequality, or immigration, and then the languages that we have to speak about it, or try to converse about it. I'm not a technical utopian here, I'm not saying there's this magical solution to these massive problems, but there are, I think better tools. Just like Interlingua isn't saying I'm going to unleash perfect communication with everyone in the world, it's just saying, I'm going to give you a lot of leverage that statistically will unlock more of the other languages.

Aza Raskin: And I really wonder how we could bake into our language, the ability to do systems thinking and complex dynamics, such that our language is helping us

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out as opposed to hindering us. I thought it was really profound what Lera was saying about choosing your frame, is crime a virus, or is it a beast? Choosing one of these two frames will keep you from choosing the other one and there'll be solutions you find with one that you don't find with the other. And that's happening all the time at the level of these incredibly abstract hyper object problems like climate change. Where we pick it up, how we talk about it means we might be blocking ourselves from finding the very solutions we need.

Aza Raskin: There's a design prompt I want to give to our listeners, which is how might we change the language, use language, craft language, to help ourselves see the nature of exponential curves? So I'll just throw out a couple that I think are sort of funny. One would be every time you use exponential, say in an essay, every time you use it, you have to double the length of it. So the first time you use it, you have to say exponential. The second time you say exponential, you have to say exponential, exponential. The third time you have to say exponential, exponential, exponential. And you'll just very quickly see that it goes ... Or maybe you have to say it twice as loudly, and then four times as loudly.

Aza Raskin: I don't think these are realistic, but I want to put that in people's minds, how might we change the way we speak so that we can be better in contact with the realities we face?

Tristan Harris: Totally. And so the project of humane technology is this complexity gap. How do we design these strap on extensions of the human mind, the human cognition, our emotional relating capacities? How do we put on this brain implant extension of ourselves that gives us more empathy and access to other people that helps us make better sense of the world, clearer sense of the world and help us make wiser choices?

Tristan Harris: So what can you do? Well, instead of just checking your news sources, you can check your framing sources. How are the words and the frames that are being presented to you influencing your views and opinion? So we can't not use frames and I think noticing that automatically creates a kind of humility about all the ways we could be perceiving the world. And I think that makes me hopeful because then I feel less politically polarized. I'm much more able to be curious about what are other ways people might be seeing the situation that I'm not seeing. And that's why we thought Lera's work was so important.

Tristan Harris: Are there other examples that come to mind that you've seen through your research, where peace-making and the ability to synthesize and better listen and understand to each other have emerged?

Lera Boroditsky: Asking questions. So when you hear someone say something that you disagree with, or you find surprising or puzzling, rather than jumping to tell them that they're wrong, or try to convince them, think of questions that you could ask

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them, why do they think that, and how does that work, and just try to understand as much about their worldview as possible.

Lera Boroditsky: I don't spend a lot of time discussing politics with people. I'm much more interested in what other have to say, not because I want to take on their opinions, but because I'm just really interested in how they think. And once you've gotten to hear a lot, and they also feel heard, you might be in a much better place to start to see where you agree and where you disagree and what is the structure that needs to be aligned between the two of you.

Aza Raskin: I really hear this refrain of humility that the world that you perceive is not the world that is, to not get mad, but to get curious. And in that frame of humility, I'm really curious, Lera, doing the work that you do, it must change your own lens. It must change your own relationship to your mind and your perception of the world. And I'm curious, is there a time that your behavior is different because of your work or that you've changed how you act, behave or feel because of your work?

Lera Boroditsky: No, I'm exactly the same stubborn, impetuous person that I've ever been before. I think part of that is the human condition. But I think it makes me a lot more curious. Every time I learn something new that blows my mind, it makes me think that the world is so much bigger and richer and more fascinating than I could ever have imagined and it makes me excited for all the things that I don't know.

Lera Boroditsky: But it comes with the job. If your job is to ask questions and then to measure the answer, you have a measurement of just how often you're wrong in your prediction. So I get told by my own work that I'm wrong constantly, and so I have that humility experience just built into my livelihood.

Lera Boroditsky: And so if you have the ability to measure just how often the things that you think might be true, that your predictions are completely wrong, you have two ways to respond are either to be dejected and think, "Oh, we'll never figure this out," or to be excited because the world just continues to be more and more fascinating and complicated. So I choose the latter.

Lera Boroditsky: My favorite experience in research is when you make an experiment to test a simple hypothesis and you're like, "Well, if it's A, then this should happen, and if it's B, then this should happen." Then you collect the data and it's neither A nor B, it's C, and you never even thought of C. That is my favorite experience where the world just became larger. All of a sudden you're living in a more interesting intellectual world, and now you've really learned something. And then your job is to go and try to understand how that could have happened.

Tristan Harris: Lera Boroditsky is an associate professor of cognitive science at UC San Diego, an editor-in-chief of *Frontiers in Cultural Psychology*. She's been named one of the

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25 visionaries changing the world by the Utne Reader. And her research has been featured in outlets, including The New York Times, The Economist and Scientific American. Lera was born in Belarus and speaks four languages.

Tristan Harris: Your Undivided Attention is produced by the Center for Humane Technology, a nonprofit organization working to catalyze a humane future. Our executive producer is Stephanie Lepp. Our senior producer is Julia Scott. Engineering on this episode by Jeff Sudekin. Dan Kedmey is our editor-at-large. Original music and sound design by Ryan and Hayes Holiday. And a special thanks to the whole Center for Humane Technology team for making this podcast possible. You can find show notes, transcripts, and much more at humanetech.com.

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