

Center for Humane Technology | Your Undivided Attention Podcast

Episode 1: What Happened in Vegas

- Natasha Dow Schüll: There was a woman who was a severe narcoleptic. She said, "I fall asleep driving on the highway, having sex, the only place I do not fall asleep is playing video poker."
- Tristan Harris: That's Natasha Dow Schüll. She's a cultural anthropologist who conducted years of research in Las Vegas casinos. She wanted to understand the culture of gambling, and especially the subculture of slot machines, because slot machines pry more money out of gambler's hands than any other game of chance on the casino floor.
- Natasha: We think of Vegas, blackjack, high stakes, the tuxedo. But really, the cash cow, the golden geese are these basically adult arcade games that take money, right?
- Tristan: Slot machines alone account for upwards of 70 to 80% of a typical casino's revenue. It struck Natasha as remarkable that this repetitious, solitary game would form the casino's profit center, until she began to understand how those machines evolved.
- Natasha: Something about this activity and the way that it modulates your attention, right? It literally can keep a severe narcoleptic awake. So something is happening there.
- Aza Raskin: The gamblers Natasha interviews know what's happening. They can tally up the sporadic wins and the constant losses, and they can see they're headed towards financial ruin. But the money's almost besides the point.
- Tristan: What they're pursuing is an experience. It's almost like undergoing anesthesia, they want to feel absorbed by the machine.
- Natasha: I was hearing the same thing from people who were in a relationship of harm with these, they were addicts, and they called themselves that. And they said, "That's where I feel safe. That's when I can get into my zone." And I kept hearing this zone, zone, zone. And the zone is this dissociated state. It's really out of space, out of time, out of money value, a sense of being a social person, or even having a body can fade away, so people will stop feeling pain.
- Tristan: Even the designers of these slot machines marvel at the power of these devices to blot out the player's surroundings and hold them spellbound in an endless loop of play.
- Aza: And right now, I hope designers throughout the Bay Area have just felt a twinge of recognition. I know that I did the first time I heard Natasha speak. And the more she reveals about this struggle between a player and a slot machine, the more you'll come to recognize where the attention economy is headed.
- Tristan: Today on Your Undivided Attention, Natasha Dow Schüll, author of *Addiction By Design* will explain how designers, pursuing a singular goal of screen time, can overwhelm our sense of self control.

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- Aza: She'll reveal how incremental upgrades to machines can lead to the gradient descent of mankind.
- Tristan: And she'll explain why this descent will continue further than any designer intended until we look beyond the isolated AB testing results and consider the collective wallop our designs will have on humanity. I'm Tristan Harris.
- Aza: And I'm Aza Raskin. And this is Your Undivided Attention.
- Tristan: Thank you Natasha for being here.
- Natasha: Thanks for having me.
- Tristan: So why don't you take people a little bit through your background and what you learned in studying for so many years the mechanics of Las Vegas.
- Natasha: Well I was one of those very provincial downtown New Yorkers, who not only never really visited the rest of America, but never went above 14th street. So, when I went out to college at UC Berkeley all across the country, there was a layover in Las Vegas. And so at age 18 getting off the plane, I saw the most bizarre and exotic sight I had ever seen. Here were people sitting at these machines, you walk off the plane and there are these banks of games, and I just remember sort of being bored and not having a lot to do and just watching. And that was always in my mind, so when it came time for me to write a senior thesis in anthropology I thought, I'm going to go to Vegas and try to ... what's going on here, right?
- Natasha: And so I started then, at first not with the gambling but with the architecture, and that led me in different ways, literally and figuratively, to the slot machine. And I say it led me to the slot machine figuratively, because the whole interior design and architecture of the casino is really constructed and engineered, I learned, to get people over to these profit hubs. I remember having a conversation with a casino interior designer who told me, I kept sort of looking up and around, and he said you know look at the floor, the floor is so important. Because people sort of wander in off the strip, and the carpet is doing a huge amount of work. The carpet is drawing them into the gaming areas, they are sort of narrowing at the right point, and they are never, never having right angles in them. And that is very important not to have right angles in the carpets because what a right angle does is it stops you up, and puts you in the position of a decision maker, where you have to make a choice, into the gaming area-
- Tristan: That's the last thing we want you to do when you're in a casino, is make conscious decisions about whether you want to be there.
- Natasha: Exactly, in fact let me quote for you, and this quote always stands out in my mind, what one casino manual says to explain that 90 degree turns are bad for business, it says we want you to, "Not analyze the various things you observe as you meander along, we want to curve you to where we want you." So it's about the curving, the smoothing, I kept hearing that. And then it carried over into other aspects of the

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interior architecture. Apparently the ceiling height was really important. Bringing down these low covers over areas that makes you feel like you are in your own secluded, private cocoon is very important. You have to feel a sense of shelter, so if you read these design manuals it's about quote "Perceptive shelter." Sort of imaginary lines that extend down and you can kind of get into your cocoon.

Tristan: And when you say design manuals, what design manuals are these?

Natasha: Well, there's like a giant tome called like, Designing Casinos by one guru of the industry, and in there you can find things like quote "The law of space elimination." And the law of space elimination dictates that people will feel anxious and exposed if their backs are open or if they're in a giant slot warehouse with a really high ceiling, so that might be good if you're in a church, right? Because you want to have these perspective points and these big grand spaces, but what you want to do is sort of make these little caves, so nooks, crannies, corners, these are the highest earning slot machines. People want to hide alone at the machine and just kind of zone away. So it's about "protected sanctuaries for play", that's a direct quote. "Constricted space" so people can forget themselves, another direct quote.

Tristan: And that was another thing that got me interested in your work, is you said even that there's a sort of intention for disembodiment, like a make people forget not just where they are or what they've been doing but even their own bodies.

Natasha: So this curvature that I mentioned on the carpet floors carried over to the curvature of these ergonomic seats, which are designed especially for the elderly, to allow the flow of blood through the arteries. It's very reminiscent of 19th century factory construction, assembly lines, how to sort of prune out dead time and increase productivity. And in fact, I'd say that the rhetorical analog for the machine zone is what the casinos call, this is their actual term: continuous gaming productivity.

Tristan: Continuous gaming productivity?

Natasha: So although these are consumers, they're in an analogous position to the factory worker on the assembly line.

Tristan: That's so fascinating, so I mean back then we were optimizing for productivity but now the productivity is your vessel-hood like existence to get something out of you and to get the most efficient optimization of your, you know, mindlessness basically.

Natasha: Yeah.

Tristan: It's like optimizing for maximum mindlessness.

Natasha: Yes, and really when I started this project it was the Las Vegas casinos everywhere were in this real shift in design logic. Some of us still think of Vegas as being loud, jangly, bright, neon, flashing, and it used to be designed that way, make it as loud as

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you can, people need to hear the coins clanking, and you know, put a strobe on their face. No, you want people to sit down because your new profit logic is called time on device, and to increase time on device, this is a sort of ergonomic operation where you have to worry about fatigue, it's not worker fatigue, it's consumer fatigue.

Tristan: Right, we can't have you fatigued there, we have to make sure that you're staying.

Natasha: Right, so you are measuring that light doesn't bounce directly at people from interior surfaces because that will bring them to awareness and tax their senses. You don't want sound to bounce off walls and come and again make you feel depleted, so people will even spend time constructing these protective sound cones, so they're invisible but they're there, right? Where your ears and your eyes and sort of audiovisuals are directing you to your own little theater, and trying to buffer anything from the outside that could interrupt you.

Natasha: Think of an early slot game, right? First of all you're standing up, you're not sitting down. It's loud and maybe you're feeling anxious, but you're also feeling really... you have a sense of risk and thrill. This is the sort of gambling exchange, you're coming with your money, you're putting it in, and this is a volatile exchange, because you will either lose it or you will triple it, right?

Tristan: Right.

Natasha: And those were before video screens, and those were before microchips went on. But now when you have microchips and video screens and you're able to computationally, really manipulate the odds and the pacing of the experience, and the person is sitting there, we have shifted to what's called: low volatility, high hit frequency. So somebody drew me a graph on a napkin, and he said early slot machines, and it was like these huge spikes, quickly going down to zero. And then he said this is today's penny slots and he drew this gradual slope down to zero, but you reached zero much later, you got more time on device, and you had what he called a smoother ride on the way. Not a lot of big spikes, so what does that game look like? It's what's called these multi line games, you bet on 40 lines, 100 lines, with maybe 100 pennies, 200 pennies. Now think about it, it's almost like diversifying your portfolio.

Tristan: Right.

Natasha: Another sort of low volatility switch, right? You're probably going to get back something on some of those lines, and here's the trick that's called false wins. You will put in 200 or 100 maybe you'll get back 10, maybe you'll get back 50, but the reinforcement will be "Ding, ding, ding, ding, ding." Just a sort of low, in the key of C, if you really win, "Ding, ding, ding, ding, ding." If you are actually net losing, but it's called a false win, getting back a portion of your bet—that is also the "Ding, ding, ding, ding, ding." One sound engineer I talked to said his company put every single sound on the machines, which by the way is typically 400.

Tristan: 400 sounds?

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- Natasha: Yes, can be. He put every one of those sounds in the thought to be universally pleasant key of C.
- Tristan: Why the key of C?
- Natasha: Well because this is thought to be harmonious right? Like hmm. You know? Like that that sort of brings you to peace, so again this theme of smoothing the experience, buffering, kind of cocooning you.
- Tristan: It's anesthetizing, I mean almost an anesthesia experience of your senses that keeps you, focused on the goal of the designer.
- Aza: Aza Raskin here, we'll get back to our interview in a minute, but first we'd like to take a moment for, I know what you're thinking, a word from our sponsors, we actually decided to fund this show thanks to our generous lead supporters at the Center for Humane Technology, who make all of our work possible. So we're going to break away from the interview sometimes when the guest raises an intriguing problem. So much of design is about awareness of the right question to ask, and we know once we've asked the right questions we can actually solve them. Tristan and I are constantly talking about these kinds of solutions, but it's with a tiny number of people. Executives at Apple and Google and Facebook, people we meet after our talks, folks who want to solve the problem but we want to scale this conversation to all of us. So Tristan and I decided to get into a studio and riff on these kinds of design solutions, exactly like we've done at Facebook and Twitter headquarters. But these conversations shouldn't be confined to a tiny conference room with exposed bricks and fancy chairs. So we're going to open it up here, on the show. You're about to hear a conversation starter, the first of many that we're going to weave throughout the series.
- Aza: First up, do you ever feel like your phone is buzzing and ringing, just full of notifications as incessantly as a slot machine? This is actually a design decision to keep us checking our phones, and we can really easily change that.
- Tristan: Here's a good example, Aza, so if your phone has an ambiguous vibration sound.
- Aza: Yeah.
- Tristan: And it buzzes the same way every single time. That turns your phone into a very-
- Aza: Into a slot machine.
- Tristan: Into a slot machine. You don't know what it's going to be. A simple way to change that is to have unique vibration signatures. So when you get a text from one of your close friends, you get buzz, buzz, buzz, which is what it does for me, I set it up to do that. Verses when you have a calendar notification you might have buzz, or something like that. And so you have a very distinct difference, and now you're not just playing the slot machine, it could be anything, you've created unique signatures

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and so that disambiguates in your mind, and Apple could do that in the next version of screen time.

Aza: Yeah.

Tristan: And Apple could do this in the next version of iOS, and like notifications it could be like, boom, you've got these six most common kinds of notifications, we notice that this is causing ambiguity. You know you get 16 notifications a day, and if we split them up in these six different types that would actually reduce your looking at your phone by like 30 percent, boom, done. Imagine a billion people looking at their phone 30 percent less, because they have a clear signal in their pocket.

Aza: And you could actually go to the next step and play with how associative human brains are. So imagine if you sort of spelled out the phonemes in the buzz. So Tristan becomes "Hmm-hmm, Hmm-hmm." Right? And Aza goes "mm-hmm, mm-hmm." There's enough haptic feedback in that to do this.

Tristan: Maybe.

Aza: And so at the beginning, would you know? No of course not. Would you associate really fast? Yes. The point being is that there is an entire vocabulary that we are completely ignoring, because we're constantly pulling people back into looking at the device rather than having it... it's about giving you more options on screen than giving you more options in life, and that's not the way we should be designing.

Tristan: Yeah. I'm not sure we should reveal the haptic sounded out sort of thing, because there could be a lot of complexity there in like the chances that people can disambiguate that signal, I hadn't thought about that, so I don't have confidence about that solution.

Aza: But I think it's totally fine to riff on ideas, because that's the point, it's not that we're saying this is the end all, be all. It's just like here's how to think about it and of course we want to be exploring the space.

Tristan: Yeah.

Aza: We want people to try and be like, hmm that didn't work but this other thing that I tried while I was doing it did this thing and that thing, that's the point.

Tristan: Yeah.

Aza: Not that we have all the answers right now.

Aza: Do you have a few answers yourself? We'd love to hear them. Disambiguating vibrations is a design idea that flows from a full stack model of how human beings work, because the ambiguity sets off a mental process that wonders, what was that? It's acting like cognitive lingerie, hiding the punchline. Stimulating emotional arousal, keeping us wanting to be distracted. So if you have a few answers yourself,

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we're all ears, we want to hear your riffs. You can learn more about the humane design agenda and how you can connect with a community of heterodox designers at the Center for Humane Technology website, that's humanetech.com. And now, back to the interview.

- Tristan: People when they visualize slot machines, so if you explain this term one armed bandit, that came originally from you pulling the lever, yeah?
- Natasha: Yes, and I think that's still a symbol to evoke gambling, right?
- Tristan: Right. But they still use that gesture even though in fact, the machines have changed.
- Natasha: Right, but it wouldn't really work as a gesture to communicate gambling because you know, you'd just be almost invisibly tapping your finger very rapidly.
- Tristan: And so explain why is that transition so powerful, so I was really... I remember listening to you on a interview, I think it was like five years ago, before Time Well Spent, and this point was profound to me. Because the transition from, I have to, you know put my hand on a big lever and pull it, to now I get to rest my hand in one position, it doesn't have to move, and I just have to make the smallest adjustment to push my finger, and I get the same kind of effect.
- Natasha: So think back to the old days, you get your change, you have your bucket, you are reaching down, getting a coin, putting it in to a slot, reaching your hand up and pulling a lever.
- Tristan: That's a lot of work.
- Natasha: Lot of right angles, lot of decision making, right? A lot of choice points that might put you in a position of a sort of an agent who is choosing to spend their money. You want to hide all of that. So a lot of this is sort of camouflaging the choice, but it's also, the other strain of logic there, is the sort of assembly line streamlining, so it takes more time to do that, that whole thing I narrated not only puts you in a position of choice, but it takes a while.
- Tristan: Right.
- Natasha: And so I think back in the days when the lever was replaced with the button, that alone sped up to 300 hands an hour, to maybe 900 that you could play, 6 to 900.
- Tristan: Wow.
- Natasha: So you know, the same as in a factory, like where can we prune time and speed up production?
- Tristan: Right. You even talked about, it was an example, of people wearing even diapers, because they... I mean talk about the psychology of a gambler, and opting into this

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experience. Because a lot of people think, oh they're being duped, they just don't know what's happening to them, and I mean if someone's showing up with a diaper to play these games for, you said, hours and hours upon end, there's a consciousness in some ways to this. But it's a complicated relationship isn't it?

Natasha: Yeah, I mean just on the diapers, because some listeners may say oh this is a sensationalist sort of sound byte about the diapers, so I even had thought, like how common is this diapers thing? It came up in the-

Tristan: Right, it's just an anecdote.

Natasha: But this is what I learned, so it came up in a few of my own interviews, and these were very rational, reasonable people, who said you know I've never done anything like this before and I'm ashamed to admit it, but I get the adult Depends, I wear these like dark blue wool pants, and I can just stay there longer, I don't have to leave the machine. But when it was really driven home to me as a point, was listening, I was actually maybe a speaker on a radio show in Las Vegas and it was calling around on this topic. And someone called in who had worked for 20 years at a casino and she attested there on the phone that every single night in her casino, and it was a popular casino, in the back alley sort of off the side of the gaming floor, would be a whole row of machines that had been essentially urinated on and were going out for cleaning.

Tristan: Oh my god.

Natasha: Yeah. So you know, whether people are planning it or not, you get so absorbed because there's many little sort of loops happening, and the loop would be playing a particular hand, or a spin, or a round of video poker, right? And if they happen so rapidly, one to the next, sometimes 1,200 hands an hour on the latest penny machines, you, again, not only are you not making choices to continue, it's almost like you feel like your body is continuing... I don't know if your people have had sometimes, they can relate to this when I bring up the idea of flow.

Tristan: Right.

Natasha: Flow, we think of as... it has been described by Mihaly Csikszentmihalyi as optimal human experience.

Tristan: Right.

Natasha: It's deeply linked to creativity, you feel that you're not dancing, the music is dancing you, or you know your hands with the instruments are just beautifully performing a surgery, or climbing a mountain, right?

Tristan: Maybe explain this point, because I think it's really critical and Mihaly work is always referenced, but so the psychology of flow is the, and you should explain it, but my understanding is, it's when skill and effort and complexity are perfectly matched, right? So if you have something that's high skill, that is-

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- Natasha: Too high skill is basically a right angle, it's too much effort it breaks the flow.
- Tristan: Right, it's like a too hard of a video game level, it's like oh I can't beat this level so I'm uninterested, I'm going to stop playing.
- Natasha: And too low level-
- Tristan: Too easy.
- Natasha: Is too easy, you're going to get bored.
- Tristan: Right.
- Natasha: So it's like it's this trying to find that sweet spot in between anxiety and boredom, and there's actually like four components to flow, people can go look at it but it does have to do... this really was something I struggled with for a while through my research, because I read flow and then I was conducting so many interviews with gamblers, really getting in, trying to get into what do you experience when you're at the machines? And it lined up so perfectly with all these criteria for this optimal human experience, but they were describing an incredibly depleting experience, right?
- Aza: We'll get back to our interview in a moment, but first, you may recognize this feeling of full but empty depletion. As you sit in front of a screen, scrolling through an endless blur of content. And full disclosure, I'm partly to blame. It is my dubious honor to be credited with the invention of the infinite scroll. I got caught believing that making an interface easier to use meant it was better for humanity. Instead, it was one of the first interfaces that got used not to help you, but to hold you, so let's fight back. Here are some ways to let our brains catch up with our impulses.
- Aza: If the user says like, I don't really want to be using Instagram more than 15 minutes, we'll just start slowing things down just a little bit after 15 minutes, because you've asked the user what they want and now you're just helping align their environment so that when they trust fall into the interface, the trust fall is aligned with their values and what they want. It's adding friction back into the interface.
- Aza: This is I think one of the core problems of the blind AB testing, and the optimizing for an individual user at the bits and pixels level means that you lose sight of these obvious higher level questions about like what is technology even for?
- Tristan: Yeah. Remember the thing we talked about years ago where you bumped your phone against another phone.
- Aza: Oh yeah.
- Tristan: And then it like binds them both into a do not disturb, so it actually then asks both phones, hey do you want to both go into do not disturb and for how long? And when I drag it to two hours, you see two hours on your screen.

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Aza: Mm-hmm.

Tristan: Or we used to swap phones?

Aza: I loved the swapping phones, because then Tristan would get a notification, I'd take it out and be like, do you want this? And he'd be like no, I really don't.

Tristan: Yeah.

Aza: And then I'd just put it back away.

Tristan: And so that's like a social sort of friction, instead of saying friction just for me, like oh I'm not going to do it because I have to extra unlock, it's like no, actually, my phone buzzes in your pocket but we don't do it.

Aza: Right. Or imagine like, we had this idea too. If you just put your phones in a stack you can easily detect when they're just stacked on top of each other, and it just turns off all notifications. Is the signal of like, we're going into quality time, and it becomes a social indicator and of course the nice bit of this is that when you look around a cafe you can see everyone else sort of like doing it. Turning off, so that they can tune into each other.

Tristan: Right.

Aza: How else can we fight the endless swipe and the bottomless scroll? If you have ideas how to add useful friction to your phone, share them with us. Or check out the humane agenda on our website at humanetech.com, and you can also get humane design ideas from my dad, Jeff Raskin, who made the Mac, the one button mouse, and me. You can read about most of those things in his book, *The Humane Interface*.

Tristan: I mean a common belief, especially in a more libertarian oriented Silicon Valley, is that you know, there's always some percentage of the population that just are gamblers, they just are addicts, this is just what people want and we're just giving the people, that portion of the population what they want. What's wrong with that perspective?

Natasha: Oh that portion? Well first of all I don't buy that perspective, it doesn't sync up with the brain research and the reality. We're on a spectrum, many of the things that... the reasons that we get drawn in and addicted to this has to do with positive aspects of human survival, right? Getting attracted to things that give you this kind of feedback et cetera. I don't think it is a situation of here's this cordoned off cluster whose identity just is that of an addict born into the world and the rest of us can gamble, or text, or what have you with immunity. This is a spectrum and I would say that most of us in this day and age have glimpsed the zone, and by glimpsed I mean to a greater or lesser degree, have experienced spending more time and more money and being pulled in and why can't I stop Netflix post play? Here I am at two in the morning binge watching *The Handmaid's Tale*. Whatever it

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is, I think that the fact that we can all glimpse the zone is testament that there is a sort of culture wide shift to an ecology in which our relationships with technologies are increasingly, you could say, predatory on this tendency. I don't even want to call it a fallibility or a weakness.

Tristan: Right.

Natasha: Because it's also linked to creativity, right? And survival. So it's just who we are as humans. What really makes the difference is between climbing a mountain, or dancing, or performing a surgery, why is that flow-

Tristan: Which are the examples of flow in the positive sense, like these surgeons who fall into flow while doing surgery or the musician who falls into flow and time disappears while playing that musical song perfectly. But then what makes that difference-

Natasha: Right, so my answer is not that it's in the person, which is also you know the casino industry's answer, and it's a very convenient answer.

Tristan: And also Facebook's answer.

Natasha: It deflects blame away. It's that you have to look at the design of the technology.

Tristan: So I think this is, you know, we should probably transition to the parallels between this and the technology industry, so we've just sort of-

Natasha: Although there are the algorithms, right? A key part-

Tristan: Okay, well let's do the algorithms first then, let's talk about that. It is a critical point that will perfectly mirror how technology works.

Natasha: So the inside behind the screen thing that's going on is parallel I'd say to the audiovisuals and the curving carpet. So I found that this sort of logic of curving you into a zone of unawareness carried over to the level of the math inside the machine.

Tristan: Right, because prior to this, so basically the casinos hired mathematicians to get better and smarter, more computational about the way that they do this, right? I mean before this it was just a mechanical thing where you have the mechanical things spinning.

Natasha: You were limited by the physical constraint of having 22 stops on mechanical reels.

Tristan: Right.

Natasha: And now, there are you know, there can be hundreds of stops on the so called virtual reel, and those stops, most of them, can be mapped to non winning symbols that appear in front of you. So, what it allows is a disjuncture between what you

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see spinning in front of you on these... you know, it's basically just an animated reel on a video screen. You may get a sense that you have certain odds based on that, you may see the same kind of number of winning odds that have always been on slot machines, but in fact they're weighted differently. So I've drawn a parallel to explain this to people, that the equivalent of weighting the device, where you literally drill heavy silver into the dice at a certain point that makes you not win, is the equivalent, that there is some equivalent of that computationally. And I actually map that out in my book, this is how you weight the reels computationally, by mapping fewer winning symbols down to the symbols you see in front of you.

Natasha: The non winning ones have far more weight, so there's a disjuncture between your human perception and what is actually happening in the machine. And some would say that this is a case for... you know that this is misleading graphics and runs afoul of consumer protection laws, and you know what? It totally does. The case is totally there, but what lawyer is going to be incentivized to bring that case to trial? What jury is going to understand the math? Like there's so much heavy lifting that would have to be done there. But I can assure you, with confidence, put it on the record that there's a number of things that have been going on for quite a long while in the casino industry, that are blatant violations of existing consumer protection laws.

Tristan: Yep. So if we zoom out, you know we've got this kind of pattern. We have owners of a space, which they get to design the entire architecture of an encompassing space, that once you're in that space, there's an asymmetry of power in everything from the architecture in the lights and the ceilings and the smells, and we also have the technologies that extract across that space that are optimized with algorithms. And then we have a political structure, where you know, we have a huge amount of money that the state actually makes from this as well, so why hasn't this been regulated for example? I mean if this is so asymmetrically powerful and people are harmed...we should tuck, I think you said in your book, what is it that problem gamblers have a 20 percent suicide rate?

Natasha: Problem gambling and pathological gambling, you know, I think they're rather arbitrary distinctions.

Tristan: That's very hard to define.

Natasha: But in the sort of gnoseology of the psychiatric disorders those were distinguished, and so pathological gamblers if we actually carry that sort of way out on the spectrum, serious disorders, is super high, 20 percent, yeah.

Tristan: Yeah.

Natasha: Problem gambling is the sort of catch all for a much higher percentage of people who experience this problem either intermittently or maybe in a slightly milder form.

Tristan: What you're describing sounds like a kind of dystopic manipulation machine environment, I mean speaking personally, it was just almost ridiculously obvious,

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the parallel, time on device is the same as time on site, and that you have now 500 billion dollars of market value for Facebook and close to a trillion dollars of market value for Google, locked up in a similar system where the attention economy demands a certain kind of human being sitting on the other side of the screen. We don't want you to be a conscious, aware sort of human being, we want you to be the most extractable kind of human being you can be. So you know, I remember in reading your work and looking at the slot machine dynamic just how pervasive this is, I mean I have a list of things that I can name are clearly slot machine mechanics. I mean you pull to refresh your email and you get that delay, and there's actually a designer named Loren Brichter who actually invented that mechanic of the pull to refresh, and when you reach the top it doesn't just stop and halt, it has to kind of smoothly push past and then has a kind of exponential friction and then when you let go it bounces back.

Natasha: Yeah

Tristan: And there's something very attractive and seductive about that level of detail. When I was actually working at Apple, I would really spend time studying animation curves, and I remember it's if you want the ease in, ease out curves then there's just this whole library of different styles and animation curves and progress bars that you can use. And this level of detail now starts to show up inside of, you know, mechanics and software products. So Tinder is a slot machine for faces that you might want to date, and then the whole point is to get you in the zone so you don't just actually examine each face really quickly, you'd have to get you swiping lots and lots of faces. And then Facebook, you know, photo slideshows, your hand never has to leave it's resting position you just hit next, or the space bar, or the right arrow and without leaving it's resting position like a penny slot, you get a variable reward.

Tristan: I think part of what I find fascinating about this work and what you've identified is that these are just fixed features of the human social animal system, like how we work. We don't get to choose this about us, it's like being a chimpanzee and saying hey, I'm going to choose not to be attracted to bananas, like sorry, you've got a million years of evolution working against you in the way that you will intrinsically feel an attraction towards things. I often think about this in linguistics as well that there's a kind of... the light or the meaning or reality gets bent in a way that you don't see based on your instincts. A good example of this is, I think we talked about this once, that in psycholinguistics if you have two theoretical pain medications, one's called Pavel, and one's called Bavel. Which one works faster?

Tristan: Everyone says Pavel, because it's an unvoiced consonant that works faster and so there you are, making an assumption about something, that you think that you're choosing, but before you're choosing your consciousness is trapped inside kind of a prism that's bending light in a certain direction and not another, and I think that's the same thing true in terms of this novelty seeking instinct that you're talking about with slot machines. That there's something fundamental about the way that our brains crave rewards, forget the deep neuroscience of it at this moment, and that that is being optimized for in this kind of reverse engineering the matrix level

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code of your nervous system, to create that perfect continuous behavior modification loop, that gets you sucked into the machine.

Natasha: But this is a perfect point to pause on, because I went into this project, you know, as a young undergraduate and then graduate student, it was over so many years. But in the early days, I really hoped like, ooh I'm going to kind of infiltrate the industry, and that was a time when there wasn't a lot of attention on it. So I was quite easily able to kind of get inside the labs, and I was hoping that people were sort of packing B.F. Skinner's behaviorist manual in the side pocket of their office desks and hiring brain scientists, and they weren't. And whenever I asked why the color green? Why the curve this way? Why did you make this choice? I was hoping they'd have a really great answer, because the brain works this way and we want to capitalize on that. And they were like, "Oh I don't care, I don't need to know that."

Natasha: And so I think what we have to understand here, which helps us with the ethical argument maybe, is that this is a giant sort of laboratory situation where you've got this key process data flowing either off the casino floor or off the market into the clouds of all these companies, who can do these massive AB testing kind of things, which aren't about causality it's about correlation. So if we're living in this sort of big data time, another great example is McDonald's. McDonald's did not figure out how to make the perfect hamburger that would sort of exploit the weaknesses of the human organism, someone stood and watched, like we're going to have two hamburgers so it's a perfect AB test right? Hamburger style at McDonald's. Where are people lining up the most? Oh, they like this burger better, and then let's iterate on that burger and iterate on that burger. So, you know, if you go into the casino industry, or any of these maybe, you don't find, sometimes you find it, but you don't find as much as you'd expect, to the kind of causal stories and predatory behavior. What happens though, I think is actually more sinister, or more difficult.

Tristan: It's the banality of the evil.

Natasha: Right, I mean it's just that the formula that gets hit upon, you don't have to understand it, it rises to the surface and that's the product you go with. And you're not even understanding what you're doing. I mean I think that's part of your mission, right? Is to get people who are doing it to understand.

Tristan: To understand.

Natasha: You may not be engineering this, but if we reverse engineer it for you a little bit, maybe you'll want to not go that way.

Tristan: We're going to stop our interview with Natasha here, at this ethical fork in the road. A position that may feel familiar to many of our listeners right now. Whether you're designing the killer burger, the killer slot machine, or the killer app, we rarely have the opportunity to look up from the AB tests and see where is our industry headed?

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- Aza: The whole reason we're making this podcast is to first give us that moment of reflection, and second, and more importantly, to help us take action. Awareness creates the opportunity for choice.
- Tristan: You can raise awareness by pointing out slot machine tactics in designs of products that you already see and use, or one's you're making. Call it out, we want to see screenshots of these problems and your ideas for solutions. And yes, we're inviting you to share those ideas with us on Twitter and Facebook, because we're not against tech or social media, we're against the way it's designed and being used today.
- Tristan: Next week on the show, Natasha Dow Schüll will offer us a way out of this ethical impasse, and the way out, she says, will not run through the user's sense of self control, or even user interface, but will go straight to the algorithm itself.
- Natasha: I'm like okay look, look at all the ways that the slot machine, we try to regulate it. And some of those ways involve adding extra little screens and modules onto the slot machine, or above the slot machine that are even sometimes called "The responsibility aid." Or "The pre-commitment calendar." And it's all on you to open that, go in there, set your calendar, lock yourself out and then it sits-
- Tristan: Tie your hands behind your back, put the seat belts there but then-
- Natasha: But then it sits there alongside a completely contradictory algorithm and ergonomics machine that is sort of trying to get you to spend as much as it can. And so it puts the person, again, the poor exhausted person, right?
- Tristan: Right.
- Natasha: Is saddled with resisting temptation and managing themselves, what if we just moved that regulation down to the level of the algorithm?
- Aza: What if, indeed? Natasha will game that out along with other undervalued solutions next week. We hope you'll listen, we'll hope you take action. Thank you for your undivided attention.
- Aza: Your Undivided Attention is produced by the Center for Humane Technology. Our executive producer is Dan Kedmey. Our associate producer is Natalie Jones. Henry Learner helped with the fact checking. Special thanks to Abby Hall, Brooke Clinton, Randy Fernando, Colleen Haikes, and the whole Center for Humane Technology team for making this podcast possible. And a very special thanks to our generous lead supporters at the Center for Humane Technology, who make all of our work possible. Including the Gerald Schwartz and Heather Reisman Foundation, Omidyar Network, the Patrick J. McGovern Foundation, Craig Newmark, Knight Foundation, Evolve Foundation, and the Ford Foundation, among others.