

APPLE

# HOW BIG COMPANIES KILL IDEAS — AND HOW TO FIGHT BACK, WITH TONY FADELL

*Stories and lessons from his new book, [Build: An Unorthodox Guide to Making Things Worth Making](#)*

By [Nilay Patel](#) [@reckless](#) May 3, 2022, 10:49am EDT

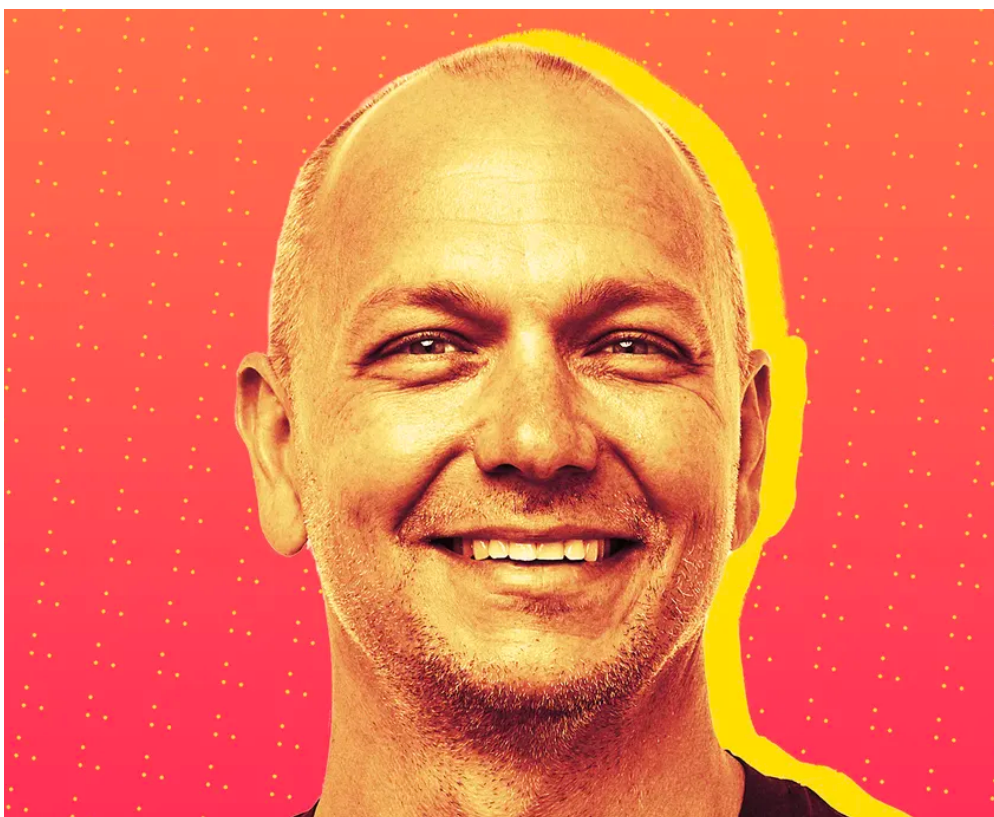


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**T**ony Fadell was instrumental in the development of the iPod and iPhone at Apple and then co-founded Nest Labs, which kicked off the consumer smart home market with its smart thermostat in 2011. Tony [sold Nest to Google for \\$3.2 billion](#) in

2014 and [eventually left Google](#). He now runs an investment firm called [Future Shape](#).

Tony's written a new book called [Build: An Unorthodox Guide to Making Things Worth Making](#), which, I'll be honest, is total bait for *Decoder*. It's one part memoir, one part tech industry gossip, and one part org charts and decision-making. Seriously, this book has a lengthy section with actual diagrams of org charts to illustrate how company cultures change as things get bigger.

Now, I've known Tony for years. [Nest launched in November 2011](#), just like *The Verge* itself, and one of my first big stories for our new tech website was a feature on Tony and his thermostat. He has always been a huge character and completely open with his time, advice, and opinions. There's an f-bomb within the first eight minutes of this interview, which is very much in character for Tony Fadell.

I hope that doesn't scare you away because Tony has some great stories that you'll want to hear. Okay, Tony Fadell. Here we go.

*This transcript has been lightly edited for clarity.*

**Tony Fadell is the principal at an investment firm called Future Shape; was instrumental in building the iPod, the iPhone, and the Nest Thermostat; and wrote a new book called *Build: An Unorthodox Guide to Making Things Worth Making*. Welcome to**

## **Decoder.**

Hey, thanks Nilay. It is always great to talk to you. It has been a while, before Covid-19, so it's great to be here. Thanks.

**You and I have known each other forever. One of the first big stories *The Verge* ever published was one I wrote about the Nest. I don't know if you remember since it was before the site came out, I showed you PDFs of what our website would look like during one of our interviews.**

Yes, I remember. It was great. We were both launching our companies at the same time. That was a fun set of days.

**I think that period was formative for me. Obviously with Nest, it was very formative for you. That was 10 years ago, and a lot has happened since. Why write a book about building things now?**

Why? I woke up one day and realized the only reason why I am sitting here — and able to talk to you and so many people — is because of the successes due to mentorship offered by various people along my career. All these things we have done are because people helped me. I thought about who those people were, and most of them had died, and I was like, "Wait a second. I'm not getting any younger." I think the baton has been passed to me; I have to give back just like people gave to me, without any financial reward.

I don't want to call myself a master, but it is a master-to-an-apprentice kind of thing. I wanted to take all those stories and mentorship lessons, and give them back to people creating around the world by putting them in a book. Back in the '90s, it was Silicon Valley and maybe a couple other places. Now it's everywhere.

It is not about this one technical thing we did with the iPod or the Nest Thermostat; it is about human nature. I say it is an unorthodox book

because human nature does not change. Technology changes. It is moving faster than everyone, and it is going to continue to move even faster. But human nature doesn't change.

Many people ask, "Oh, what's the latest and greatest?" Most management and mentoring books are about doing some kind of crazy thing that has never been tried before. Most of that stuff never works. It is all flash in the pan to sell a book or get on a podcast. This is really about the details of human nature — about how to build yourself, your team, your project, and how to build companies. That's what I think is really important and why I wanted to write this book, to give back and help people.

**As I was reading the book I thought, "Well, this is just bait for *Decoder*," because one of the core ideas of this show is that every company and every leader have the same problems. We are really just talking about trade-offs on the fine edges of similar problems across the industry. I ask a bunch of questions on *Decoder* in every episode, but because it's a book and because it's you, I am going to ask them in a slightly different way.**

Uh-oh.

**This is the Tony special, man. I always ask everybody how they make decisions, which I do want to ask you. The book is basically about how to go through all the decisions you make as a leader. For you that was knowing when to quit a company that was failing, knowing when your time at Apple had run out, and knowing when to fire your lawyers for overcharging you. You have run through the full gamut.**

It is also knowing about yourself and how you want to approach your career if you are going to be a leader. It's not just about being a CEO. I try to make sure it's all the steps along the route as you individuate from your family and become a professional.

**That's what I mean. In the most abstract sense, how do you think about making those decisions for yourself? As you were writing the book, how did you think to communicate, "There is a framework and a process here?"**

This was exactly another reason why I did the book. I just get a gut feeling. It's not always the most logical thing. These are opinion-based decisions, not data-based decisions. There is a chapter in the book about that. The book was just my opinion saying, "I think this needs to happen. I am going to go explore it and see what happens."

That is the same thing that happened with the iPod or with Nest. I find a pain or some kind of thing I want to solve, and I just pull on that thing. I keep going. Obviously, you use your brain a lot, but there is a lot of gut in it. You're not going to go out and ask 20 people, "Should I write a book?" then go do that. A lot of people think about products that way. When they are going to do the V1 of anything, they say, "I'm going to ask a lot of people and see what they think. Then I'm going to come back and make my judgment based on that." It's like, "No, no, no, no, no!" You have got to know inside what you want to do.





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Every decision I have made and every job I have had — except for the one at [General Magic](#) — I created myself. I was dying to go to General Magic because that was in my gut, so I just took whatever job they gave me. When it came to Philips, or my own startups, or obviously Apple, I was able to create the position I wanted because I came with ideas. I came with certain knowledge, and said, “This is what I want to do and this is how I want to do it.” I think a lot of leaders and people respect that, as opposed to just taking what is given. You are going there and offering value beyond what they do. I hope that was also in the book. I am trying to offer value beyond what you normally would see.

It was really an exploration about how to format the book. I would say that my co-writer, Dina Lovinsky, and I spent six to nine months just getting the format right, because I did not want a long-form book. I was trying to make micro chapters for the TikTok generation. “We only have so much time and attention span. How do you get people engaged and get them drawn in?” The format of the book is not a regular book. It’s really odd and many of the publishers that I pitched to were like, “I don’t get it. Just write a book.” I’m like, “No, no, no, no, no! We are going to innovate the format. It’s time to

innovate.” So I hope we did that. It was another leap of faith. We spent a lot of time iterating to get it right. It was kind of frustrating at the beginning, I must say, but I hope we nailed it.

I’m writing this book to help. All the profits of this book are going to be matched five times by me, and they are going to go into a climate-focused fund to help find businesses solving our climate crisis. Any monies that come out of those investments are going to go right to climate initiatives and philanthropic entities and NGOs who are working on climate change.

**So how do you think about making decisions now after your whole career? How has that changed? Now that you’re an investor, there’s a lot of mentoring people or deciding when to spend money. How do you make those decisions?**

Again, it is a mix of gut, rational, and emotional decisions. Do I like this team? Do I like the person? Are they transparent? Are they trustworthy? Are they able to break down walls — because you are going to get tons of walls? Are you doing something that matters?

For me, “matters” means “existential.” Are you doing something to help society or the planet or health? I don’t want to hear about the Metaverse. I really don’t. Fuck the Metaverse. I understand VR and AR in certain applications, like in design, but I don’t want to meet people in the Metaverse. I want to be able to look into somebody else’s eyes. I want to see and feel and look into their soul and build a relationship. Zoom is much better than a phone call, but the Metaverse? Give me a break.

***"FUCK THE METAVERSE."***

I want to spend my time on things that matter. I have kids, and it changed the way I thought. I want to make sure we have a planet for my kids, my grandkids, and their generations that they raise. When you come to this point in life, you have to talk about existential problems. We have very

limited resources on this planet. We have very limited time as humans. The planet will be here long after we are gone, but we need to take charge.

Yeah, we might not have caused the problem — maybe our parents or grandparents or whoever did — but we are living with it. Guess what? It is not like our parents are going to come in and fix it now. No, they are either retired or not here anymore. It's up to us to fix it. We have limited resources: brilliant brains, money, and time. At best, we have 20 to 30 years. Shit, we have to get building now!

That is what I want to spend my time doing every day, and I want to be with entrepreneurs doing that. That is what I think is most important. As a community, we need to understand how we live our lives together, both personally and professionally, to make this planet a better place. I'm sorry, but we are morbidly obese on this planet right now. We need to go on a collective diet.

**Let me just offer you pushback there. I think I understand your criticism of the Metaverse. I don't know if I want to spend my days in a headset either. A lot of your book is about overcoming the barriers, the obstacles, and the naysayers. There are a lot of people working on those projects who think that AR glasses are the next great technological leap for the world. I might buy it in some circumstances; I can see what they see, and I can hear their pitches. There are a lot of people who are aggressively trying to build that vision — that really is just a vision — and stay focused on what they think is the next generation of technology. How do you put saying, "Fuck the Metaverse," up against that?**

Look, I am not against VR, AR, or XR. I have been doing VR since 1989. At the University of Michigan, I made gloves and lights and 3D displays on [SGI](#) or Unix workstations. I'm not against it. What I am against is pouring so much money and time to get people so focused and more insular, and to stop making human connection.



We invested in a company called Gravity Sketch, which is doing an amazing collaborative design in VR and AR. I am all for 3D design and AR glasses, to “see what I see.” You could have an expert see what you are working on — such as a medical application — and start to direct you and help you do the task.

I am all for that stuff, but when you say we are going to make human connection and have meetings in the Metaverse — when we are going to sit there and dance together in the Metaverse — it’s like, “Give me a fucking break. Seriously? Let’s do something real. Let’s solve the problems we have.”

### ***"WE WERE BUILDING THE IPHONE 15 YEARS TOO SOON."***

I want to solve problems and pain points that we already have, not create and solve problems we do not have. It reminds me of General Magic. We were building the iPhone 15 years too soon; we were just trying to impress the engineer next to us in this great sandbox.

Yes, the iPhone came out 15 years later — and of course you had to have General Magic to get to it — but we were working with technology that was not ready yet. I just saw that Meta, or Facebook, or whatever they want to call themselves, has spent probably \$30 billion on the Metaverse already. \$30 billion? Really? Is that an efficient use of money? Where are we still? We just have better games. We’re meeting in the Metaverse with no hands, no bodies, and no torso. We can’t even look into each other’s eyes. 30 billion bucks?

### **I will give them credit, there are hands but no legs.**

Hands, whatever. All Italians and other people who speak with their hands can have hands. Okay, great, but you still can’t look in their eyes. That is \$30 billion and one company. Let’s go solve real problems with it. I am not against technology. I am against technology in service of no problems. We

are just trying to create new problems.

**One of the things I always ask people is, “How is your company structured?” I want to tweak that here again. A huge portion of the book that really resonated with me is that as your company scales, the structure will break at certain amounts of people. That was one of the first things you and I ever talked about when we were starting *The Verge*. I was writing that story and was like, “Man, we are 25 people, about to be 50.” You were like, “Watch out. That is a moment. You better stop and think about that moment, because everything will change once you get over that number and the next number.”**

**The book really points out that as you get bigger, preserving the culture of a company — the spirit of a place — necessarily changes. You add in layers of management and all that. I will tell you, this is the hardest lesson I have learned over the past 10 years. I also think maybe you can’t learn it without learning it yourself. You can tell someone that information all you want, but the actual pain of going through it is what makes you see that it’s real. How did you deal with that?**

I went through that nightmare when I was building my first real team at Philips. If you go past 40 or 50 and did not set up your organizational structure right, you almost have to go down and fix the structure before you can build back up again. When you go through that enough times, you learn tools, techniques, and how to engage your team to help get past that. Of course, sometimes you just have to learn by doing and failing. That is a part of the book. But if you went through that pain at 40 to 50 employees, do not let that happen again at 120 employees.

You and your team are going to learn and adjust to it. Other times, you may hire people on your team who have gone through that transition before and can help you see it. You may not know exactly how to solve it, but you just

have to tune into knowing that problem is going to exist so that you are sensitized and your antenna is up. You have to say, “Oh, okay. I am going to have to think differently about it.”

It is not just the same old, same old when you go from 40 to 60 to 70 people. You have to mentally change the way you lead and how you manage and communicate. You may have a different way you want to do it, but you just have to know that you are going to hit that.

It is just like a warning sign on the road, “Uh-oh, construction ahead. Better pay attention.” Hopefully, people will solve that problem in different ways. I gave some tools to explain how I thought about the problem and how I have seen other companies do it. We have over 200 companies in our investment portfolio that handle it in different ways. Everyone will do that, but at least there are some signposts along the way to say, “Look, pay attention. This is going to happen. It happens to everyone. Try to find some ways around it and try to engage people to work as a team to solve it. It is not just all you.”

**Which breakpoint do you think is the hardest? I will tell you, I think it is like six to 20. You are on the same road 20 to 1,000.**

Well, six to 20 is definitely hard because it is so personal. The relationships are so close and you have to start to individuate in terms of roles and who is getting what information. You can kind of get away with 40 because you can still have weekly or bi-weekly meetings with the team, but that is when you have to change your whole communication style.

When you get to 120, forget it. That is that limit of knowing everybody’s name and having personal relationships with them. That is just the physical limit of our brains to have a real personal connection — that much time and knowledge — about each person’s life. I think it is really down at that first level, then it is at that 120 level where you have to think about things very differently. You have to understand that this is a business and not just

everybody having fun together. That does hurt.

**So let me bring this back to the Metaverse. You were at Apple when it went from like 3,000 people to 80,000 people. Now Apple is cruising over 100,000. Google is also a massive company, with over 100,000 people.**

Sure.

**Facebook has 100,000 people, with 17,000 people working on the Metaverse. It's crazy. These companies have all just gotten gigantic. I think that there should be more competition in the market, and I think there is some regulatory stuff you could do there. There is a strong argument that these companies are so big and unwieldy that they are just going to fall apart on their own. If you were plopped in the middle of a 100,000-person Meta — and you've got a \$30 billion bet with 17,000 engineers on the Metaverse — how would you think about structuring and aligning that company so it actually executes?**

Well, I do not have all the knowledge of Facebook, or Meta, or whatever it's called. I will tell you this. I was at Philips Electronics when there were 275,000 or 375,000 people in the company. It was a huge company in 1995. It was a quarter of a million or so people, and now it has 25,000. That is a factor of 10 below. It is a whole different company now. It is like the Roman Empire; it all disintegrates because you do not have the right communications. You do not have the right ability to allow each unit to go off and do what they need to do. They start bumping up into each other, they are competitive, and silos get created.

The same thing happened to Sony. I think there is just a normal arc in the life of a company. I think I would try to sit here and figure out how to split up the companies, to figure out what needs to be in which organization. I don't want to say this because you already know — you read about

Alphabet in the book — but you have to figure out a way to make individual operating units. Look at what Warren Buffett does. He buys fully operational companies and puts them underneath a financial management structure, but each of them operates independently.

Alphabet had the right intentions, but it did it with the wrong business units. It took the most nascent business units and said, “We are going to spin them out.” Those are babies, and you need to coddle and protect them. You want the ones that are fully formed to go out in the wild and become more resilient. You make them individual public companies that have to try to survive by themselves, as opposed to the ad business funding everything and letting them just lose money. They have to live.

It is kind of like you are still living at home with your parents when you are 40 years old. “Oh, mom and dad will just keep paying for everything. I’m just going to sit here and have fun.” At some point, they have to get kicked out and go live on their own to know how to make their own money and build their own existence, independent of the mothership. I think a lot of these companies are going to have to start thinking about those kinds of divisions and making them live on their own, just not when they are babies.

**We should talk about this, since it is in the book quite a bit. You founded Nest, and you built the thermostat and the connected smoke detector. You had a grand vision for the smart home that you were going to build out over time. Your whole thing was, “I am going to find unloved products in your house and make them really cool.” Thermostats and smoke detectors definitely fit in those categories.**

**You sold the thing to Google for \$3.2 billion which — I recognize we are now in 2022, and Elon Musk is buying Twitter for \$44 billion — at the time, that was a massive number for a startup. As you said, Google then reconfigured itself into Alphabet, and Nest got split out. That seemed disastrous.**

“Seemed?”

**Right. It’s in the book. It was a disaster. Nest then got reintegrated into Google. I have heard bits and pieces of it from you and from others over the years, but tell me that story. It really seems like Google was trying to protect the money machine of search and ads, while still trying to innovate, and could not figure out how to structure that. They ended up with the worst of all worlds at all times.**

Our team at Nest went in there thinking of this as a marriage. We had all these discussions for months previous like, “Are we going to have kids? How many kids are we going to have and where are we going to live? Okay, we are going to get married here and this is going to be wonderful.” It all seemed great, but people got upset with us because we were bought by Google, not Apple. “How could all these Apple guys go to Google?” It was like, “Look, this is business. This is not personal. We have to do the right thing for our customers, and the right thing for the platform we are trying to build.”

Google said all the right things. Then over time — after like the first six months — it became like the *Tinder Swindler*. I was like, “What happened? Where is all this great stuff you said we were going to have?” It went out the window. Over time we were just one toy in the toy box. When you are bought for \$3.2 billion, you would think people would actually respect and invest in the team as a new area of Google’s business. That is not how it worked.

Apple is a whole different story, at least when Steve [Jobs] was there. It was respected when you did stuff. People took note and tried to make successes. It was my mistake. I did not realize that Google had gone through many of those billion-dollar acquisitions and just let them flail. They just said, “Oh, that was a fun ride. Moving on.” There was no existential crisis because you always had the ad money tree from search.

Then it was just a matter of cutting their losses, as opposed to seeing that these are real people with families, trying to do right on the mission to build this thing.

***"YOU COULDN'T NOT MAKE THE IPHONE SUCCESSFUL BECAUSE YOU WERE CANNIBALIZING THE IPOD BUSINESS."***

They just saw it more as dollars, at least from the finance side. People inside the company were just like, "Oh, it's yet another project we are trying." At Apple, every single thing that was tried — at least under Steve — needed to ship because it was existential. You couldn't not make the iPhone successful because you were cannibalizing the iPod business. It had to be successful, and everyone needed to be on it. If you were on something that was distracting from it, you needed to move to it and work on it.

That was not the culture at Google. Obviously they are successful, with many smart people, and that works for them. It is very different when you live and die each day by your vision, your mission, your dream. You do not want to just run to another project because it is just safe and easy; you are trying to do something hard. At that time, that was not how Google thought.

**There are cross-references in the book to other chapters of the book. One very memorable chapter title I noticed as I was reading comes up over and over again. It was "Fuck Massages."**

Fuck massages.

**It is basically an entire chapter about Google's culture of perks they create and how you hated it. It wasn't particularly positive. For people who do not know, Google has famous perks: free food, free buses, everyone gets a bike. It's nuts. Why are you so negative about that culture of perks?**

I think that there are two reasons. There are perks that help you build your day-to-day life and family outside of the business, whether that is medical,

dental, or education. Those are called benefits.

Then there are perks, such as free food at all times. There are things that make you more insular and only think about the company, to become one with a Borg and never leave. I am not against buses. Don't get me wrong, I think they are great for mass transit. However, the buses are being used as a tool to show up late for work at 11:00 in the morning, then leave at 2:00 in the afternoon after having the free lunch. "Well, I showed up at work that day." Did you really?

When people start taking advantage of all these perks and no one pushes back, and when people are bringing home dinners for their entire family in to-go boxes, it is like, "Is that really what you are trying to do here?" That is not where we are trying to incentivize, and no one is pushing back on it. That is where we have moved from the mission and the team, to individuation and "me, me, me, me, me."

You have to have a balance between perks and benefits. I did not see teams working together. I did not see people trying to better the company. They were bettering each other and themselves, but not necessarily doing the right thing for the customers at that time. Now, Sundar [Pichai, the Alphabet CEO] has done a lot of changes and he has pushed back a lot. That is why you have seen the teams rise up and scream, "It is not like the old days." Well, guess what? It should not have been like the old days.

**You draw a direct comparison to that particular Google culture at the time to Apple. Apple famously does not have free lunches. There is a famous story about Steve Jobs, who drew a \$1 salary, going to the cafeteria and still swiping his employee card that just bills the meals out of your salary. He was laughing because he didn't know who was getting billed because he only made a dollar. It's very funny. And not to focus on free food, but you have drawn the comparison here between Apple, which faced an existential crisis and knew it had to ship products, and Google, which printed**



**money and has 15 messaging products that have no coherent strategy. Do you think those things are as directly connected as I am making them out to be?**

In a way, yes. The other thing you have to understand is that Apple has been in business much longer, and it has gone through disasters, like in the '80s and '90s. It has gone through the cycles. Google has never gone through cycles. It has all been up, and they manage the downside so it does not really affect them. There has never been any reckoning for them to fix things, because they keep milking that cash cow. That creates a culture of thinking it is always going to be fine. You are living in a dream state.

If you go to most other companies, you have really hard constraints. I am not saying there are no budgets at Google, but they are nowhere near as severe as what I have experienced at large corporations like Philips or Apple. We were worried about every freaking \$10,000 in the iPod team, because we were dealing with atoms. "Are we going to make 200 units of prototypes or are we going to make 50 of them? How would we make so many and how much would it cost?" Google really did not have to deal with atoms until Google Cloud, and yet the cash was coming in.

Look at what is going on in Intel; they are finally getting the reckoning. Pat [Gelsinger, the current CEO of Intel] is doing a great job. He's being the parent CEO that it's needed for so many decades, since Andy Grove [Intel CEO from 1987-1998]. He is slashing, cutting, and changing things. That is what it takes when you are a CEO of a company that has been riding high on the hog for so many years and rethinking things. Intel is finally going through that existential crisis. The last one was through Andy Grove, when they went from DRAM to processors.

Like you said, these companies get so big. I think these companies need to go through some kind of existential crisis to actually help them solve their cultural issues.

**Another concept in your book is that some CEOs are parents. By the way, your kids are teenagers. Maybe I should just interview them next because I am dying to know how this goes. It sounds like you are about to boot them out of the house.**

I did not boot him out, but one is out of the house. He is 15, and going to boarding school. He did that by himself. It was very surprising and actually very emotional for me.

***"YOU HAVE THIS CONCEPT OF PARENT CEOs AND BABYSITTER CEOs. THE PARENTS PUSH YOU, WHILE THE BABYSITTERS JUST MAKE SURE YOU DO NOT DIE."***

**You have this concept of parent CEOs and babysitter CEOs. The parents push you, while the babysitters just make sure you do not die. You are saying Pat Gelsinger is a parent CEO. He is changing the whole thing and pushing the company forward. It also sounds like you are putting Sundar in that category.**

Yes, just in a different way. He is a change maker.

**Let me just ask you about Apple. They print money and they just had their third best quarter ever; the iPhone continues to be a smashing success, they reinvented the Mac with the new processors, and they have the services line of business that seems to be printing money. You step back and squint, you can make a lot of these criticisms about the current state of Apple.**

**They have a couple of cash cow businesses. You are a car guy. They have dumped however many billion dollars into a car project that seems to get reset every couple years. They are funneling money into AR and VR, just like everybody else. How would you evaluate that company now?**

Well, it is the number one company in the world, right? You can say all you want about Tesla and Elon, but they are the number one company in the

world. It is obviously working for them. They have a culture that has maybe gotten a little bit fatter on the edges, but it is still a very lean culture. Jeff Williams [COO at Apple] and his team are still there. The same guys and gals are still there doing a really whizbang job of making sure that company is running well.

People are faulting them because they think there is not enough innovation. Well, you just said it: M1 processors. We didn't start the M1 project, but we did start the Apple processor thing together when we bought P.A. Semi back around 2008. That was getting us on that path.

It takes years to be able to best the processor guys in the business, but they did it. To me, that is innovation. It is a lot of risk to make that switch over. Maybe they could have done it a little bit faster, but no one else did it. Now, everyone is trying to copy them and say, "We are going to make our own processors."

As far as I am concerned, there is innovation, just not the innovation that gets everybody all riled up. Maybe it is a little bit geekier. That's fine. Sometimes you have to start at the lowest levels, and be really geeky. That is what I am doing with most of our investments, because they will transform the top end sooner or later. It does take time for it to flow up.

The iPhone was not created because we said we were going to make a Mac smaller. The iPhone was created because we said we were going to make an iPod bigger. It took the iPod to get to the iPhone. How many years did it take to get to the iPod?

Look, you can say what you want about Apple, you can always wish that Apple was going to surprise and delight you every quarter with something that the world has never seen before, but that is not reality. They're the number one company in the world, and they are innovating at maybe the lowest levels, but those lowest levels are going to change the company and those products dramatically over the next decade to come. You just have to

wait. I'm sorry, TikTok generation and millennials who need instant gratification. That just does not happen, especially at the scope and scale of Apple.

**So you mentioned making the iPod bigger, Mac smaller. For Apple nerds, this is like an endless debate over what happened in the bake-off to make the first iPhone. I have to ask you about this urban myth of computing.**

Yeah, a rumor. There was no bake-off.

**To make the iPhone, there was one team that tried to scale up the iPod and one team tried to scale down the Mac. Then Steve Jobs just spun around in a circle and picked one. What actually happened there?**

Here is what specifically happened. So we were off making the iPod stuff happen, and it became very clear to us that there was a real threat from mobile phones, feature phones. They were starting to add music, MP3 playing, to the cell phones that they were shipping at the time.

**I had one, a Sony Walkman phone. It was one of my favorite little gadgets.**

I don't even know if it played MP3s. It probably played some weird Sony format.

**Some weird Sony format with a memory stick.**

Right. Anyways, there was this existential threat coming because people only wanted to put one thing in their pocket. Was it going to be the iPod or a phone that played music? Since Apple was nowhere near phones in 2004 or 2005, what were we going to do about it? We talked about this before. The Motorola Rokr project was born, which was, "Let's get everybody to use iTunes. They could get a limited set of music on their phones." Motorola

Rokr was going to be it; 99 songs was all you were going to get. It was kind of like an iPod Shuffle, in a way. So we started down that one, and we know how disastrous that project was. Steve didn't even want to show it on stage when it was ready.

**Yeah. The contempt with which he announced this project — if you go back and watch it — is very funny.**

It was hysterical. That was probably three or four months before the Rokr shipped, because we were under contractual obligation to ship it. We were like, "Oh, wait a second. This is not working at all." Jeff Robbin [VP of consumer applications at Apple] had to deal with the Motorola team. He would come into our executive meetings, head in hand, saying, "I can't take these guys. They are not getting anything done. We can't get them to agree to anything, and even if they do, they can't implement it. We have to do it for them."

That was the point where Steve was like, "Fuck it. We have to figure out our own situation." Then it came down to, "Are we going to buy a cell phone company? Are we going to make our own?" The way we thought about it is, "We are not buying a mobile phone company and putting music on it. We are taking a computer and putting a phone with it."

***"YOU COULD DIAL NUMBERS WITH THE CLICK WHEEL — WE WENT BACK TO ROTARY PHONES."***

We started going down that line, and we said, "Okay, let's try. What can we do with the iPod?" So we made an iPod plus phone; it was the classic iPod with the wheel, and the phone would be a headset. You could talk into and listen to it, and you could dial numbers with the click wheel — we went back to rotary phones. We spent a lot of time working on it, but it did not work. That was one angle we were working on, and at the same time, we were doing video iPods.

We were trying to do full-screen iPods for video because we were like,

“Well, it’s great to have video, but it is a little postage stamp screen. Let’s see about making a virtual wheel and a single-touch touchscreen with a full-screen device.” Then, on the Mac side, they bought a company that Steve Hotelling [now senior manager, touch hardware at Apple] was part of. I don’t remember exactly what happened there, but it was bought and it had capacitive touchscreens for multi-touch.

### **FingerWorks was the name of the company.**

FingerWorks. That’s right. Thank you. The team there created this huge multi-touch Mac the size of a ping-pong table. It was a projector from the ceiling that projected the Mac interface, and all of the sensing technology was around the edge of this table. You could sit there and play with it, which I did, and it was cool.

Steve showed it to me and was like, “There is multi-touch technology. We are thinking about making a Mac with this.” We all said, “Wait a second. There are three different things here not working out. There is the iPod plus phone, but we think we know how to build a phone because we know the hardware guts of it. There is a full-screen iPod, but we know how to make a big screen iPod. Oh, and we now have this multi-touch thing that is not integrated yet.” There were no chips for it. It was all discreet. Logic was huge. “Can we make chips for this and make a screen that would fit on this?” Those were all the hardware pieces that came together.

Then, there were the software pieces. We had the iPod OS. I am being very, very nice to say it was an OS. It was not an OS, it was an embedded processing thing. It did just a couple things. We didn’t even try to get games on it. Games were downloadable, but they were not third-party. It was really difficult, but we made it work. Look, the iPod OS was a hack.

Two things happened on the software side. Jon Rubinstein [senior VP of the iPod division at Apple] and Steve Sakoman [hardware engineer and executive at Apple] at the time said, “Mac OS will never work on iPhone

because it is too big. So we are going to go off and build a new team to make an embedded Linux version of this next generation thing."

Then Avie Tevanian [chief software technology officer at Apple] said, "Oh, we are going to scale down Mac OS and make it work." I sat there in the middle between Avie and Jon as they were doing their software things. I am here with the team, looking at building the iPhone hardware processor, and these two guys are going to war with each other. Avie had all the resources. Jon only had a team of five to seven people, and was trying to say, "Okay, we are going to use Linux. It is going to be open-source and we are going to make it the right thing."

There was this kind of run, where they were both competing against each other. Steve was like, "We are going to see who wins." So they were fighting and everything else, while I am sitting here building the stuff that we can and getting diagnostics running. Then Jon decides to retire with Steve. I am now in charge and report to Steve. I also inherit all of Jon's projects, plus the iPod, and the Linux thing. I was like, "I do not want to be in this war. It is not a war I chose." So I said, "Over the next six weeks, we are going to hold a little competition to see which team can make the mark."

Avie had just retired as well, so it was Scott Forstall [SVP of iOS software at Apple] versus Steve Sakoman and the Linux team. Over time, there were questions about all of the different interoperations that needed to happen to make it fit on the little device like, "Can Mac OS get scaled down to this much flash memory and this much DRAM that is necessary?" Then, there was Linux scaling up and trying to get everything from scratch, asking, "Can you make an app environment? Can you make all the wireless pieces work?" It was literally from scratch because embedded Linux in 2005 was really just nascent. It was very tiny. It was bigger than the iPod OS but very tiny. Over those six to eight weeks, Scott and the various other people came together and were able to shrink down Mac OS, and they had so much more technology.

***"I CALLED UP STEVE AND I SAID, 'I AM GOING TO KILL THIS LINUX PROJECT.'"***

They even have tools. They had the whole app builder and a lot of engineers who knew it. It was clear to me that it was going to be able to fit, in some regard, on this device. It was a no-brainer decision. I called up Steve and I said, "I am going to kill this Linux project. We are going to take that team and work on software stacks for the lower-level stuff — communications, Wi-Fi, Bluetooth, touch, whatever. Then we are going to work on the phone with Scott and the other two engineers who are leading the other pieces of the puzzle." That's really what happened. Steve was cheering, "Thank God. The war is over." Jony [Ive, chief design officer at Apple] called me and said, "Steve is so happy. Thanks for ending the war." I get called out like, "There was this war between the two," and I was like, "I never started the war. I never lost the war."

**I ended the war.**

"I ended it." I hope the same thing happens in Ukraine soon. Like goddamnit, can we get over that war. It's fucking bullshit.

**You should get over there, Tony.**

Yeah, right.

**You just mentioned a lot of huge personalities. There's Scott Forstall, Jony Ive, Jon Rubinstein, and there is Tony Fadell in that mix.**

Sure. You've got to survive.

**These are huge personalities. Overseeing them all was Steve Jobs himself, also a huge personality. One of his legendary strengths was that he was able to manage such high performers, such driven people, such big personalities, and then produce great products out of it. I would say that approach is out of favor across the**



**industry now. Even in your book, you are like, “No assholes, please.”**

No, that is not what I said.

**That is what you said. Let me just finish the question, and then you can yell at me. [Laughs]**

I'm not yelling. [Laughs]

**You can tell me I'm wrong. [Laughs] Across the industry now, all of the executive teams are portrayed as fast friends. We do not hear about these massive interpersonal conflicts anymore. A lot of those folks have moved on to other things or they are investors now. I would just say that model of a team of rivals — where you have the big visionary leader and a bunch of high-powered executives, who are in competition with each other, with their projects — has fallen out of favor. I think we might be seeing less innovation for it. Is that what you see as well?**

To do things that are really differentiated, you need to have creative tension and creative conflict. If you don't, you will not get the better result. It becomes much more group think, where everybody is happy. I think at the time, it was because of Steve's personality. How can I say it this way? There were only so many dramas that you could cover in the news back in the early 2000s.

**I see.**

Steve was one of them. It was really media-driven. I know a lot of people who were or are at Meta/Facebook, and believe me, there is a lot of politics in that company. There is a ton of politics in Google. To think that there are no politics, especially when they are big companies, is BS. I just don't think the personalities are being covered as much as they used to be, because there is so much more news to cover. We have Elon. He is now the

Kardashians of the business, right?

**Yes. We call him the biggest celebrity we cover; that is how we think of him in our newsroom.**

The celebrity has just changed. You guys talk about it all the time. “Look at how often Elon’s management team is turned over. Now, that management team is somewhere else.” The story has just shifted. There is still drama at Apple, just less. Tim is still a personality in his own right, but he is very different from Steve.

It depends on the nature of the beast and the macro environment around it. I think you could pick any company and see it. There were a lot of people going crazy about the promotion changes at Facebook, or Meta, that happened over the last year. We also have all the sexual harassment stuff. Look at EA, [Activision, and Blizzard](#). There is just a lot more news to cover.

**I want to end on a view into the future, but I want to start rooted in Nest. We have talked a lot about other people’s decisions. I have always been curious about two acquisitions that you made at Nest; one was [Dropcam](#), a camera company, and the other was Revolv, a company that made a hub with radios in it that could connect to everything in your house. With Dropcam, the Nest Cam actually shipped, but publicly those founders were not happy.**

One founder. I would not say both founders, it was one founder.

**One founder was not happy. Revolv never shipped. Why did you make those acquisitions and what happened there?**

Revolv was about to go out of business. It is kind of an acqui-hire, in a lot of ways. We were like, “We are going to get all these different engineers and technology, and see what we can do with it.” We were trying to build a platform, not just another device. Revolv was just part of that acquisition, and it was cheap. It wasn’t that many people, maybe about 30.

With Dropcam that was just something Matt Rogers [Nest co-founder] wanted to do. Matt was like, “We have been saying we wanted to do cameras for years, let’s do it.” I said, “Make a bet. Go off and do it.”

So he went off and ran with the ship and brought the company in. We talked about it, but I wanted him to have his own thing. So he did that. No one forced the founders to sell. No one put them over a barrel and said they had to do this. We talked about the deal and they accepted it.

I’m sorry if there are sour grapes and one of them did not like what happened at the end, but hey, shit happens. Look at me. I’m no longer at Google or Alphabet, because shit happens. Go live your life. Business is business, and not everybody gets what they want.

**This is an important piece of the whole book. I think it is interesting to look at a different layer here. You wrote a lot in the book about Nest going to Google, and the Google corporate culture — you call them antibodies — rejecting Nest as a company, the cultures not meshing.**

There were antibodies at Apple when we were doing the iPod, too. Let’s be clear, there are antibodies in every large corporation.

**So Dropcam comes in. Do you think they perceived Nest as having antibodies to Dropcam?**

I really don’t know. I think there was a conflict of vision. I was screaming and yelling, “We need to do a doorbell cam! We have to!” They said it was the stupidest idea ever. “What? Everybody wants to see what is going on at the door.” They said it would not work because the camera is too low. “Guys, we need to make a doorbell cam,” and they still said no. “What? We are going to make one.” Finally, I just relented and said, “Okay, well what are we going to make instead that is better?”

At some point, I gave in when I should not have. Ultimately, the doorbell

camera finally happened, but it was just because they did not like that someone else was giving directions. I did not like what they were saying we needed to do at Google for Alphabet, for Nest. I said, "Screw it, I am not into this," and I got out, but I did not sit there and trash them all day long. I think I was very fair in the book, too. It is just two different ways of thinking. To go off and trash somebody because you don't like it, well, grow up.

**You made a big bet with Revolv — with Nest overall — on a very nascent technology at the time called Thread. There are a lot of radios in the world, but they don't talk to each other. There is this standard called Matter, which we cover on the Vergecast all the time. It is supposed to unite the smart home. This is a big bet for a startup to make on a technology that — 10 years later — still has nothing for consumers. How do you make that bet and where do you think things are now?**

I am very pleased with where Thread is and where Matter is. It used to be called Weave. It was Thread and Weave, and now it is Thread and Matter. Protocols — especially all the way up to application-level protocols and radios — are very difficult to do. I thought it was going to take seven years. We are now 10 years in, and going to get there in the next two. I am very proud of the work we did. I am very proud of what we did even as a small company, because we had the right vision. I got pushback all over Alphabet/Google, especially from the highest level, saying, "This is the stupidest thing ever. We do not need another radio, and we do not need another protocol."

**Meanwhile there is probably another group at Google developing a new radio standard.**

Yes, there was. It has finally come to light. It took a lot of time and I give all the credit to the team. After Matt and I left, they went on to make it happen, to make it real amongst many companies, including Apple and Amazon. These things take time. The first GSM mobiles — Global System

for Mobile Communications — born out of Europe took a lot of time too. SMS as well. The M1 processor took a lot of time. There was a vision at the beginning, and so be it. Again, that is what it takes. I am so proud of that work and I am so glad we are going to have a legacy beyond the Nest brand and products. We are going to actually have something that is fundamental, that is going to change the way products interact, just like Bluetooth or Wi-Fi. I am very proud of that work.

**When you are making that kind of investment, you're saying, "It's seven years out, but I have to ship this thermostat today and the next thermostat next year." How do you balance your thinking across those timelines? It seems like the hardest challenge to me.**

I remember this really clearly when Wi-Fi did not exist. There were three or four different Wi-Fi-like standards back in 2000. Lucent had the basic technology, and Apple threw in and said, "We are going to make Wi-Fi embedded in every single one of our products, even if people don't have internet access at home, even if they don't have a Wi-Fi base station. We are going to make sure all the endpoints have it built in, because one day we can turn it on and all of this stuff happens." It is the chicken and egg game.

That's the way I thought about Nest. I said, "All of our products must be connected." Even in the very first generation of the Nest thermostat, we put a Thread radio. It wasn't called Thread at the time, it was called [Zigbee](#), but it had the same wireless fundamentals at the lowest levels that we could add other software on top of.

I said, "All of our products have to connect together. Wi-Fi doesn't cut it, Bluetooth doesn't cut it. We need a new standard." Zigbee was still starting to happen in the home theater world. I said we needed to bet on something, and that's how it went. We had a long-term vision. Products like a thermostat stay on the wall for 10, 12, 15 years. You don't change it every 12 to 18 months like you do a cell phone. We shouldn't even be

buying cell phones at that rate either, given what we're doing to the planet. That said, these things are going to be in your house for a long time, so let's try to make them work together. Let's make sure that we have that customer relationship for a long time, and not make them go buy a new thermostat five years in. No one does that.

That was the long-term vision because we said we had a platform in the home, not just a product. The whole goal of Nest was to be a platform company. That was the reason why we ultimately sold to Google, because we knew that the platform company would take billions of dollars to build over time. No VC in their right mind would fund a company with two product lines, where products themselves were profitable unit-wise, but the overall company was not. We have this and now I am going to ask them for money to build a platform? There was no way I was going to get that. I was never going to be able to build the dream, the vision, the way we wanted to. That's why we ultimately had to sell.

**This seems like one of the central tensions of all the products that I talk about lately. You have a great piece of hardware, but then it is connected to a software stack, a platform, or a connectivity stack, and you have to just continually spend time fixing and improving that thing. Every hardware CEO I talk to — from John Deere to Sonos — comes on the show and they're like, "We actually spend more money on software than hardware," which is completely backwards to me.**

That's always the case.

***"HOW ON EARTH CAN ANY STARTUP SURVIVE WITH THAT HUGE WEIGHT OF PERPETUAL SOFTWARE COST, WITHOUT JUST SELLING OUT TO ONE OF THE GIANTS?"***

**Well, it's intuitively backwards, I would say. Now that it's revealed, it's become accepted wisdom. How on earth can any startup survive with that huge weight of perpetual software cost, without**

## **just selling out to one of the giants?**

It's a really good question.

Tesla is a perfect example. They were able to wrap a lot of software with a lot of metal and build a platform beyond the car. There was the software platform of the car, then there was the supercharging network, so on and so forth. There are those once-in-a-lifetime kind of situations that you go for and try to make happen. There are times when it does make a lot of sense, if it is differentiated.

With Nest, it was a slow-moving market. Whereas EVs, all of a sudden, boom, the whole world decided they need to make the transition. In a lot of ways Elon got lucky, but he did the right things. None of the suppliers would offer him anything. He had to build it because he had to. Nobody wanted to work with him because he was like, "Oh, who is this little company? You're not Ford or a Big Three." He had to out of necessity.

I think a lot of those companies that are born out of necessity and have to create these things could exist because they are doing something so different. That's the reason why we sold Nest. If we didn't sell, I don't think we would have been able to do it. We were already bumping up into those other companies.

Now, if the next car company comes in while Apple or Google has their own car, then that might not happen. I do think you can innovate other spaces that they are not innovating in. You can create other platforms outside, but you just have to not try to replicate or go against them. You have to go in a whole different direction that they're not looking at. We are doing that at a couple of our startups now; we are making new platforms that these guys are not even looking at. They don't understand the new hardware, the new software, the new markets, and the new pains that are opening up because of climate change or health.

I think that can happen. Just don't try to build a platform that you know

these guys are going to get interested in building sooner or later. They could fudge you out of existence even if they don't build it.

**Let me bring that back to Matter real quick. The idea of a standard like Bluetooth or Wi-Fi, is that you can build something and get all the benefits of the standard for free. You just connect to it, and everyone uses it. That is a great network effect.**

**I look at the smart home and I say, "Well, Amazon/Google/Apple just wants to own everything in my house." Matter is the thing that is supposed to break that. All this stuff can talk to each other, and my iPhone can connect to my Amazon Ring devices, or what have you. They all say they want to do it; they are all part of this board. I do not see why their incentives align such that it will actually happen. That seems like a really tenuous bet to me. Do you think that it is actually going to happen?**

I think these companies have realized that there are so many products that need to go into the home that they are not going to build them all. You have to treat them almost like an app ecosystem. There are certain apps on your iPhone that come from Apple, and there are a lot more that do not. You need to have everybody looking at all these different angles.

The hardware — like connected light switches and plugs — is not a great business, to tell you the truth. That is why we didn't do it in Nest. Frankly it sucks. So you say, "Do I really need to do this? No, I don't. I need to own the software and the user interface, but I don't need to connect to all that stuff."

Most of the products in the home-connected ecosystem are not great businesses unless you own the platform and the user interface. They are going to let all these things bloom. And you know what, what the hell? Let them use some kind of Matter-like protocol. Let them connect to me, because I can only evangelize so much.



We tried to make it so only this ecosystem can work with this ecosystem. You brought up Bluetooth. In certain cases, Bluetooth is not even used in AirPods, or the whole stack I should say. Over time, when it becomes a good business, we will individuate and make our own thing. In most cases like Wi-Fi, you can use all kinds of third-party stuff. I see the same thing happening with the home-connected products. “What is the standard? Let’s all go for it.” They are usually not great businesses for the platform companies. So okay, no big deal.

Now, let’s say there is some product that just blows everyone away that we did not realize. People will then start making additions to Matter, just like we saw with the browser with Microsoft or even Google — making their own proprietary extensions to that protocol. Sometimes those are successful, most times they fail. My hope is that Matter, just like Bluetooth, will continue to make tons of evolutionary changes and just keep up with what people need. It may not be the best thing ever. You might see things like the AirPods out there that will ultimately come back to Bluetooth or another standard. It’s just that war. For the most part, most of those products are bad businesses.

**There’s a light switch CEO out there right now just crying into his coffee.**

I talked to a lot of them because they wanted me to buy them. Back in the day — I won’t name names — there were a lot of them who said, “Please buy my company because you need smart light switches.”

**All right, I am going to tell our producer Creighton that we have to get a light switch CEO on the show. Really come at light switches, and why they are running a good business.**

***“THERE’S A LIGHT SWITCH CEO OUT THERE RIGHT NOW JUST CRYING INTO HIS COFFEE.”***

They are great businesses, but not for these large companies that make 60

or 80 points margin. These are 20 point margin companies, like making cables or docks.

**I have talked to those CEOs, and they are some of the scrappiest folks out there.**

I love them. Let me be clear, almost my whole marketing team at Nest came from Logitech, because I wanted scrappy. I wanted people who knew how to talk to customers and make those marketing dollars sweat. I didn't want Apple guys. I love the Apple guys, but they have resources beyond what a startup has and they think very differently. You have to think about your constraints and hire properly for those constraints. The Logitech team — Anton and Eric and Mateo and all these people — are amazing people and they did a scrappy, amazing job. Look at what Nest looked like when it came out. I think we did a really damn good job. I'm very proud of it.

**I have one on my wall here, it's great. Actually, the first generation ones I bought for my parents are still on their wall. Last question. You are an investor now; you have Future Shape, which is your investment company. What is the bleeding-edge technology that you are investing in or paying attention to that no one else sees?**

I cannot say the names of the companies except for one, Menlo Micro. Menlo Micro is a great one. They are creating the transistor moment for relays. Relays in the world — little electromechanical or solid-state relays — open and close contacts. When we electrify the world or we make the world fully wireless, you need these types of relays everywhere. It's called distribution for electricity, or RF. All of our cell phone towers have them in them. These guys have made a MEMS component that replaces relays, which have not been innovated since the 1880s. This is the first thing like that, and people have tried for 40 years to make this work. These guys finally cracked the code. These things are going to be everywhere. Again, just like that M1 processor, the initial processor, it is going to change everything over time. Same thing goes here, especially as we are moving to

more energy conservation and those kinds of things.

Menlo Micro making an electronic micro mechanical switch for power and RF distribution is huge. I cannot tell you how much. We waste so much energy today in these networks, and this gets rid of it and makes it much more reliable. It's crazy stuff.

We do diamonds without mines, like we're in Diamond Foundry. We are making diamond wafers for the next generation silicon. "Okay, you're making jewelry?" Well guess what? That wasn't the only thing we were making. We are making literally diamond semiconductor wafers, because that is the next generation of computing technology. These are the kind of crazy things that no one sees that we are investing in well ahead of the curve. Not the stuff that you are hearing about in the press, Meta this or NFT that.

**You're talking to the press. You have a big audience right now.**

Well, it's not like everyone right now is like, "Oh my God, look at how cool it is!" I think it's cool. The geeks think it's cool. One day when they see these things in their VR headsets that they are staring at all day, then they are going to go, "Oh, that's cool too."

**All right. Well, Tony, you have given me more time than you promised. I really appreciate it. I could talk to you about MEMS relays for another hour. I love talking to you every time we hang out. Thanks for coming on the show.**

Hey, let's have a drink and let's get kicked out of a bar again together. All right?

**I would love to, man.**

Come to Paris or I'll be in New York. Let's hang out.

**I said this before we started taping, but I will say it to the audience, it feels like throughout my life Tony Fadell has popped up and been like, “You should grow up a little bit, get married, have a kid.” So this is another one of those times, and we will have to have another one soon.**

Thank you. Thanks for having me on, and thanks for the 10 years of hard work you guys have been doing at *The Verge*. I still think you are the best news source for the technology world out there, and I am always reading it. You have really lived up to what you said you were going to do 10 years ago, so you should be very proud. Thank you.

**I appreciate that. ■**

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