Design Notes

with Matías Duarte

Liam Spradlin: Matías, welcome to Design Notes.

Matías Duarte: Thank you. Happy to be here.

Liam: Just as an introduction, I like to always start off the same way. I want to know what are you working on and why is it exciting to you?

Matías: I'm currently working on a couple different places, figuring out kind of what is the potential of gen AI across some various different teams at Google. And I've been spending a little bit of time now with the Pixel team and some of the close friends and partners in the search [inaudible 00:01:31] and Android world there, looking at how can gen AI help us do some of the things that we've always wanted to do but haven't had quite the technology ready to do it. Because the user problems are perennial, it's just a question of what can we do with them. And it's a very exciting moment, I think, to be able to tackle these same old problems with these new techniques.

Liam: You said something that provoked another question that I can't pass up, which is that the user problems are perennial, we have the same old problems. I feel like I've seen a lot of debate recently about how many solved problems there

really are in interface design and what are the remaining ones. Tell me about the ones that you think are perennial.

Matías: People's lives are complicated. They want to get things done, they want to stay on top of things, they want to stay connected. These are kind of the perennial needs or perennial problems, if you will. And I think we've got some really great solutions that we've come up with in the past, but we've always wanted to do more and now it looks like we can do more.

Liam: Okay. Speaking of the past, I want to know a little bit about the journey that led you here to where you are now in your career.

Matías: Sure. Which part of it? It's been a long journey. It's been a long and winding road.

Liam: I think that's kind of why I like to ask this question. I want to hear where it wound and what maybe was unexpected or what are the turns that you think are particularly noteworthy?

Matías: Okay. Well, I guess I'll give you the 10,000-foot overview of the career journey, which started not in user interface design, UX design of consumer products at all, but started in video games, which is what I spent six or seven years out of college doing, and then realizing just how tough of an industry that was. At the beginning of the dot-com boom, I realized, "Oh gosh, all my friends, they're making all this money doing web consulting. I know how to make websites,

let's go do that." So my journey started with a twist, if you will. It was let's go do something a little different than what we've been doing before. And from there, I ended up discovering the consumer electronic space because I went to work for Danger, company was also started by Andy Rubin, who later started Android, where we worked on the T-Mobile Sidekick, and that was kind of an early cellphone slash mini computer. But that kind of got me into the software and consumer electronics industry as something deeper than websites for content, but really into applications and operating system designs.

I think after Danger, which I was very proud of all the work the whole team did there. Because we were doing something that was novel, yes, because we had these devices that were bringing together kind of the best of the web and messaging in a way that other devices didn't do that at all, or if they did, they were extremely, extremely expensive, but we made them really accessible, not just in price point, but also in user interface. And so that was kind of the spark or the beginning of rolling down this hill and just being like, okay, this is really great. Helping people take advantage of the technology, bringing the technology into places that it hadn't been before, but again, in a way that was really making it accessible to people who otherwise wouldn't have had it.

So from there, I went to LA, worked at Helio. Then from there I went to Palm and worked on WebOS. And after that, I came to Google. I worked on Android for a little while. And inside Android, as you know, we eventually got around to

working together with the rest of the company in launching Material Design in 2014. And that was another big twist because from working on Android where the primary focus was the phones, the operating system, the platforms of tablets, watches, automobiles, et cetera, now there was this opportunity to focus on the design system for the ecosystem and for the company. So I left the Android team, founded the Material Design team, and did that for a little while.

Liam: That's a perfect destination for us to pause at because the impetus for our conversation today is the fact that Material Design is now 10 years old. So that's already, in terms of-

Matías: This podcast is all about making me feel old, between Sidekick and Material Design, I get it.

Liam: It's a celebration.

Matías: A celebration, yeah.

Liam: I'm sure there are many more winds to come. But yeah, 10 years, in terms of technology and in terms of the digital interface itself, I think is a pretty long time. I want to dive in a little bit to kind of the then and now. What made Material Design such a turn? What was happening with digital interfaces back in 2014 and the years leading up to it and how do you think about that compared to now?

Matías: Yeah, what a good question. Everything was extremely different, but of course, also very similar. Some of the ways

which it was really, really different is first off, Google as a company didn't really have a unified design system at the time. So we had kind of a look and feel that was working on the web, we had what we were doing on Android, we had different opinions of how we would show up on different platforms. So that was a big contrast from where we are today, where the company has really come together and done what at the time seemed like a pipe dream of making something that is really coherent and cohesive without making it all identical or shoehorned or straight jacketed. It took us a long time to figure that out, even after 2014, many evolutions of material and extensions and working with other teams. But back then, that was a dream. We had nothing like that. So it's a very fragmented landscape from design inside the company. It's also a very fragmented landscape for the design experiences in the Android ecosystem.

We had a lot of developers that were not updating their app from much, much older generations of Android, that were looking extremely stale, let's say. We had developers that were porting their apps from other platforms without really care for the conventions of what an Android ecosystem would be. So that was also a really big difference. Generally, the craft and the refinement of user interface designs back then was also a lot less mature. Things were still very loud, still very simple. We're kind of just coming off of the heyday of skeuomorphism. And we were actually at an inflection point in higher resolution displays that were just starting to come into the market. The higher end devices had higher resolution displays. There were a lot of devices that still had

lower resolution displays. I think it had only been a couple of years before that we'd updated our typefaces, our default system typefaces, to take advantage of what the flagship phones high-res displays wanted to use. So yeah, there was just a complete landscape that was very different than the world is today.

Liam: Yeah. I want to pick up on this point about how the design and the capabilities of the hardware were and to some extent still are related because I think back then the technology of especially mobile devices was still getting such major updates year over year that really brought capabilities like higher resolution, font rendering, the ability eventually to build in a live conceptual light source. How did that affect the way that the system took shape?

Matías: It's a good question. I do feel like we have reached a bit of a plateau in terms of capabilities, where everything now is this ultra-high resolution where you're no longer worried about pixels, you can really worry about the shape and the gesture and increasing the texture of things. So that was a big unlock that happened then and there hasn't been anything like that recently. We've reached the saturation of now where everything is very high-res, everything can be high frame rate, a lot of color depth, great contrast, great legibility in different lighting environments. Generally, the processors are fast enough so that you can embrace animation. The systems are smooth and responsive enough. So there's a lot of things that back then were just brand new and were unlocking possibilities that have now kind of become a status quo. And there's not new frontiers of kind

of human perception to unlock in the same way.

One of the things I like to talk about Material Design in the original version was we're finally able to render things on the screen in a way that are analogous and sophistication to how we would do something with print. Where you could have very clean, high resolution printing. You're not worried about the pixels, you're not worried about the screen printing, you're just worried about what's the color. Or you could, what's the typeface doing? Or you could do things with die cuts and print or spot varnish or something like that. And in 2014, that was brand new. Just having that kind of richness of a palette was brand new.

And I think there's frontiers like that yet to come, but they're nowhere near. Like the ability to do, something everybody's wanted to do this, I think I've seen for decades, where it's let's have your devices be more responsive to the environment around them and do dynamic real time lighting or surface effects, respond to the ambient light sources. All these kinds of things, respond to the gaze, and we just don't have the battery overhead to do that kind of processing in real time yet. Probably will at some point, but that's just not there yet. Stereoscopic displays, things like that, maybe augmented reality, that's another similar kind of frontier. Again, not quite there yet. So we are living in this period, which is still the same period that started in 2014 to now, which is like we finally have the richness of a whole kind of range of human perception, but we don't have any new ones to unlock yet. Those are still on the horizon. It's going to be a new moment to come, but it's not here yet.

Liam: My feeling right now is that having unlocked all of the primary perceptive capabilities that we can for now and with the idea of systematizing design and systematizing the interface, having caught on throughout the industry, that we're at a point where we're starting to also examine the subjective qualities of the interface and some of the impact that using the interface has on folks and their relationships to their devices. I'm interested in how you might think about that and also maybe, yeah, your beliefs in general about how all of that progress has influenced the way folks use the design.

Matías: Yeah, 100%. I completely agree with that. If it wasn't clear from earlier, I feel like we spent that early period just being really satisfied. It's like, "Oh, now we have a mature toolkit," and it was great and we made everything good up to a certain level. But one of the big impetuses behind Material You, which now is a couple years old, as an extension and evolution of the material system was like, okay, now that we can render anything that people will perceive with that level of quality and craft that you might have in print or in industrial design or something else, the question now becomes what should we render. And I think that's actually the most interesting frontier and actually the frontier where it starts to intersect with some of this potential of generative AI as well.

Liam: Yeah, my mind is racing at the question of what should we render because should itself is a deep pool to dive into.

Matías: Right? I think I have opinions there and they kind of start with that manifesto that we came up with for Material You, where we were looking for an antidote to the kind of modernist status quo, which I think we were all kind of instinctively chafing under and we were looking for how can we have something that is more human, more expressive, more emotive? How can we lean into that? Can we make a design system that embraces some of that? And I think that's the beginning of unpacking that question. And then ultimately, the end of that is can you have a design and a design system that is really radically personal, radically accessible? So we are able to craft things not just for sets of people or the lowest common denominator the way that we craft things today, but where we can really craft things down to the individual.

One of the provocations behind Material You and when we started to talk about personalization, we had that idea of why can't we have a designer, a single designer for every one of our audience, for every user, every customer. Well, if we can't do that, literally how can we give a little bit of that taste, a bit of that responsiveness, a bit of that co-creation? And as we start to look at now, okay, what can gen AI do as part of the design story, it becomes even more clear that we can go much, much further. We can bring much, much more radical accessibility, much, much more radical personalization. That's the part that really, really excites me.

Liam: Yeah, because I guess it's coming closer to the idea of having a designer for every "user" in the sense that we can't feasibly as humans have the conversational exchange that

would be required to really make something personal for every person, right?

Matías: Yeah. Yeah, absolutely. And it doesn't have to be conversational either. I think that's one of the lovely things that we did on the Android personalization with the system themes is that we were having a non-verbal conversation. We were picking up on what you were putting down as a user when you select a wallpaper, then we're able to respond to that and be like, "Okay, great, you picked that and now we're going to bring these other things and put them around it." Maybe it's a little bit working the way maybe decorators or tailors or fashion consultants would work where it's a creative exercise, but it's co-created with the client and that I think is just such a fertile ground of possibility, but also to me just feels like really, really disruptive of the status quo of, okay, one size fits all, we know what technology is and what technology looks like. I'm kind of like, "I don't know. I don't know. What do you want it to look like? What actually works for you?" That-

Liam: Yeah. It's really striking to think back to the statement of what should we render, the implication being that we now have the power to render whatever we should and that the capability of the technology transcends the ethos, if I may, of mass production, that people's experiences of lives could be improved by all getting the same chair or whatever the case may be. That actually we can move beyond that and say we are operating at scale, but at the same time, it's collaborative, they're picking up, like you said, in the same way that a tailor would, not just what you're explicitly

expressing with language, which could be a course tool, but also the vibe.

Matías: That's right. Yeah, that's exactly right. If we can move, mass production is, again, a thing about accessibility in my mind. It allows us to do something and get it to a lot of people. Something that's beautiful, something that's affordable. Now we're at the point where it's like, okay, well what if it's mass and personal? Mass personalization, what if we can get it? We can meet people's needs in ways that are really, really intimate and really, really nuanced, but not making it this esoteric, hard to access, you have to... In reality, even our software experiences are so much a part of our lives. They're a window into our worlds. And there's no person on the planet who is actually rich enough to tailor their user interfaces to the way they want, that they can hire a team of designers and create the software that they just want. It's still such a big burden to make software that it really does boil down to these lowest common denominator experiences.

And so if you think about, it's basically the entire world. Typically, we think about people who are being left out as being these small percentages, but it's really, when it comes to user interface designs, the number of people who we constantly leave on the sidelines, I think it's just heartbreakingly large. And I think that's the big transformation potential in terms of impact, is really being able to bring a diversity of experience. Everything else has such a huge diversity of experience. You look at furniture, you look at clothing, you look at entertainment media, you

look at podcasts, people have so many choices and there's things that are fit and suited to them. And these digital software experiences, gosh, they're so important and users have no choice and no control. That paradox is like, oh my gosh, this is a real problem. So this is the thing that I'm super passionate about. I think this is one of the most important things that we as designers and tech can be working on.

Liam: Absolutely. Yeah. I want to know how you've thought about this over the course of material design's history, the way that not just the software but the design system itself is involved in or mediating our experiences, not just of software, but also of life.

Matías: Yeah. I think the initial Material Design, the 2014 Material Design V1, I think we were so overwhelmed by all those other problems that we were talking about earlier, I don't think we realized the impact that we would have in terms of constraining things or homogenizing things. We were actually completely focused on the chaos and the lack of predictability and the lack of structure. But by the second version of Material Design, I think we started to really feel these hints, where we realized, "Hey, our ecosystem isn't as diverse and as vibrant and as expressive as we wanted it to be." And so we started to think about expression on the part of the product creators, on the part of the developers. And that's important, but even then, we didn't have our eye on our audience, on our users. And so I think you had to kind of go through it in steps, like peeling this onion and realizing, "Okay, there's more expression here and now we see this

new need, this new unmet need."

I think also it reflects maybe a little bit of how I've thought about just what is design, what's it for and how do you think about it. I think early in my career, certainly at the time of the original version of Material, I was very focused on the needs of the work, the work having integrity. The idea of this is such a strong North Star when you just focus on how does the thing cohere and hang together and what does the work itself demand. Which is good, but I think it can sometimes lead you astray. And I realized that design, the work itself, it can't just be about the work. It has to be about the audience and the audience's needs. So for a long time, for many years then, I would just anchor on this idea of, okay, design is about, it's always got to be anchored on the audience, need the user problem. It's a type of problem solving. Everything else, if you're divorced from that problem solving, it's art. Which I also think is true, but again, it's still just kind of part of the story.

And now I've gotten to appreciate a little bit more that there's this interesting dialogue that happens between the needs of the audience and what the designer brings to the work, what the designer brings to the work. Where if you're just meeting the needs of the problem, maybe that's just prosaic, maybe that's just the most prosaic design. But the best design kind of pushes the problem a little further. It doesn't tip over so far into being this art that is ignoring the needs of the audience and is just about its own needs, but there's this tension, there's this dialogue of how much more can you bring than strictly what the problem demands. And

that's where the magic happens, where the best design brings so much more while still completely satisfying the problem. Not detracting in the least from the problem itself, but bringing more.

Liam: Yeah.

Matías: And that's where I think what we were able to do with Material You kind of captured some of that, of realizing, okay, we've done the prosaic solutions to the problem and it feels kind of empty, it feels like we've lost where design magic can happen. I don't know if that makes any sense.

Liam: I think it makes perfect sense and I wish that we could use that language more often. And I should be careful when I say we, but I just mean as an industry, rather than appealing to merely the problem or framing everything as a problem and its solution as something that is reliably delightful because there's a full spectrum of human emotion that I think can, and would I say should, I'm not sure, but can definitely be evoked through design.

Matías: Yeah. It's very tough because again, in our business, in our product making business, it all comes down to these stack ranks of needs and where are you going to draw the line. And it's in that practice that you exclude people and you exclude needs. And so you'll focus only on these most prosaic needs and you'll forget some of these other human needs, which some of them are emotional, some of them are different types of accessibility needs. There's a whole range of these other needs that if we just focus on it as a

problem and what is that bare minimum, what are our priority zeros for the problem, then we don't leave room for that magic for us to say, "Hey, people have these other needs, they have these other dimensions and we can do some of that as well." And we don't know what it's going to be, but that's where we're going to surprise, where we're going to delight, where we're going to bring in magic.

Liam: Yeah. And I see that as, like you said, bringing something more to the table than just a solution to a problem, extending your own subjectivity so that it reaches through to the person on the other side. And I'm interested because I know folks listening are interested in probably more practical advice for their everyday practice too, how you manage to do that. What does that look like working at a place like Google with so many other people to make that subjective extension, to try to reach out to every possible person who's going to be on the other side of the interaction?

Matías: Well, I think there's almost two questions there. One is how do we do it? And then the other one is how do we do it at scale? I think how do we do it, I think that is the magic of design and the art of design is striking that balance. And you can't discuss it, you have to draw it, and then you have to look at it and be delighted and surprised by what people have drawn and then use the judgment that you have and kind of dial that in. Where is it not too far? Where has it gone not far enough? I always like to, as a practical practice, people who work with me will be like, "Oh my gosh, he's saying that again," but I always feel like it's better to draw

everything too far, draw it to 11, so you know where you have to pull it back. It's better to have drawn the thing that goes too far and then be really thoughtful about how you pull it back.

And I think that's kind of like the proven best practice for how we do it. But that's not at scale. That's not yet for everybody. That's not yet embracing this kind of radical personalization, radical accessibility. And I think the way we're going to get to scale is, again, using gen AI as part of that dialogue, where we can have models that can take that intention and that judgment that we are having, that we do so difficultly for one population, one lowest common denominator, and have those help be kind of our last mile of rendering and interacting with the needs of every individual out there. And it can be, I don't want people to take this the wrong way and think we're imagining like, "Yeah, there's going to be a little user interface designer AI inside every phone." Maybe someday.

But I think it's going to start with things that are more like what we did with the wallpaper system, where we can identify places where we would design things within a certain range, dial that in for a certain range, and now we can make it a system. The color palette development system for Material You, the whole color palette system with its tonalities and its contrast levels, that's a system. And gen AI is going to enable us to make more things into systems. And we're going to make design judgment now, not about the end product, but we're going to have design judgment about the system. How do we feel about the range of things that

the system can produce? How do we feel about the internal structures within the system? What is the framework that that system operates under?

Liam: Yeah, I am glad that you said that because I think something that is often missed in the conversation about generative AI with regard to producing interface is that if you ask an AI to create a shopping cart screen, it can do that, but it lacks a subjective viewpoint. And I think my instinct is that in order to make things radically personal through the processes that we have at Google, you need to figure out what makes the work personal to you and turn that into a system. Is that right?

Matías: Yeah. And I think we need to find, so I think that's 100% true. I think it's about creating both a way that the system can bring, what we were talking about earlier, that magic, that bit, that is beyond the bare minimum of solving the problem, how can instead of having one spark of magic, can we craft systems that can create a range of different classes of magic in a way that is truly responsive to the range of people who are going to encounter it and kind of fit those two together. And so I think it's really easy to get kind of hung up in this conversation of AI about what's it going to mean for us as product creators and for us as designers, but I think it's a better thing to focus on. It's a better North Star to focus on what does it mean for the users.

If you can think of, okay, if the outcome for the users is these sets of things, but those sets of things are not just that it's cheap or that it's there and it didn't exist at all

because you can generate anything, but if you think that what we want for the users is something that is really bespoke, that is really tailored, and that also pushes them, gives them a little bit of that extra that they didn't need or that they didn't know that they needed or they didn't even know that they wanted, okay, if we focus on that, then we start to see how it's okay, great. We couldn't do this for everybody without finding ways to bring gen AI into it. But also great, now I see where our role is in that partnership with the user and where the gen AI is just a tool that we're both going to be using.

The gen AI is a tool that we are going to be preparing and setting up and structuring with our point of view about that magic and it's going to be the tool that the user is relying on to deliver that for them. I don't know, I find that that's helpful as the framework because it seems now it kind of breaks it down into this more concrete problem of I'm actually excited about that, I'm excited about that future. That doesn't feel like a threatening future, it feels like a, "Wow, how is that going to work future?" And then I can start to break it down into what are the problems? How would we tackle it? It's like we can't do that for everything, but maybe we could start in something smaller. Maybe we could start with color systems. Could our color systems be more expressive or more responsive or understand more?

So for example, if we took the framework of the color system results that we need to have today, we know the structure provides accessibility and provides something that all the API's need. How can we have gen AI not generate

something from scratch, but help mediate to be a better set of inputs into that color system. Because right now, the inputs into the color system are like, "Well, we do some understanding of a wallpaper," that's already actually a little bit of gen AI right there. What if it was richer? What if it included other inputs, included understanding more things about a user? It included having a dialogue with a user, if that's what the user wants. All of that just becomes this potential. But the color system is still there, that's still this thing that we've crafted too. It's like, okay, now we're breaking this down and it becomes very tractable. It's like, what are the other things that are like that? What are the systems that we could create that we haven't created yet?

Liam: I normally like to close the conversation on a question about the future, but I feel that we have so comprehensively unpacked the future, that question has to be a little more-

Matías: We just went there. Sorry.

Liam: Yeah. It has to be a little more sophisticated than usual. But I want to start by asking, given this vision for how the interface is likely to evolve, what should designers be focusing on right now? How would you approach the first of these many steps?

Matías: I think there's the two things that are really important to focus on. Maybe if I could try to summarize or pull back, it's like these two big ideas that I think are the most exciting ones right now. And the first one is the role of designers as adding that extra, not losing sight of what is the extra that

design brings to the problem. So really understanding that, having a mental framework for that, understanding where and what kind of extra is it bringing. Is it more comfortable because it's more like you? Is it giving you something unexpected? Is it giving you something emotional? So being very intentional about that on one hand.

And on the other hand, really thinking about, okay, where are the opportunities to design at a higher order of abstraction where we're creating systems? Systems that aren't just about problem solving systems, but systems that include this serendipity and magic nudge that design brings to it. I think it's those two things hand in hand that's where, at least that's where I'm spending all my time thinking about, so that's of course where I tell everybody else should be thinking about that too.

Liam: And do you feel constrained at all by the tools that we use as designers right now?

Matías: Oh gosh. In the kindest possible way, I'd say yes, very much so. The design tools we have today are incredible. Right now, it feels like we're in a golden age of design tools. Things couldn't be better, more collaborative, real time, accessible everywhere, such rich tools that understand problems that are only germane to user interface design, like layout rules and repeating elements and all these things that just blow my mind. It's so amazing, it's so wonderful. And yet, the tools are so locked into so many assumptions about kind of today's status quo, the status quo that we created, that we helped unlock with Material 2014, this kind of default

assumption about these very simple, very unexpressive, very modernist-centered layouts and aesthetics. All of our tools just want to do that. And the thing about the digital interfaces is that they can be anything. They really can be anything. The constraints are all in the perception and the human mind.

One of my biggest regrets with where we landed with Material Design was we just loved the idea of creating order by telling people to design in this material, but it was always supposed to be a magic material. It was always supposed to be a magic paper where it could do anything just if we just needed to have some degree of order, some degree of coherence. It's like when you read a science fiction or a fantasy story, the magic has to have rules otherwise there's no drama, there's no way that the brain can make sense of it. Material Design should have been imaginary design, but it wasn't. We solved actually our most pressing problem, which is we brought quite a bit of order and beauty to the chaos, but we've left so much outside out in the darkness, so much expressiveness, so much potential for what all of these little pixels can do if they're coordinated in the right ways.

And we see flashes of it here and there, and I'm really excited about what teams are doing and what I see people draw. But the tools, all of our workflows and the tools that we design in, as you know, they're not set up for that kind of expressiveness, that kind of funkiness, wonkiness, it's just not how this stuff wants to work.

Liam: Yeah. To bring it back, designers are ourselves subject to perennial user problems.

Matías: We sure are.

Liam: All right. Thanks again for joining me, Matías. This has been a really cool conversation.

Matías: Yeah, my pleasure. Always fun to reminisce about this stuff.

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