Defending a Patent: Lessons from Hal Philipp's Entrepreneurial Journey

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Announcer:

Greetings, and welcome to Mind Matters News. This week, we're continuing our interview with Hal Philipp, inventor of the modern touchscreen. Previously, we covered several of Hal's earlier inventions, including the creation of the charge transfer sensor.

Today, we'll be hearing about how the sensor led to touchscreens as we know them today and what happened in their aftermath. Joining us this week, we have Bradley Norris, director of the technology entrepreneurship program at Baylor University, as well as your trusty host, Robert J. Marks. Enjoy.

Robert J. Marks:

So let me ask you, you were recognized by the Queen of England for your business.

Hal Philipp:

That came much later.

Robert J. Marks:

That was later?

Hal Philipp:

That was much later. That was before I sold the company.

Robert J. Marks:

Before you sold the company?

Hal Philipp:

Yeah.

Robert J. Marks:

So you were much bigger than what you were doing now.

So is it time to go into the touchscreen?

Hal Philipp:

No.

Robert J. Marks:

No, okay. What's next?

Hal Philipp:

So up until this point in time, I was doing single point touch sensors, so single channel, so your touch, or proximity, single channel stuff.

But I soon realized you could expand it into a linear sensor, so you could do a stripe sensor, so you'd get analog output. So you'd have two sensors on two ends of a conductive strip, or some geometric set of electrodes, and you get a ratio of the two endpoints. And so, I did that and produced a chip that did that.

And then, found out that you can do a scroll wheel, like on the iPod, so you could wrap it into a circle so you can do that. That's three channels of sensing. And then, I developed, for General Electric in Louisville, Kentucky, they approached me around 1999, they wanted to have touch controls for their Monogram family of appliances, and it was 60 touch buttons on an oven. That was a lot of chips and it wasn't really economical to expand it to that many...

Robert J. Marks:

What were they trying to do with all these chips? They were trying to-

Hal Philipp:

Controls on the stove or whatever it was, the microwave, whatever it was.

Bradley Norris:

The 20 or 30 controls? And then-

Hal Philipp:

Yeah. Well, there's a keypad. There's all the cook modes and all this stuff.

Bradley Norris:

Typical stuff.

Hal Philipp:

They got up towards 60 on some of these.

Robert J. Marks:

Wow.

Hal Philipp:

Huge numbers of buttons.

Robert J. Marks:

It sounds like something they called-

Hal Philipp:

Custom labeled mode buttons.

Robert J. Marks:

They call it feature creep, you just get too many features.

Hal Philipp:

So the question was how do you do that with the current technology that it had? And I knew that I couldn't commercially adapt the technology I had to this kind of application. It was a lot of channels of sensing.

So I tried to figure out how to make it into a matrix. In a matrix, you have cross wires like this, so you have electrodes that are emitting pulses sequentially. So pulse this one, then this one, this one, this one. And then you have other electrodes that cross, they don't touch, but there's a dielectric in between, and then you're receiving the charge through a dielectric.

So you have like a plastic layer, a glass layer in between, and you're receiving charge on these electrodes. And you can differentiate all 16. In this case, four by four. You can differentiate all 16 nodes independently. They're completely independent channels. There's no crosstalk at all.

And so that was the basis for the General Electric contract. And that was around 1999. And so I developed that technology and in fact, it was very cheap to produce again. The external circuitry was very minimal, and that was a very successful contract.

When I did that contract, I then realized that once you had this XY matrix of sensors, you could interpolate between the two of them, and that gives you a touch screen. So you just had to have them in a regular arrangement, and you got the individual channel outputs from every crossing. Every crossing generates an output, even just eight bits is enough.

And then you take the next channels around it. And by using ratio-metric analysis, you can figure out where the finger is touching on a two-dimensional surface. So that became another set of patents.

Robert J. Marks:

Is that basically the same sort of touch screen we use today?

Hal Philipp:

It is.

Robert J. Marks:

It is.

Hal Philipp:

They're all based on the same principle.

Robert J. Marks:

But your patent is expired.

Hal Philipp:

Yeah, sadly. But I don't get any money from it now, even since I sold the company. That's another question.

Robert J. Marks:

What surprises me about you, Hal, is that once your patent expires, you don't keep track of the technology anymore. You just...

Hal Philipp:

No, I let go.

Robert J. Marks:

You let go and-

Hal Philipp:

I let go.

Robert J. Marks:

... you let go and you go on to the next thing. So it's always about the adventure of the next step.

Hal Philipp:

Yeah. You want to talk about Apple Next?

Robert J. Marks:

Talk about Apple, yes. Let's talk about Apple. One of the things that Hal taught me is that when you get a patent, a patent is only a license to sue. Nobody else is going to defend your patent at all. You have to. So it's a license to sue.

Hal Philipp:

Correct.

Robert J. Marks:

This is the parable that goes with that saying.

Hal Philipp:

Correct. So if somebody steals your car, you call the police. If somebody steals your patent, you're stuck. You have to pay money, a lot of money to defend your patent. It's just the way the world works.

And that's the dark side of inventions, because if you have a really great idea, people will steal your patent. It's guaranteed. Don't think otherwise. It's absolutely guaranteed. And if you can't defend your patent, if you don't have the resources to defend your patent, the rest of the world will get the message that you're a soft touch, that you're weak.

Somebody stole it already. You didn't do anything about it. So everybody's going to steal it, and then you have nothing left. That's the real world. That's the real world. A patent is a license to sue. That's all it is.

Robert J. Marks:

So you had license to Motorola, Samsung, GE, and Apple, but then something happened with Apple that raised your eyebrows. Could you go into that?

Hal Philipp:

Yeah. Well, apple was one of the first licenses I did with this technology, one of the very first. The other cases with the capacitor, I was really selling, except for the automatic faucets, of course. But in the case of Apple, I was just from a marketing perspective, I was a one-man band.

I had a very small company around the year 2000, and I had five people at that point in time. So I was doing my own sales and marketing, and I was writing articles, and so the principle means of marketing was actually writing articles for trade journals. So I'm pretty good at writing, and so least I think I am.

So I'd write an article about an application of one of my patents. I would do the drawings. I would have a professional photographer do a very nice photograph, and I would submit it to, for example, Sensors Magazine or Appliance Magazine or any of these commercial trade magazines. And every time I would get on the front cover, the front cover, not buried on page 65, it was the front cover.

Why? Because I had a great photograph. That's it. It was a beautiful abstract. The photographer I hired was amazing. This is all pre-digital stuff, so this is late '90s and with film and everything, but did a great job. And I submitted those and I got on the cover every time. I have so many covers and magazines, I stopped counting.

Robert J. Marks:

Wow.

Hal Philipp:

And one of those magazines was read by an engineer at Apple. His name was Chris Krah, and he was working on the G4 Power Cube, which is around the year 2000. I don't don't know if somebody remember that. It was a box of cube, passive radiator. Didn't have a fan of it. It was one of Jony Ive's creations, I guess.

And it had a capacitive touch button on it, because Steve Jobs had decreed that they would use capacitive touch. It was sexy. It was cool. The problem as Chris Krah described to me was that their capacitive sensor cost about $35 and didn't work worth a damn.

So when your phone went off next to the computer, it would switch it on and off. If your cat went by, it would switch it on and off. And so not very reliable and horribly expensive. Chris Krah saw my chip. I was selling through distribution at the time, through DigiKey, which some of you may know, and it was a catalog item along with a bunch of other derivations that I had going through.

He bought one and he stuck it in the computer, and it worked first time, and the cost was about a 1.50 or something like that. So that's what the retail price was in small quantities. And so I got a call from him and an invite to come to Cupertino. So I did.

I went out there and had a conversation, and it turned out that G-4 was quickly discontinued, so I didn't get in there, but Chris Krah went over to the monitors group, and it was decreed then that they would put my chip into their monitors. So the desktop monitors, and that was just the single point sensor. It was nothing sexy, nothing fancy, just on/off, end menu functions.

So the senior buyer for Apple that was involved in this transaction called me and said that they couldn't possibly do business with my company, which was Quantum Research Group, by the way, if you want to look it up, couldn't possibly do business with us because we're too small. We had maybe eight people or something, and it was a liability for them. If we went bankrupt, then the supply chain would be disrupted, and you just can't do that. So that's a lesson in business right there.

You have to find an alternative means to market if you're too small sometimes. In this case, I said, "Well, how about licensing it?" Because I knew license models. So I said, "Let's license it." They said, "Yeah, we do licensing all the, we'll license it." So I wrote a license agreement with Apple.

So it went into their monitors, and that ran for, I think five years or so. Microchip was selling the actual chips themselves directly to the suppliers in Japan and Korea. And I was getting royalties. My company was getting royalties, which was very cool.

They got very angry with me though, because I refused to sign the terms and conditions that Apple laid out. They first signed the contract, the license agreement. Then they presented me the Ts and Cs after that, and I read the-

Robert J. Marks:

The Ts and Cs?

Hal Philipp:

... terms and conditions-

Robert J. Marks:

Terms and conditions.

Hal Philipp:

And I read the terms and conditions, said that I will not work with any competitor for Apple for the rest of my career. And I said, "No, I don't think so. Thank you very much." And that made them very angry.

Bradley Norris:

Can we go back to the, they rejected you as a direct supplier, but were okay with licensing?

Hal Philipp:

Yes. Because the supplier was then Microchip directly, which is fortune-500-type company.

Bradley Norris:

Right. So did they specify the parameter on which they rejected you? I know supplier evaluation, supplier qualification is a big issue in supply chain management, operations management.

Hal Philipp:

Too small. That's it.

Bradley Norris:

Just too small.

Hal Philipp:

Just too small. They just wouldn't work with a tiny micro size company. That's it.

Bradley Norris:

All right. But they were comfortable with the license.

Hal Philipp:

Absolutely. And so in my pack of tricks was licensing agreements.

Bradley Norris:

So how did you get past their terms and conditions-

Hal Philipp:

I didn't.

Bradley Norris:

... that were unrealistic?

Hal Philipp:

I just didn't sign them.

Bradley Norris:

Oh, okay.

Hal Philipp:

And the manager was fired the next week. Because he screwed up. He should have presented the Ts and Cs first.

Robert J. Marks:

I see.

Hal Philipp:

I know his name. I'm not going to repeat it here.

Robert J. Marks:

But his initials were, no, don't go there.

Hal Philipp:

That was really something. And so I guess Steve Jobs got really angry with me. So that colored the rest of the relationship with Apple, not in a good way, but I didn't know it had gotten that bad.

So when I developed the touchscreen, I took some models to Cupertino, and I met with Jony Ive and a team of engineers and managers again in a conference room about this size. And they oohed and awed over it. And I had a private meeting with Jony Ive afterwards and all that stuff. And I said, "We'll get back to you." They never did. They never did.

And the rest is history. They stole everything from that point on, everything. There wasn't a patent that I had that they probably didn't steal in some fashion in terms of capacitive sensing at that point in time.

Robert J. Marks:

So that's the reputation for some of the larger companies. They use your technology without considering the ownership at all. And then if you get cross with them, you either go to court and if you don't have the resources, you lose your shirt.

If you do have the resources, well, the legal thing plays out and sometimes they come to you and say, "We'll buy your company. We'll give you a few million dollars and we'll just buy your company. And to heck with you." So elaborate on that and what Apple did and what you did in response to that, and the idea that patents give you a license to sue.

Hal Philipp:

Sure. So once I realized what they were doing, it was again a survival thing that kicked in. Either I sued them or I would lose the company eventually. It's just a matter of time.

Because everybody in the industry knew what was going on. They all took apart the Apple products. And I got calls from people. "So you got to deal with Apple"? "No, actually I don't." Because they knew whose tech was in there.

So Motorola, for example, I quickly licensed Motorola when they were still in the handset business. So they got a touchscreen license from me. They didn't develop it to the degree that Apple did later, but around about 2005, I was pleading with Apple, their legal department, to do business with me and to be honest, and all these be ethical and all the things they claimed to be as a company.

My lawyer explained to me that basically companies like Apple, big American companies are, let's say, they're a little ethically challenged. What they will do is they'll take what they want in the marketplace, they see a good idea, they just steal it, and they just wait for the pennies to drop, see if anything happens after that.

So in many cases, if you're a tiny company, you don't have the resources to sue. So it slides by and eventually, like I said, you lose your company. In some cases, if you think you have the money to sue, you go and sue them, but then you go bankrupt from the legal fees. So they...

Robert J. Marks:

You have to have deep pockets in order to sue.

Hal Philipp:

You to have really deep pockets to sue, and so I was faced with this conundrum. So it took me about a year to figure out this was the proper course, what the proper course was. And I did sue them in 2006.

And the lawsuit involved several things. It involved, first of all, the track pad on the notebook, which was mine. It involved the iPad, which was mine. It involved the mouse. They called it the Mighty Mouse that had a capacitive switch in it. That was mine. And the scroll wheel on the iPod, that was mine.

They took all those things without permission, just about everything that I've done to that point in time was mine. And their attitude was, "Well, sue us." So you have to sue them.

Robert J. Marks:

So you did.

Hal Philipp:

I did. Fortunately, as a company, we were doing really super well between license agreements and money coming in from that, money coming in from chip sales, we were really flying pretty high, and we had a lot of cash in the bank. And remember, we had no venture capital.

So I ran the company extremely tight, really super tight, and there was no fluff in that organization whatsoever. We had secondhand office furniture. We were sub-lending from a company that was slowly going bankrupt and expanding into their space. And so we optimized our rental needs. And so we had the cash.

And so 2006 came around and they weren't responding. And my lawyer was saying, "You're not going to get anything out of them. It's like squeezing a rock." So I filed a lawsuit, and in 2007, I spent 3 million just in that year alone on litigation.

Robert J. Marks:

On legal fees, oh my gosh.

Hal Philipp:

Just against Apple, 90% of it was against Apple. We had other lawsuits as well, but that was a major one, and then there was a discovery process. So if you sue somebody in civil court, they have the chance to go through your file cabinets, and all your electronic records and everything, and you have to produce these. So you need staff to do all that and produce all these documents and upload them to a cloud storage facility.

Robert J. Marks:

That's discovery. And that's-

Hal Philipp:

That's discovery.

Robert J. Marks:

That's only in the US?

Hal Philipp:

Well, yes. It's mostly in the US.

Robert J. Marks:

Mostly in the US.

Hal Philipp:

There's some limited discovery in the UK, but that's US, but the lawsuit was the US, so I had to play by US rules. And so that was very disruptive, all that is very disruptive to your organization. All your people are involved in this sideshow that has nothing, no bearing on your actual business. But you have to do it.

And it's a bit disheartening, honestly. But we won the Markman hearing. The Markman hearing is where the judge will decide on your claims. And I had something like 20 claims in the dominant patent that they were violating that the lawsuit was about. And one of the claims was disallowed, only one out of the 20. And so the lawsuit was allowed to proceed to trial.

And then the iPhone came out in 2007. So this is the following year. And when the iPhone came out, we opened that up and realized that there was another patent involved. And my lawyer said, "Well, you're going to have to file a second lawsuit."

Robert J. Marks:

Oh, geez.

Hal Philipp:

And it's like, "Well, yeah."

Robert J. Marks:

And so you did.

Hal Philipp:

No, I didn't.

Robert J. Marks:

You didn't?

Hal Philipp:

No, I decided to sell the company. There comes a point where you know have to get out. This is really, really critical. You have to know when to leave. You have to know when you're at your peak and when it's time to go.

I woke up one morning and I said, "This isn't fun." Just not having a good time. It wasn't about the money, it was just not having a good time. So I made one phone call and I sold the company to my principal supplier, which was Atmel in San Jose.

Atmel does the AVR family. They were bought up later by Microchip. It was a really interesting story involving Microchip and Atmel. But that's for another time, maybe. There was a lot of rivalry.

Anyway, I knew the CEO. I'd just done a license agreement with them. So I knew the CEO and I called him up and he said, "I'll be on a plane as soon as I can in a couple days. Meanwhile, don't talk to anybody else. I'll make you an offer you can't refuse."

Robert J. Marks:

Did he have a cat on his lap?

Hal Philipp:

He did.

Bradley Norris:

I know none of us like to spend a lot of money on locks for our doors, but a good defense is necessary. And clearly in this case, you needed to activate those defensive mechanisms like a lawsuit.

Hal Philipp:

Sure.

Bradley Norris:

What was it that triggered you? You said it took a year to decide to go to court, and by the way, you're not the only small business that has decided to do this. It would be interesting to dig up the various stories.

I know Masimo continues to play out with their oxygen sensor and heart rate sensors in the watch, but I'm just curious about that decision, how you came to the conclusion, "It's time we have to activate this, we have to do this."?

Hal Philipp:

Well, it was just the fact that they weren't responding. I really did put in a lot of good faith effort and communication to their legal team and to their management to try to do business with me and honestly accept a license agreement and pay money, and they were just stonewalling.

And also, I was looking at the financial situation of the company, the other things that the company was involved in at that point, and so it's a a balancing act. It's not just about deciding to sue, but also when to sue and knowing that you have the resources to back it up. So if I had run out of cash, if the company run out of cash during the middle of the lawsuit, then it would've been a catastrophe.

But what happens next is that you go bankrupt. And then Apple, for example, could buy the company out of bankruptcy and get all the patents. It works like that. So it's a very dangerous game. It's really super dangerous.

There's no backup plan really. You either do it or you don't do it. And so I did it, and we were winning, except that, again, I would've had to file another lawsuit, civil suit, and go through the discovery process again and pay another 3 million a year and whatever. And by the way, even if you win the litigation in civil court, that doesn't mean you actually win the overall case.

Robert J. Marks:

What?

Hal Philipp:

You can win the battle, but lose the war. So they can appeal that decision through the appeals process. And it could take you 10 years to get your money, even more. I mean, there's an infamous case of the automatic windshield wiper, which is like a 1960s patent or something.

Robert J. Marks:

Oh geez.

Hal Philipp:

And this went on for like 20 years. The guy got it just before he died. He got the money finally, and he got 20 cents out of the dollar of what he was really owed.

And the other trick that they will do is an Apple, for example, or any company in this kind of scenario, might offer you 10 cents on the dollar just to make the whole thing go away. So you think you've got something, but actually they got off really cheap, and that just makes the whole thing go away. Do you really want to do that? Not really, no.

Robert J. Marks:

The case where they had the automatic windshield wiper, they made that into a movie called Flash of Genius.

Hal Philipp:

Did they?

Robert J. Marks:

Yeah. And so if you want to watch the story in a pseudo documentary where actors play out things, it's a good thing to watch. But it really shows the difficulty of going up against a Goliath when you're a little David.

Hal Philipp:

It's a very amoral business. There's no ethics involved. The company can spout all they want in public about ethics and morality, how they treat smaller, small suppliers. It's BS.

At the end of the day, they do what they want to do. That's just the way the world works. That's just the way the world works.

Bradley Norris:

So has this changed you, this experience as an entrepreneur, as an individual, has living through that attack and defense changed you?

Hal Philipp:

Yeah. I don't want to get back in that business, that's for sure. It was a bit traumatic. So I mean, I won the battle because the lawsuits went with the company when I sold the company. And Atmel picked up all the litigation and settled with Apple, so they did their thing.

But meanwhile, I got paid. So I had a really good positive outcome. And since I didn't have venture capital, I basically owned the whole company. I had a stock option program and so on. So some percentages went to friends and family who supported me in the early days and employees and so on. That's great.

But I didn't have to pay off a VC house, so it was mine basically. And that was nice. So that was anti-traumatic. That was a good part. That was a good result. Would I do it again, if I knew what I was facing from the very start, not so sure.

Bradley Norris:

So what's the vision now?

Hal Philipp:

I'm retired.

Bradley Norris:

Well...

Announcer:

That wraps up part two. We'll be back next week to cover some more of the lessons Hal has learned from his career and answer some questions from the live audience. Until then, be of good cheer.

This has been Mind Matters News with your host Robert J. Marks. Explore More at mindmatters.ai. That's Mindmatters.ai.