



## Holiday Science Fiction Special Edition

**Description:** After catching up with just a bit of year-end security news, for their special holiday episode, Steve and Leo review their favorite Science Fiction books and movies, pulling the commentary they have previously scattered throughout many years into a single reference.

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**Leo Laporte:** This is Security Now! with Steve Gibson, Episode 333, recorded December 28th, 2011: Our Science Fiction Special.

It's time for Security Now!, our special holiday edition. Joining me now from GRC.com, Steve Gibson, the man behind - the myth, the legend, the man behind Security Now!, our security guru, our privacy expert, the author of SpinRite, the world's finest hard drive and maintenance utility. Happy Holidays, Steve. Did you have a good Christmas?

**Steve Gibson:** I did. It was nice. We're having a real cold spell in Southern California, and it was even colder in Northern California. I was up there for the weekend. And of course I like to start my days at Starbucks. And on Christmas morning, they opened at 6:00 a.m. So I left the house around 5:40 and hoofed it over to Starbucks, dragging my little airport wheelie behind me.

**Leo:** It's a Starbucks Christmas.

**Steve:** And I was passing cars that were completely, like, they looked like they were in the snow, it was so cold. It was below freezing.

**Leo:** Wow.

**Steve:** And one of the gals, I got there a little early, and she was also - she was hoping that she was going to be able to get her Starbucks and get back home before her kids woke up. They were ages three and five. And I said, oh, good luck with that. They

probably never went to sleep.

**Leo:** Oh, yeah. The worst thing with little kids on Christmas. And of course now I have teenagers. So we had to - we were all in Massachusetts, visiting Abby. And we were all staying in the same hotel. Abby came across the street to join us in the hotel. And I think it was 11:30, maybe noon. Finally Jennifer and I said, you know, this is it. We're going to miss lunch. So it really shifts at some point.

**Steve:** Yes, it does.

**Leo:** Oh, dear. Well, anyway, Happy Holidays. So you didn't come up here to visit Mom at any point, or...

**Steve:** Oh, yeah, I did, for Saturday and Sunday...

**Leo:** Oh, good. Oh, good.

**Steve:** ...just for the - I come up on the morning of Eve and leave on the late afternoon of Christmas Day.

**Leo:** That's sweet. Yeah, we've been having some pretty nice weather up here. I don't know what it was like on Christmas Day. But we've had beautiful weather the last couple of days. So maybe it'll warm up in the Southland.

**Steve:** Last year I gave Mom her first Kindle, which was the current model at the time. This year, because I had been reading so much, I sort of gravitated toward my DX. And so I...

**Leo:** Oh, really. The big one. The giant screen.

**Steve:** Exactly. And I just like, I mean, I'm not holding it up in the air. It is heavier. But it's - I just like the reflective screen more than reading on anything else. So I thought, you know, I'll bet Mom would like this, too. So I tracked down one. I really like the white color, which they discontinued in favor of the graphite, which is a very dark graphite. I think they do it so that the not-quite-white eInk background looks a little bit whiter by comparison if you [indiscernible]...

**Leo:** Oh, there you go.

**Steve:** ...in a white frame.

**Leo:** Clever.

**Steve:** But I found somebody on eBay whose dad had purchased a DX just before the first iPad came out, and he put it on the shelf and never used it, so it was in mint condition. So I was able to get a white one for Mom and verify that it was - anyway, so she's just - she's in love with it. I've heard from her a couple times.

**Leo:** She likes the DX. She likes the bigger form factor.

**Steve:** Yeah, you know, at 84...

**Leo:** It's easier to read.

**Steve:** ...the macular degeneration begins to kind of be a problem. And, I mean, it is, it's easier to read. When I saw the font size that she had chosen for her smaller screen Kindle, I thought, oh, this was a good idea because now you can actually get three sentences on the page. So, yeah, just fine.

**Leo:** Yeah, my mom just had cataract surgery in one eye, and she loves the Kindle for the same reason, big print. She said, "I can read again," which is really wonderful because she's a voracious reader. And Jennifer, who I gave the little Kindle, the new little \$79 Kindle to...

**Steve:** Oh, which I really like, too.

**Leo:** Love it, love it.

**Steve:** So small and lightweight.

**Leo:** She's following in the family footsteps. She left it on the plane. So, but here, good news, it's \$79. So I guess...

**Steve:** It's readily replaceable. But we had a really funny cabin attendant, I don't remember whether it was coming up or going - it was flying up - who talked about how every single flight somebody will leave their electronic gadget, whether it's an iPad, a Kindle, a BlackBerry, a BlueBerry, I mean, he went on to - he went through this great little pitch that I'm sure is repetitious for him. But he said, "However, if you want to recover those, there's a website you can go to."

**Leo:** What?

**Steve:** And then, pause, and he says, "It's [www.ebay.com](http://www.ebay.com)."

**Leo:** Ah, the truth comes out.

**Steve:** To get your lost devices back. So...

**Leo:** Yeah, that doesn't - yeah. Alas. Well, it's all right. You know, it's kind of a holiday tradition. And you're right, at 80 bucks it's a good thing. So tell us what we're going to do this episode. Because we should explain for those of you watching after the fact, the recorded version, that we're doing this on the 28th, well, it says here on the screen, 28th of December. Most of the TWiT shows are in best-of mode. So we reserve this week, and we've done this for a few years, and it's really fun, for making best-of cut-downs of the whole year for each episode, the TWiT Best Of episode is Sunday, that kind of thing. And it's a lot of fun because we let you go to [TWiT.tv/bestof](http://TWiT.tv/bestof) and suggest that. That's up all year round. If you see something you really want to preserve for next year at any point, just go there, [TWiT.tv/bestof](http://TWiT.tv/bestof), and give us the information. In any event, so we've collated those for most of the shows. However, you and I talked last - or a couple of weeks ago. By the way, thanks to, was it Tom or Iyaz who did the show last week?

**Steve:** It was Tom who covered it.

**Leo:** Tom Merritt. Thank you, Tom.

**Steve:** He's been doing our Q&As lately.

**Leo:** He's great.

**Steve:** We noticed that the every-other-week of Tom was synchronized with the every-other-week of Security Now!'s Q&A.

**Leo:** It's perfect.

**Steve:** So, yeah.

**Leo:** So we thought this week, because there really - it's hard to do a best of on a show like yours where it's either great in-depth discussions of how the Internet works or something, you can't take five seconds of that. Or it's news. So we figured, let's make a special episode. And Steve's idea was great.

**Steve:** And of course last, yeah, last year we famously repeated the Portable Dog Killer episode that was everyone's arguably favorite podcast, even though it wasn't about security news. But I actually did get some feedback from people saying, oh, you broke

your record of never having missed a single episode, blah, blah, blah. It's like, well, okay, yeah.

**Leo:** You can try to be perfect, or you can do a good job.

**Steve:** And somebody - I would love to give credit to whomever it was, but now I've forgotten. But the recommendation or the idea was surfaced to do a sci-fi show. And I thought, wow, that's a great idea because there's been so much good feedback about the book recommendations that you and I have talked about over the years. And people have said, where's that written down? Where is that all in one place? And so, okay, nowhere. So I thought, hey, let's do that. Let's do an episode. We'll do a little bit of security news because there is - there's one important thing I need our listeners to turn off in their routers which has just come up.

**Leo:** Oh, okay.

**Steve:** A new problem with the most secure technology we have, our WPA technology, involving the WiFi Protected Setup, which is an ease-of-use feature that virtually all routers now have? It's all enabled by default, and it turns out it can be cracked.

**Leo:** Geez Louise.

**Steve:** So that, we've got to talk about that briefly. But mostly we're going to go through all of the books that I have talked about in the past and just sort of put them in context, compare them to each other, what I liked about them, sort of pull all this together in one place for our Holiday Sci-Fi Special Edition.

**Leo:** I love that idea. I love that idea. So we will get to sci-fi, holiday sci-fi in just a bit. And a bit of tech news, or security news, because security news never sleeps.

**Steve:** Nope.

**Leo:** Because the bad guys never sleep. But before we do any of that, the chatroom has spotted something. And I think they've - as usual, the chatroom is brilliant. You are wearing a Minecraft shirt.

**Steve:** I am.

**Leo:** Okay. Don't tell me Steve Gibson, the king of assembly language programming, is playing Minecraft?

**Steve:** No, I don't even know what it is. It's sort of - it's kind of a cool, sort of Escher-like...

**Leo:** It's great.

**Steve:** Yeah, impossible Mbius strip thing. So I thought, oh, I like that. I'll - I was over on, I think it was ThinkGeek. And I thought, oh, I'll take one of those.

**Leo:** Well, the story is it's diamond blocks in a game called Minecraft, which is a really popular game right now, written in your favorite language, Java. But the advantage of that is it's portable. It's on every platform. And it's really interesting, comes out of Sweden, and it was just this guy who wrote this really fairly simple program.

**Steve:** How weird. I figured it was like old school, back in...

**Leo:** It looks old school. It does.

**Steve:** Yeah.

**Leo:** Yeah, because it's 8-bit. But it's not. In fact, it's probably the hottest - it's one of the hottest, if not the hottest, games out there right now, believe it or not.

**Steve:** No kidding.

**Leo:** Yeah. And it's kind of - I have it probably here, I could show you. But it's kind of a strange game. You go around, it looks like a first-person shooter, but instead of a hand with a gun, you see a block, which is your hand, and you go around beating on the landscape to collect natural resources. There are a few enemies, but it's not really about fighting enemies. It's about collecting natural resources and building things. And so the natural resource that's on your T-shirt is diamond bricks, which I gather - I'm not a Minecraft player, but I've played it, but I'm not a player - is apparently very scarce and valuable. So that's the T-shirt.

**Steve:** Cool.

**Leo:** Isn't that funny?

**Steve:** Thank you for letting me know what I'm wearing.

**Leo:** Did your mother buy that for you? All right. So let us get - you said there's some router news. I'm actually very curious about this. What's going on?

**Steve:** Yeah. Okay. First of all, I did want to mention that Firefox released their v9 of -

or Mozilla released v9 of Firefox. And there was a glitch in the 9.00 release. So the next day, after they saw that it was crashing some people's computers, they quickly updated it to 9.0.1. And you probably saw the news. I wanted to remind our listeners and you that Microsoft has announced they will be adding automatic update, that is, background updating, to IE starting next year. So everybody's getting on the bandwagon. Mozilla will be doing it in April with v12, for some reason, of Firefox. But 9 is out. They're claiming 36 percent faster JavaScript execution for v9 as opposed to 8, which has been out for - a week ago. And they fixed a bunch of security issues and also released the similar v9 of their Thunderbird app for email and news. So I just wanted to make sure that our listeners knew that 9 had happened and got a quick fix.

**Leo:** Although Mozilla is taking great pains at this point to say, don't worry, just like Chrome, don't think about version numbers.

**Steve:** Right.

**Leo:** It's just automatic.

**Steve:** We'll take care of all that for you, yes. And there was some interesting SOPA news, since you and I have been following this, as have, boy, the entire industry has just gone bonkers over this. So the good news is there's been so much fur flying that there's just no way this is going to happen. GoDaddy, that was a very visible supporter for who knows why, it must have been that the people behind SOPA went around and tried to find supporters, they lost upwards of 70,000 domains exited GoDaddy in an active protest of GoDaddy's support of SOPA. So GoDaddy quickly backpedaled and said, oh, it's not really what we meant, and we're now...

**Leo:** And that's B.S., B.S.

**Steve:** I know, I know.

**Leo:** Because if you look at SOPA, GoDaddy actually has an exemption. They helped write that law. There is an exemption written into the law that says "unless you're a GoDaddy domain." It's unbelievable. It's unbelievable. Fortunately, we moved our stuff off GoDaddy long ago.

**Steve:** Yes. And you remember that I got a short-lived domain, I think I got a wildcard domain when I thought that my DNS spoofability test would benefit or needed for some reason - oh, no, maybe it was my version. I think it was my - I was developing a sitewide, application-wide versioning system, and I was going to use DNS to do version testing because it was a simple thing, an app could send a query. And so I wanted different domain names or, like, subdomains. So I used a wildcard DNS certificate that I got from GoDaddy. Or, no, no, I'm sorry, not a certificate, just a domain. And what really annoyed me was that they tried to auto-update or auto-renew that domain after I had deliberately informed them I did not want to be updated. They tried to charge my credit card. And the good news was I had used a PayPal one-time-use credit card, so they failed at that attempt. But the fact that they tried to do this behind my back, without my

permission, I thought, oh, I'm glad I'm not with them. So you also left them.

**Leo:** Yeah, although one of the problems people have been having is that they're kind of sticky. They have this timeout, which they've changed since people complained about it a couple of days ago. And I got stuck kind of in the GoDaddy web with a few domains. Which are still over there, and I'm trying to get them out of there. But we - our advertiser is Hover.com, and we've been telling people for a long time to move over to Hover.com.

**Steve:** Yeah, cool.

**Leo:** I don't - I may have misstated exactly GoDaddy's presence in the SOPA bill. It may be other - see, I believe they get - the closed domains get redirected to a GoDaddy domain which says "Closed."

**Steve:** Hmm.

**Leo:** But I have to check. I don't want to slander them. I'd have to check and make sure that they - they say that they took their name off the list. However, their CEO, Warren Adelman, said "Fighting online piracy is of the utmost importance. That's why we've been working to craft revisions to this legislation. But we can do better."

**Steve:** And I did, you're right, I did hear that they were a large participant in the creation of the legislation.

**Leo:** I think they get some benefit from it. In any event, I've told people to get off GoDaddy. There's, as you point out, there's many other reasons. It's not the best domain registrar in the world.

**Steve:** Yeah, yeah.

**Leo:** And Wikipedia and many others are moving off of it, so that's good.

**Steve:** Stanford Law Review did a very nice piece called "Don't Break the Internet," an anti-SOPA and PROTECT IP, the PIPA legislation, which is the Senate's version. I just tweeted the URL at my SGgrc Twitter feed. So I really commend our listeners to check it out. You can get a PDF version from that page. Just the first paragraph of that reads, "Two bills...." And so this is the Stanford Law Review's official position on these two, on SOPA and PIPA, said:

"Two bills now pending in Congress the PROTECT IP Act of 2011 (Protect IP) in the Senate and the Stop Online Piracy Act (SOPA) in the House represent the latest legislative attempts to address a serious global problem: large-scale online copyright and trademark infringement. Although the bills differ in certain respects, they share an underlying approach and an enforcement philosophy that pose grave constitutional

problems and that could have potentially disastrous consequences for the stability and security of the Internet's addressing system, for the principle of interconnectivity that has helped drive the Internet's extraordinary growth, and for free expression."

Anyway, it's a - the whole thing is really great. And so I would recommend, if our listeners are interested, I don't have - the URL is long. But if you just go to [Twitter.com/SGgrc](https://twitter.com/SGgrc), it's right there in my feed because I wanted all of my Twitter followers to be able to check it out. It's just a great read, and I really recommend it.

**Leo:** Yeah, yeah. It's been my position all along that what's really happening is a kind of a bigger story, which is that the Internet and computing in general poses such a threat to the current business models for content companies - current is the important point - that they would like to just kind of disable or break the Internet, break computing with, as they've tried to do, with DRM and so forth to protect their current business models. And the future really isn't in those business models anyway. So it's almost like old farts like me saying to the new generation, hey, you know, until we retire, would you mind doing things the old-fashioned way?

**Steve:** Well, and Leo, with Tom last week I made the point that essentially this is a blacklisting attempt. And we already know that blacklisting doesn't work. If it did, we wouldn't have any spam because we would have blacklisted those 12 bad guys...

**Leo:** Right, exactly.

**Steve:** ...and that would have been the end of it.

**Leo:** Good, that's a brilliant point. If this is such a good idea, why doesn't it work with spam?

**Steve:** Yeah.

**Leo:** And we know how horrible MAPS and ORBS, all the injustices done by these black hole services that do exactly that and don't work. And that's also been my position is you can't stop piracy. Pirates are very nimble. They move around. So copy protection and things like SOPA only hamper legitimate honest people. The pirates are not disadvantaged in the least.

**Steve:** And if we were requiring ISPs to be intercepting attempts to access these blacklisted DNS names...

**Leo:** Oh, imagine.

**Steve:** There would be a massive growing list. The bad guys would jump over to new names.

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**Leo:** Right, right.

**Steve:** They would get added. They would jump. They would get added. They would jump. I mean, it's just - it doesn't work. It can't work.

**Leo:** We know this. We know it now. My domain was blacklisted by MAPS or ORBS, one of those, for a while. And it meant a lot of people whose - it's funny because so few ISPs now use these black hole spam fighting techniques that it only affected a few. But I got emails from people saying "I don't see your email anymore." And it's because their ISPs did it. And of course the ISPs back down very quickly because it often ends up doing things like blocking Gmail, which is kind of a big thing to block. That's the problem with domain-level blocking.

**Steve:** I got a nice mention in Twitter from a Chris Carter whose handle is @parking\_god. I guess he's good at parking.

**Leo:** Must be good at it.

**Steve:** And he said the exact quote is, "The 'Net interprets censorship as damage and routes around it."

**Leo:** Right. Exactly

**Steve:** And that was John Gilmore who came up with that great phrase, "The 'Net interprets censorship as damage and routes around it."

**Leo:** That's the man who founded Sun and was one of the brilliant original cypherpunks and just a brilliant guy.

**Steve:** And he is an EFF co-founder, too.

**Leo:** Co-founder of EFF, yeah.

**Steve:** Yeah.

**Leo:** And he's right. Anyway, we know. It's just the members of Congress who need a little education.

**Steve:** Well, and, boy, I think they certainly...

**Leo:** There may be learning, yeah.

**Steve:** They certainly realize that something happened, and it wasn't good, so...

**Leo:** Whoops.

**Steve:** Yeah. Okay. So here's our big security news for the week I need everyone to pay attention to. There was a feature that was added to WPA, WiFi Protected Access, which is our state-of-the-art, very good technology for encrypting wireless links. This thing is part of what's called the WiFi Simple Configuration, or WSC, Specification. And this part of it is called WiFi Protected Setup. All major vendors - Cisco/Linksys, Netgear, D-Link, Belkin, Buffalo, ZyXEL, Technicolor, they all have WPS, this WiFi Protected Setup, certified devices. And on those devices this is enabled by default. And this may be something that some of our listeners have encountered because it's based on an 8-bit PIN. So the idea is you and your device negotiate using this 8-bit PIN.

Now, I am going to cover this in detail in two weeks because this is big news. We need to understand what the problem is and how it works. But the short version is, even though this is an 8-bit PIN, the way the protocol functions tells somebody who is guessing whether or not - you're not even going to believe this, Leo. I know you're sitting on your ball, so I don't have to worry about you...

**Leo:** You can't fall over.

**Steve:** You're not going to fall off your chair.

**Leo:** It might explode, though, with indignation. What, what?

**Steve:** This protocol tells an attacker whether or not the first four digits of the 8-bit PIN are correct, separately from the rest.

**Leo:** So that makes it really a 4-bit PIN.

**Steve:** Well, what it means is that you can guess the first four...

**Leo:** And they'll correct you.

**Steve:** ...separately from the entire eight.

**Leo:** And then they'll - and you keep doing it until they say yes, so that's...

**Steve:** Got the first, yes.

**Leo:** Yeah, got the first four.

**Steve:** Then, once you get the first four, it turns out that the last digit of the eight is a checksum.

**Leo:** Oh, no.

**Steve:** So that's easy.

**Leo:** You have the last digit.

**Steve:** So then you just need the middle three. And so it turns out that within a couple hours it is possible, on a router who's got - a router that has this...

**Leo:** WPS.

**Steve:** ...WiFi Protected Setup, WPS, enabled, it's possible to negotiate the 8-bit PIN, or the 8-digit PIN, and get into the router. So this is a - there's a security paper being presented. I've got the whole technical readout on it that is a lot more detailed. I want to do it detailed in two weeks. But the short-term immediate takeaway is simply disable WiFi Protected Setup on your router. It's almost certain that listeners to this podcast are using strong passphrases with their WiFi because we know that the way WPA could be compromised is by guessing a short or simple-to-guess passphrase. I would expect none of our listeners are doing that. But if they still have WiFi Protected Setup enabled, which it is by default on all routers, then this creates a backdoor independent of them having this enabled. So...

**Leo:** If you've turned off WAN administration, the ability to log into the router from outside the router...

**Steve:** That does not protect you from this.

**Leo:** It does not. Okay.

**Steve:** It's a separate vector. You want to turn off WiFi Protected Setup, which is on by default in your router. We're going to come back to this in two weeks, but I didn't want to wait, obviously, because what's happened is the security researcher who found it documents it carefully. He is not providing code, but he demonstrates it and has metrics for how few hours it takes him to crack different routers. Some routers do have a lockout where, after a number of mistakes, they won't accept any more. But those lockouts self-expire, so all that does is slow someone down further.

Anyway, we're going to go over this in detail. It will be the topic in two weeks. But in the meantime I wanted our listeners to just log into your router, and you want to turn off WiFi Protected Setup. Which, again, I'm almost sure no one who listens to this podcast would be using it anyway because they would know, their gut instincts would say, wait a minute, an 8-bit PIN doesn't seem like it's secure enough. And it's not. Turns out it's much less secure than we thought.

**Leo:** This is the time of year when people go visit family and friends. And probably most of them have already done so or are there now. And probably Grandma and Grandpa have - use WPS because it's convenient. It's a new feature, you push a button, you're secure. If you used it to configure everything, can you then turn it off and remain safe? Or do you need to reconfigure?

**Steve:** I don't know that. I'm going to have to take a look at it and understand it...

**Leo:** For next week.

**Steve:** ...much more. Yeah, I just encountered this, and I wanted to give everyone a heads-up.

**Leo:** So if you are visiting Grandma and Grandpa this week, turn it off.

**Steve:** Yeah. Do them a favor.

**Leo:** Yeah.

**Steve:** Increase their security while you're there.

**Leo:** Yeah.

**Steve:** Now, for your benefit mostly, Leo, because you missed this last week, I wanted to aim you - take a look at this very cool new concept in CAPTCHAs, which we've talked about and which are very important because you're wanting to basically prove that you're not a bot. And so the one place I know this is located, and I haven't looked at their source code to figure out where they got it, but it's [mpesupportgroup.com](http://mpesupportgroup.com), and it's their contact form is protected by an animated CAPTCHA. And what's so cool and clever about it, and Tom and I discussed this last week, was that no single frame contains the image. But it's our mind, our brain, that is able to integrate across the animation...

**Leo:** So clever.

**Steve:** ...that makes it very easy to read. I mean, much more - some of these

CAPTCHAs, I just say, I don't know what that is. I mean, I'm definitely not a bot, and I can't type that in correctly.

**Leo:** Yeah, no, but this is easy.

**Steve:** Yeah. Isn't that neat.

**Leo:** But we've, of course, pointed out that CAPTCHAs really are kind of dumb because what they - it doesn't matter how hard it is for a computer to read because what the bad guys do is they set up porn sites with the same CAPTCHAs.

**Steve:** Yup. And they have other people solving them for you.

**Leo:** And they have humans solving it at the rate of thousands of CAPTCHAs a second. And that's all they need to do.

**Steve:** Yeah.

**Leo:** So I don't care how good you make that. If the human can't read it, then it's safe. But then it's no good. So there you go.

**Steve:** Yup. And I got a nice piece of listener feedback about my switch to DigiCert. You'll also remember that two weeks ago, Leo, there was a bit of a mystery because something seemed to have gone wrong with our SSL after I switched to DigiCert. And Lil, a.k.a. Dr. Mom, said that her organization had blacklisted GRC. It turns out they were using the Websense provider and that Websense provides this kind of security where, because my SSL certificate was signed by someone else, that spooked them into flagging GRC as a possible security risk. Which in fact it wasn't, more so than ever, because I had switched to EV Certs. Well, the good news is that passed. Everything's okay again.

But I did get a nice note from a Corbett Bush, who's a network engineer, who just said, "Steve, I just got finished listening to you talk to Leo about your experience with DigiCert. Well, our SSL certs were due to expire and I knew that I was not going back to Network Solutions. Last time, it took me weeks to get our wildcard cert from them converted so I could put it onto our two firewalls. Network Solutions, who we got them from" - that is his SSL certs - "refused to talk to me. So, when you mentioned DigiCert several months back, I looked into them. Well, it only took me a few hours to get the new wildcard cert from them and apply it to seven web servers and three firewalls. Thank you for recommending them. They are great!" So there's some additional positive experience feedback I just wanted to share to cement it. I don't intend to become a DigiCert fanboy. But, boy, I'm really, really pleased with the move I made.

**Leo:** Well done, as always, Steve.

**Steve:** And speaking of fanboy, there is a place I am a fanboy. And that's when it comes

to SpinRite. I got a...

**Leo:** It's your own product. You get to be a fanboy.

**Steve:** In mid-December, December 15th, I got a note from a Bob McKinstry, who sent by way of our sales email contact, he said, "Another SpinRite Testimonial." He said, "Hey, Steve. I am a listener of Security Now! since year one, and a SpinRite owner. A few days ago one of the residents in our training program asked how he could get help with his Dell laptop, as our IT department doesn't support machines they don't own. The story is classic. After a power outage, his laptop would not boot into Windows, and it would only blue screen, reboot, and rinse and repeat. Without hesitation, I told him about SpinRite. I lent him my trusty SpinRite CD, telling him he would need to purchase SpinRite if it did fix his machine." Which is only fair, and that's okay.

So he says, "I told him he had to be patient and let the program do its work. He fired up SpinRite and went to bed. When he woke up in the morning, he was good to go, just like that. SpinRite is a great product. Another drive saved. Another happy customer. Thanks for all you do with GRC, and thanks for all the great podcasts that you've done with Leo and the TWiT network. Bob McKinstry, St. Louis, Missouri." So thanks very much, Bob.

**Leo:** Another happy customer. Thank you, Bob. Now, let me just briefly mention Netflix, and then we're going to get a little fun, a little different kind of a show. We're going to talk a little bit about sci-fi, which I think is great. Steve has been a sci-fi fan since he was yea high.

**Steve:** Yup.

**Leo:** And as have I. And but this is not my show, so we're going to hear Steve's recommendations. I've got pen and paper ready. You should get pen and paper ready because I suspect there's going to be books that we want to listen to or read. Some people like to actually still read.

**Steve:** [Laughing] We old farts.

**Leo:** Yeah. You know, it's funny, I was having dinner with a bunch of Abby's classmates, and so they're all, you know, 19, 20. And I was shocked. They said how much they liked paper books, hardcovers. One of them is a true geek, a gamer, I mean, really a hardcore computer user. And he said, no, no, no, I really like having physical books. Not even Kindle. Physical books.

**Steve:** And you know, Leo, one thing occurred to me is you can keep reading them during takeoff and landing.

**Leo:** Yeah. There's another story there. Our friend Nick Bilton, who writes for The New York Times, has been doing some research. He took a Kindle to a lab where

they test electronic emissions. And they tested the Kindle, and I can't remember the number, but it was .0002 volts, something, you know, 2 microvolts of emissions. Which is so low.

**Steve:** Yeah.

**Leo:** It's lower, I mean, it's basically zip. And which we know because the Kindle doesn't even, except when you're turning pages, it isn't really doing anything.

**Steve:** Correct.

**Leo:** But even turning pages, .000002 volts. So, and then the response of somebody, I don't know, the FAA was, well, yeah, but if you have a hundred of them - at which point Bill Ruck, who's an old friend of mine and a former radio chief engineer and RF expert, Nick called on him, and Ruck pointed out, as you know, and everybody who has any electronics background knows, that it's not a multiplier. A hundred Kindles isn't a hundred times 2 microvolts.

**Steve:** It would not be a coherent signal all summing together.

**Leo:** And in fact - and of course remember, American Airlines now allows iPads in the cockpit for pilots. And so they're saying, well, yeah, but they only have two. What if everybody in the cabin had one? No. It doesn't work that way. So Nick is fighting a ridiculously hopeless quixotic battle.

**Steve:** Oh, but good. I'm glad somebody is.

**Leo:** Yeah.

**Steve:** I'm all for him. Go Nick.

**Leo:** But, you know, it's not going to happen because...

**Steve:** Well, because they don't have to say yes.

**Leo:** Don't have to. They just say, no, we're the FAA. Don't ask us. We just tell you. Anyway...

**Steve:** But I'd like to find out what emissions a pacemaker puts out. That'd be good.

**Leo:** Well, that's the problem. And actually Nick in his article says electric shavers are legal. And they put out a huge amount of interference. As anybody who's ever stood by a radio shaving knows.

**Steve:** Right. Yeah, you can't hear the radio.

**Leo:** [Mimicking electric razor] So, what? So I can shave during takeoff, but I can't read my Kindle. Please. There's no point. Every time we talk about this I get email, as you will, I'm sure, from pilots saying, well, they [indiscernible]. Well, uh, we're, uh, not, uh.... So what - you know, you're the pilot. You get to say. You can marry people in the plane, as well. Whatever, you're the boss. I don't want the plane to go down because somebody's reading a Kindle. I understand that. But at the same time it seems highly unlikely. And now it's time to go sci-fi with Steve Gibson.

**Steve:** Okay. So I wanted to mention just a couple movies that I have referred to in the past. Probably, I mean, there have been so many good sci-fi movies. But in terms of classics, I think one of my absolute all-time favorites is a movie called "This Island Earth."

**Leo:** Oh, I haven't seen it.

**Steve:** Oh, Leo, you have - I'm sure you've seen it. Yes.

**Leo:** I've seen it. I just don't remember it.

**Steve:** Yeah. What I love about it, and I referred to it once when we were talking about the Ultracap mega capacitor technology, because the beginning of the movie there's sort of an IQ test for an engineer who figures prominently in the film. Oh, wait a minute, I'm confusing...

**Leo:** It's 1954.

**Steve:** There's "This Island Earth" and...

**Leo:** It says, "When an alien in distress recruits American scientists Ruth and Cal to help him with an intergalactic battle against the evil Zagons, the earthlings find themselves falling in love."

**Steve:** Yup, that's the one.

**Leo:** "And trapped in outer space."

**Steve:** And that's where the interocitor comes in because he orders a replacement capacitor of some, like, many farads.

**Leo:** I think I have seen this.

**Steve:** And it comes, and it's this little tiny bead. And they're, like, well...

**Leo:** It's a supercapacitor.

**Steve:** ...this can't possibly be a multi-farad, 10,000v capacitor. So his assistant says, "I tested one, and it is." And so Cal Meacham, who is this scientist, says, "No, no, no." So he sticks it on his meter and runs the voltage up, and sure enough, it gets kind of red hot. But it is doing what it's supposed to before it blows out. So he then - there's, like, this catalog for interocitor parts. And he says, "What's an interocitor?" And so they say, "Well, it doesn't say, but here's how you build one." So he says, "Okay, order all the parts, I'm going to build one." And so he puts this thing together, and that puts him in touch with the aliens. Anyway, "This Island Earth" is just a great movie. If it doesn't ring any bell, then by all means. And I'm trying to think of the other one.

**Leo:** By the way, I've got to point this out. Mystery Science Theater 3000, 2000, you know them; right? MST3K?

**Steve:** Oh, it would have been a goldmine.

**Leo:** They have done it. They did it as a feature film. It's their only feature film. So you can probably get it on YouTube or Netflix. There is a clip on YouTube which somebody has just sent me, called "Unpacking the interocitor." So if you're an MST3K fan, and who isn't, you can watch Joel and company dissect the interocitor. What fun.

**Steve:** Okay. The other must-see is "Forbidden Planet." This is the one where...

**Leo:** Oh, classic, Robby the Robot.

**Steve:** Robby the Robot and the Krell and Morbius. And the good news is the word is James Cameron is going to remake it.

**Leo:** Oh, now, see, that would be awesome. In 3D, probably, right, yeah.

**Steve:** Oh, Leo. Oh. Or 4 or 5. I don't care how many D.

**Leo:** 5D.

**Steve:** Oh, my goodness. That - anyway, if our listeners, again, if somehow they missed "This Island Earth" or they missed "Forbidden Planet" - in fact, "Forbidden Planet" just had its 50th anniversary, like, a couple years ago, because I purchased the 50th anniversary special tin box with a Robby the Robot in it and other stuff. Anyway, that's probably my No. 1 favorite sci-fi movie of all time.

**Leo:** It is on YouTube. So I'm guessing it's probably - "This Island Earth" is. It's probably public domain, and that's I'm sure why Mystery Science Theater 3000 could do it. So you don't even have to get this on Netflix, but you can if you want the highest quality. But you could watch it on vintage video on Meveo [ph].

**Steve:** Then of course we have "The Day the World..." Or is it, wait, "The Day the World Stood Still"?

**Leo:** Earth. Classic.

**Steve:** "The Day the Earth..." I wrote "world," but I know it's "Earth," yes. The original one...

**Leo:** "Klaatu Barada Nikto." That's right, they did remake that one. I never saw the remake. I didn't want to.

**Steve:** Yeah, I did, and it wasn't - I'll see anything if it's got sci-fi, like in it. It's like, okay, I've got to see that. So, but, again, yeah, "The Day the Earth Stood Still," another just fantastic piece of work, which I've seen, well, I've seen them all, all of these things multiple times because it's not just about how it comes out at the end, it's the just great filmmaking.

**Leo:** Well...

**Steve:** And for what it's worth, Kurt Russell's version of "The Thing" was another just fantastic piece of science fiction, so...

**Leo:** This is one - when you get to movies, this is when our chatroom goes crazy and has many, many suggestions, as do I. I can think of a lot of great science fiction movies. That's the kind of - you've got to include "The Matrix," maybe one of the best of all time.

**Steve:** Oh, again, yes.

**Leo:** "Blade Runner." "2001."

**Steve:** "Space Odyssey," right.

**Leo:** I mean, there are some classic, classic movies. And I guess we'd have to put...

**Steve:** And "Pi" is another great, sort of a wacky movie, but also very good.

**Leo:** "Pi" is good, yeah, I like - that's more recent. And people are going to yell at us. You can't leave out "Star Wars."

**Steve:** Yeah, I know.

**Leo:** Or "Star Trek." I personally would leave "Star Wars" out. You know, I was in the theater yesterday, and they're going to re-release Episode 1 in 3D? And just the thought of Jar Jar Binks in 3D is just, I'm sorry, it's terrifying. I can't handle it.

**Steve:** Yeah, yeah. Okay. So for the sake of people who have not been reading sci-fi as long as I have, I mean, I know that we have a great younger listenership. Arguably one of the past masters of science fiction, the name will probably be - will be well-known to everyone, Isaac Asimov. Isaac is credited with, and did, invent the so-called "Three Laws of Robotics." The first law is, "A robot may not injure a human being or, through inaction, allow a human being to come to harm." The second law is, "A robot must obey the orders given to it by human beings except where such orders would conflict with the First Law." And the third law of robotics is, "A robot must protect its own existence as long as such protection does not conflict with the first or second laws."

So he carefully thought out, if you imagine a future where you actually have powerful machines which could hurt people, how would you integrate those into society? What, like, fundamental, like, hard-wiring would you put in their brains, in their positronic brains, which is what Asimov had, that made them safe? And so these three laws is what he came up with. Well, there's a series of novels which are just fantastic. They're called - they're Isaac Asimov's robot novels. They're mysteries, so that they're not just sci-fi. I mean, they are science fiction, but they are really - they're literature. They're really well-written mystery novels featuring a human detective, Elijah Baley, and his robot sidekick whose name is R. Daneel Olivaw. So the four books are, the first one is "The Caves of Steel," then "The Naked Sun," "The Robots of Dawn," and "Robots and Empire."

**Leo:** Now, I think when you say "the robotic rules," people think "I Robot," which was a short story.

**Steve:** Yes, yeah.

**Leo:** Was that the first? Was that the first mention of the laws? I think it might have been.

**Steve:** In fact, there's "I Robot," and then I think that was packaged in a book of short stories...

**Leo:** Right, right.

**Steve:** ...that were lots of different things. And I think you're right. I think that the rules appeared in one of those stories.

**Leo:** And then he explored, for I think maybe another 20 years, I don't know how long it took him to write these four robot books, but he explored the implications of all of that.

**Steve:** Yeah, in fact, that's - one of my very favorite mechanisms for science fiction is where what happens is not just arbitrary, but where some set of clear limitations are imposed, and then the story is written against those. And so exactly as you said, Leo, these three rules are used intrinsically in the fiction which Asimov created. And because he was a great writer and also a scientist, and produced just some really compelling books, they're science fiction in their settings and in what they do and how they do it, but just I can't recommend them highly enough. So...

**Leo:** And we should mention there are other Isaac Asimov books that anybody who wants to be well-versed in science fiction has to read all of them. But the Foundation Trilogy is brilliant. What would you recommend? I'm going to ask you this each time, by the way, so prepare yourself. Let's assume nobody's read any of these. Like my kids. You know, it's funny, I gave my son two books for Christmas, saying these are the must - these are, in my opinion, the two must-read science fiction books to get you started. One was Heinlein's, I want to - it's not "The Moon Is Harsh Mistress," the other one. And anyway...

**Steve:** "A Stranger in a Strange Land."

**Leo:** "Stranger in a Strange Land." And, now, and I wanted to get him into modern sci-fi, so I gave him William Gibson's "Neuromancer." And I thought those two will get you started. But, now, if you were like my son, now, my son's - what would be the first Asimov book you'd read? "Childhood's End"?

**Steve:** Boy. Uh, boy. That's tough.

**Leo:** That is tough.

**Steve:** I mean, "The Caves of Steel"...

**Leo:** Oh, that's Arthur C. Clarke. I wouldn't say that. "Caves of Steel," yeah.

**Steve:** "The Caves of Steel" is so good. And for me, I mean, and we know that, I mean, we're going to see a bias in the next half-hour as I go through this because I like investing in something and then having that investment pay off.

**Leo:** We know that about you. You're an in-depth kind of guy. Deep, not shallow.

**Steve:** And so, much as I invested in learning JavaScript this year, and look what happened. We got all kinds of cool JavaScript things. We got...

**Leo:** And we should also mention that you are a hard sci-fi lover. I think we should probably say that right upfront, that...

**Steve:** Very good point.

**Leo:** You don't like fantasy, swords. You don't like...

**Steve:** I don't know why unicorns are in the same aisle.

**Leo:** So this, everything you're going to get here today, and I'm with you, by the way, is hard sci-fi. And by that we mean real science, lots of it.

**Steve:** Yes.

**Leo:** It could be made-up science, like that supercapacitor, although it turns out that maybe that's not so made-up nowadays.

**Steve:** Not so much, yeah.

**Leo:** But, and I think that there's a reason why hard-science sci-fi is important. I think almost every scientist I've ever talked to, and I ask them this frequently, says that they were influenced in the kinds of research they did by sci-fi, particularly by hard sci-fi. And so in a way it's inventing the future.

**Steve:** Well, and we've seen how often we - scientists, I mean, science fiction authors are predicting where we're headed.

**Leo:** Right. It'd be my position they're not predicting, they're leading.

**Steve:** Yeah.

**Leo:** That the scientists of tomorrow are reading sci-fi today and getting inspired to build - the one exception is flying cars. Everything else they're trying to build. And maybe, who knows, maybe they're trying to build flying cars, too.

**Steve:** Yeah. And Leo, you know, given the trouble we have with malware and viruses and things, I'm no longer a big fan of flying cars.

**Leo:** No, I'm with - yeah, maybe that's why.

**Steve:** I just think it would be a flying disaster.

**Leo:** Flying disaster. Anyway, I didn't mean - sorry for the digression. But I did want to qualify what you're going to hear today.

**Steve:** No. And I think, for you and me, discussing this is a lot of the value that we have for our listeners. So by all means. One of my other favorite older school books, though not as old as Asimov, and we've talked about this before, is Larry Niven's book titled "Protector."

**Leo:** Yeah. That's a wonderful book.

**Steve:** Oh, gosh. And one of the things I also like about these books, and Asimov's robot novels have it, and "Protector" does, and so does one that Niven co-wrote with Jerry Pournelle, which is "The Mote in God's Eye," another great one, is I love it when I'm surprised. I love it when the author - and sure, this is contrived. But that's their right. And as the reader, I'm looking for something fun and that I didn't expect, instead of just sort of documentary. I don't want that. I mean, that's okay, but I'd rather have, like, something that I didn't expect.

And "Protector" is one of the best examples of that, where you're going along, and the story is interesting. You're engrossed and engaged. But you didn't expect what's coming. And, bang, it hits you. And suddenly everything changes. I mean, it fits together. But it's like you're turned upside down in what you were - in the model that you were building in your mind when some additional facts come together. And it's a great story. Not super long. So it won't tie you up forever. But I really do recommend it. If you haven't read Larry Niven's "Protector," it's really good, and I've read it a couple times

**Leo:** Another footnote. First of all, don't worry about spoilers because Steve is not going to give you spoilers. I can guarantee you.

**Steve:** I never do, yup.

**Leo:** He's really good about that. So people in the chatroom saying, "Oh, I'm covering my ears." Don't worry, he won't.

**Steve:** Nope, unh-unh.

**Leo:** But I will say this about "Protector," which I love, and I love Larry Niven. It is old sci-fi. And sometimes when you read older sci-fi, it feels a little dated. "Protector" and all of Heinlein's books, for instance, Heinlein's books are really sexist. "Protector," it just feels like it was written in the '50s. And so it's important to read these books, I think. But don't be put off by the - remember that it was written 30 or 40 years ago. So I think "Protector" is one of the best books. But I also think you must read "Ringworld."

**Steve:** Yeah, good point. "Ringworld" is classic, classic sci-fi.

**Leo:** And "Ringworld" is an example of what you were talking about, which is start with a premise. I think all the best sci-fi does this. Then explore, then expand based on the premise. And "Ringworld" is a perfect example of that. What if aliens built a Ringworld? And I'll leave it at that. What would happen? And then I think what happens with Larry and other great authors is they just go. They say, that's the starting line. Go.

**Steve:** Yup. Yup.

**Leo:** So I would throw in "Ringworld" as another great recommendation.

**Steve:** And also "The Mote in God's Eye" is another - it's a collaboration of Larry Niven and Jerry Pournelle, Jerry whom you've had on...

**Leo:** Also feels dated, by the way. So just remember that when you read these. Remember, you're reading the classics.

**Steve:** Yup. And speaking of classics, there is a series that I really liked also when I was - I almost ought to re-read one to see how I feel about it now. But they are the Berserker novels by Fred Saberhagen. They're novels and short stories. Okay. The one thing that I think of that's more contemporary was one of the original Star Trek episodes, the Kirk and Spock and McCoy Star Trek, the first iteration of Star Trek. It was an episode that was titled "The Doomsday Machine."

**Leo:** Oh, yeah, yeah, yeah, yeah.

**Steve:** And it was this long cone-shaped thing that was going around killing stuff. And it was a berserker. Anyway, the point is that the mythology behind these berserkers is that no one really knows where they came from. It's posited that ancient alien races built them to automate their war against each other, and that presumably the alien, the biological aliens got wiped out; but the machines, being machines, and also being sentient to different degrees and able to repair themselves, they kept on. So, and the bad news is, maybe their programming got altered by a cosmic ray that zapped and flipped a bit or something. Who knows? But what we have in these novels are very competent killing machines.

And what I remember of them - and, I mean, I loved them a lot - was, again, really well-written, really clever, really interesting stories set in this future where biological life, us, we humans, are out in space and encountering these machines that for no reason whatsoever want to kill us because that's the way they're programmed. And some of them are old and decrepit. Some of them are new. I mean, they're just - there's a huge spectrum of treatments of just from this basic kernel of a concept, a machine designed to kill biological life. All these amazing stories come from it. So again, if it's something that you've missed...

**Leo:** Peter F. Hamilton used that premise for "Pandora's Star"; right? In a way?

**Steve:** Actually, yeah, a different one. There it was that not all life has to be like ours.

**Leo:** Right, right.

**Steve:** That it would be possible - he gave us a compelling back story for how mechanical life could actually evolve.

**Leo:** And have no regard for biological life.

**Steve:** Absolutely just that's in the way, yeah, those stinky biological life forms. Yeah.

**Leo:** Anyway, but - so I haven't, it's funny, I have not read these Fred Saberhagen novels.

**Steve:** Oh, Leo. I don't, I mean, they're old. I don't know if they would have been Audible-ized.

**Leo:** They are. I'm looking at them. They're all on Audible.

**Steve:** Oooh.

**Leo:** By the way, I'm showing - another footnote for those watching on video. I will

from time to time show the titles that Steve's mentioning on Audible.com. So far, all of them. Except for, unaccountably, the fourth robot novel. They've only done three of the four. And I think that that's probably because they're doing - we should mention Audible, long-time sponsor of this show and all of the TWiT network, has a science fiction branch called Frontiers, where they're re-recording, or recording for the first time in many cases, the audio books of the classics. So my suspicion is, because they would have, you know, nobody - when these came out, I mean, nobody, I don't know who it was, Tor, whoever published the Berserkers in the first place, thought that anyone would want audio versions. So they didn't have the money, and they didn't do it.

So Audible, because they are sci-fi fans, and I know this for a fact, when I first started with Audible in 2000, there were very few sci-fi novels because nobody recorded these. They built nine studios in their Newark offices, and they've been recording like madmen ever since. And now there are thousands of titles, including all of these Berserkers, on audio, modern recordings of them. Which I think is fantastic.

**Steve:** Well, I mean, there are so many books which I can assert are really good. So, I mean...

**Leo:** I know.

**Steve:** ...our listeners have their homework cut out for them.

**Leo:** The other thing I would say before you go on is that - and thanks to Strength [ph] in the chatroom for pointing this out. Of course most of these are also available on Kindle. And if you're an Amazon Prime member, they've made many of the classic sci-fis available for free to Prime members. So if you go to Kindle eBooks and Science Fiction, there's 21,000+ results there. But many of them are free to Prime members. So if you've been thinking, oh, you know, I don't know if I want to spend millions of dollars on all of these things that Steve is recommending, lots of them are available for Kindle for free, which is really...

**Steve:** So I can, without reservation, I can say try one of the Berserker novels, the Fred Saberhagen, and see if they hook you because, oh, I mean, I still have mental imagery from some. And it's been - it's been 30 or 40 years since I - I don't know.

**Leo:** Oh, I should try these.

**Steve:** Maybe not 40.

**Leo:** I'm willing to try these. And they - "Berserkers: The Beginning" is available both on Audible and in paperback on Amazon. It is not on the Kindle. Which is so...

**Steve:** I'm not surprised. I mean, do you have a date?

**Leo:** It says 1998, but that's not right.

**Steve:** No, no, no, no, no.

**Leo:** No, no, no. That's when this paperback was published. I don't know what the original date is. I'm sure the chatroom will provide this momentarily for me. I think it's odd that there's no Kindle version of that.

**Steve:** There is a whole Wikipedia page on the Berserker novels.

**Leo:** Well, good. I haven't read any of these. I'm adding them to my list.

**Steve:** They really are, they're just - it's just, again, people will know what I mean more maybe when they encounter it. But it's - they're just such clever stories around the concept. And there's something, you know what I mean, that's - I guess it's one of the hooks that Peter Hamilton used with "Pandora's Star" because these are machines that have no remorse, no conscience, no - don't care about us at all.

**Leo:** And why should they? I mean, we assume that aliens would be like us. But no, of course not. They don't have to be.

**Steve:** Yeah. So they're as alien as you could want anything to be. And so it just - it creates an emotional power that there's this machine that just doesn't want to leave you alone. It's pissed off that you exist. So, like, huh, hey.

**Leo:** Yeah, and actually in the Hamilton it's not even pissed off. It's just, you know, it doesn't have even any...

**Steve:** Nope, no conscience.

**Leo:** No feeling.

**Steve:** No ethics, no morality. It's just...

**Leo:** We want that. We're going to take it. Sorry. Bye. Not even sorry. See ya. 1963. Let's see. The first Berserker was written in '65, I think.

**Steve:** Wow, okay. So...

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**Leo:** So that's how old those are, yeah.

**Steve:** I was 10 years old.

**Leo:** But he continued to write them for 20 years or more.

**Steve:** They're so good, Leo. They're so good. So again, I wanted to go back in time a little bit to help our listeners flesh out some of this background, some of the classic stuff, which is just spectacular.

**Leo:** Okay. Before you move on from classics, though, can I throw in a couple?

**Steve:** Please.

**Leo:** I mentioned Heinlein already. You've got to read Heinlein. "Stranger in a Strange Land" is considered by many the greatest sci-fi of all time. I think it's dated now, but I think you've got to read it. We didn't mention Philip K. Dick. I don't know how you feel about him.

**Steve:** Well, I think Philip K. Dick is a spectacular author. And he did many short stories which have been turned into movies. I mean, that's the...

**Leo:** Right. We don't really have to tell people, yeah, we don't have to tell people about him anymore because he's being discovered by Hollywood.

**Steve:** Right. You know, the movie "Screamers" was also based on a Philip K. Dick short story.

**Leo:** Oh, so many. "Minority Report," I mean, I can go on and on and on. "Blade Runner" is based on, was it "Do Androids Dream of Electric Sheep?"

**Steve:** Sheep, yup.

**Leo:** That's a must read. This just in from JammerB, who is apparently also a sci-fi-crazed fellow, as we all are, he mentions "The Three Stigmata of Palmer Eldritch." That's a short story. Most of Dick's stuff is short stories. There's one he wrote, and I can't remember the name of it, where advertising is everywhere. "Eldritch" is a novel? Okay. That's a classic. And "The Man in the High Castle"? Which is maybe not your cup of tea, Steve, because it's a revisionist history novel. He was - Philip K. Dick was a big idea guy.

**Steve:** Right.

**Leo:** That's why movies love him. And again, not hard sci-fi, so maybe doesn't belong on your list. But I agree with JammerB. We've got to include "Dune."

**Steve:** Oh, yeah.

**Leo:** But that's not hard sci-fi by any means. That's a fantasy novel. So we'll leave that out.

**Steve:** Yeah. But, you know...

**Leo:** But good.

**Steve:** Good sci-fi, yeah.

**Leo:** Okay. Just wanted another footnote, sorry. And I'm sure we're leaving stuff out, so.

**Steve:** Okay. So a huge author that we've talked about often, huge in many senses, not physically large, but the novels that he produces, Peter F. Hamilton.

**Leo:** Love him. He's a modern guy. I think he's one of the giants of modern sci-fi, hard sci-fi.

**Steve:** I think so. And, boy, he started in the mid-'90s with a psychic detective who was named Greg Mandel. And the books are, or were, out of print. I remember hearing someone say that they were coming back. In fact, I remember hearing myself say it because I ran across it being said or being written somewhere. But he's got "Mindstar Rising," "A Quantum Murder," and "The Nano Flower," which is - that was my introduction to Peter Hamilton back then, back in the mid-'90s when this was beginning to happen, that is, when he was beginning to happen. Then, of course, he did the Night's Dawn Trilogy, which people went nuts over. It's huge epic space opera, 1.2 million words in the books. They are huge, three huge hardbacks, or they're broken down into six large paperbacks. It lost me a little bit, Leo, because it slipped away from hard sci-fi. I mean, when you've got dead people coming back, it's like, uh, okay...

**Leo:** Yeah, I agree. Al Capone killed that novel for me.

**Steve:** Yeah, exactly. Yeah, he spent a little too much time on that stuff. And it's like, okay. I loved the sci-fi portions of it. And there are some great characters in there. But it was like, eh, okay, it's nothing I would read again.

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**Leo:** I agree. And very long. He likes to write.

**Steve:** Oh, yes.

**Leo:** Which is why we recommend "Fallen Dragon" as the starting point.

**Steve:** I was just going to say that, exactly that. If someone wants a beautiful introduction to Peter Hamilton, I've read "Fallen Dragon" I think three times now. Just, again, I'm that way. Even though I know what the story is, if a writer really does a beautiful job of painting imagery for me, it's like, oh, I'm ready to read that again. So, I mean, for the experience. So "Fallen Dragon," absolutely. And then "Pandora's Star," which is the first of two. And the sequel, the finishing of that story that we mentioned of a mechanistic thing which creates itself on a planet and then hampers us, is "Judas Unchained." So "Pandora's Star" and "Judas Unchained."

**Leo:** Both Steve and I had the great misfortune of reading "Pandora's Star" before Hamilton had finished "Judas Unchained."

**Steve:** I knew you were going to say that, Leo.

**Leo:** And we were left hanging.

**Steve:** It's like, aagh.

**Leo:** No. It is...

**Steve:** What happened?

**Leo:** So, yeah, read "Fallen Dragon." If you like that, then "Pandora's Star." And then leave - I think you could actually ignore "The Dreaming Void" entirely.

**Steve:** The whole Void Trilogy?

**Leo:** Yeah. I don't think it's bad. I think he's a brilliant - unlike many of these guys, he's actually, I think, a very accomplished writer in the craft of fiction.

**Steve:** Yes.

**Leo:** Sci-fi does not always, is not always well written in that sense. Characters are

sometimes - Heinlein's a good example. Characters are paper thin. But you read him for the ideas, for the inspiration, for the excitement, for the plot. Hamilton you can read for the characters, for the descriptions. It's beautiful stuff.

**Steve:** Oh, and "Pandora's Star" is, well, "Pandora's Star" and "Judas Unchained," they create what is known as "The Commonwealth," where this is the far future, where you've got regeneration, people's consciousness living on for hundreds and in fact thousands of years, fantastic characterizations that he does. But again, long. And although I really thought "Pandora's Star" was really very good.

**Leo:** Well worth it, yeah. I'd just say stick with those two. I mean, that's three books. It's going to keep you going for a while.

**Steve:** Oh, goodness, yes. Because he does a - he doesn't write anything short.

**Leo:** Right. Well, "Fallen Dragon" is one - and by the way, unfortunately, not on Audible. Which I'm sure they're going to record it because they have all of the Void Trilogy and "Pandora's Star" and "Judas Unchained."

**Steve:** Yeah, they're probably just working to...

**Leo:** Getting there.

**Steve:** ...catch up.

**Leo:** Working up to it.

**Steve:** So another very different author, but one of my favorites, who I have mentioned many times, is Michael McCollum. He is actually a rocket scientist. He designed a pump that's on the International Space Station. He replaced some of the problems at Chernobyl. And he's an aerospace engineer. Despite that fact, he's also a great storyteller. And he has a website, [scifi-az.com](http://scifi-az.com). And I know from our correspondence, because in fact I edited the last of his Gibraltar Series books because I'm a very slow and careful and methodical reader.

And what I was doing was, as I was reading previous books of his in e-format, I would just mark up - I think it's when I was using, I was reading on the Palm Pilot, of all things, or one of the Palm - the T3, I think it was. It was very easy to just make a highlight and save it into a file. So I would send him my file of little typos that I would find. And so he finally said, okay, I give up, I'm going to let you read these...

**Leo:** Edit these.

**Steve:** Yeah, edit these. So, okay. So he's got a couple multibook series which are also at the top of my list. I would not call them literature in the sense that Hamilton almost qualifies as a literary creator. But, oh, my goodness, they are fun. It's absolute hard sci-fi, tons of new ideas. And so there's something called the Antares Series, which are three books: "Antares Dawn," "Antares Passage," and "Antares Victory." And from his own site I just snipped this so I could share, to give you a sense for the introduction. He says - and this is, again, not a spoiler. This is his little brief sort of intro to the book.

He said, "When the supergiant star Antares exploded in the year 2512, the human colony on Alta found their pathway to the stars gone, isolating them from the rest of human space for more than a century. Then one day a powerful warship materialized in the system without warning. Alarmed by the sudden appearance of such a behemoth, the commanders of the Altan Space Navy dispatched one of their most powerful ships to investigate. What the ASNS Discovery finds when they finally catch the intruder is a battered hulk manned by a dead crew. That is disturbing news for the Altans, for the dead battleship was so powerful that it could easily have defeated the entire Altan Navy. If it could find Alta, then so could whoever it was that beat it. Something would have to be done."

So what Michael creates here is an interstellar travel technology that is based on gravity wells created by stars. So when this Antares star exploded, the mapping that they had done or the throughways through hyperspace that were all about gravity wells of stars, the loss of this star scrambled all of their mapping, and they were stranded. And something else happened at some point that recreated some throughways. And anyway, it's just, again, it is really good storytelling. And a little bit of romance. He always throws some in, which is kind of fun, on the human interest side. But just lots of great story in there.

And so there's that trilogy, the "Antares Dawn," "Antares Passage," and "Antares Victory," I recommend without question. And I've also mentioned and recommended because it was happening with us during this podcast, the Gibraltar Series that Michael created, "Gibraltar Earth," "Gibraltar Sun," and "Gibraltar Stars." There he posits a really interesting situation where, by mistake, we discover that we're not alone. At the point where the books begin, we're beginning to colonize. Our radio bubble is expanding at lightspeed, which of course is the term for the electromagnetic energy that the earth has been producing ever since "I Love Lucy" was being beamed out on television and so forth. So that's expanding. We suddenly discover that, by some coincidence, we have not come to the attention of an incredibly powerful but also incredibly xenophobic race, which wouldn't be happy at all to know that we're here in its backyard. And so this isn't a concept I had seen before. And what Michael does with it is just fabulous.

So again, that's the Gibraltar Series. And then he has a number of standalone novels: "The Sails of Tau Ceti," a book called "Life Probe," and "Procyon's Promise." So anyway, I've never read anything he's done that has disappointed me. Also they're available in every conceivable eBook format. He is selling them on Amazon, so you can get them for the Kindle. He is selling them on his own website. And they are not copy-protected, which, I mean, here's someone who more than anyone I can suggest is owed the money that you would pay for his books. But it's nice to know that you can buy them once, get them in every format, stick them somewhere safe on a thumb drive, and they are future proof because these, if you're a person like me who likes to re-read things, I just can't - I can't recommend them enough. It's, again, great sci-fi.

**Leo:** Highly agree.

**Steve:** Now, the Lost Fleet Series by Jack Campbell. I've mentioned these because I read them during the podcast's life. And they are also really good. And I know from the feedback I've received from our listeners who have followed the recommendations, they've loved them. They're another really interesting concept. Here, in the future, humanity has been sort of split into two halves that are at war. And by a fluke, the life pod - and this is not giving anything away. You get this in the first few pages of the first book. The life pod containing an old warrior is found.

And this Captain John Geary is resuscitated, near death but brought back to life. And it turns out that, by a fluke, he ends up in, well, he's the most senior officer they have because he received his commission hundreds of years before, and they go by the date of commission. So he uses that in order to get command at a time that's necessary. What's wonderful about these, and people with a really good memory will remember this because I've mentioned this before, is we're dealing with huge fleet engagements where he's configuring the physical layout of fleets which are meeting each other in space battles. All of these writers are careful to impose very clearly explained limits on their technology. So, for example, Michael McCollum is faithful to speed of light problems and comes up with drive technology which coherently fits the story really well.

Jack Campbell does the same thing. I remember, as I was reading these, really getting an appreciation for how daunting it is to operate in planetary-size space if you don't have just faster-than-light technology at your fingers. But you've got to spend all this time accelerating your ships and then turning them around and decelerating them. But anyway, he's got a series called the Lost Fleet Series: Dauntless, Fearless, Courageous, Valiant, Relentless, and Victorious, which are just - they're really nice reads. Not super long, but really great. And he's started now another series of two. "Dreadnaught" follows on from that, and then "Invincible" is another one which will be coming later this year. So those two will be following the original Lost Fleet Series. And they're just spectacular.

So the last author that I've mentioned before, I'm a little hesitant because the fifth book is not finished. The author is Graham Sharp Paul, who creates a character named Michael Helfort. And the series is Helfort's War. We are introduced to Michael as he's graduating from the equivalent of Star Fleet, from whatever Star Academy this is. And I assumed that the series was finished, but it's not. I thought that Book 4 was the end, but we only got sort of half of Book 4, and I'm still waiting for 5. So it might be something that you'll want to wait for until you hear from me that we're finished. But I really did enjoy the books. They were also really good.

And I will finish with where I currently am. I've mentioned these a couple times. I'm now in Book 10 of the Honor Harrington Series by David Weber. He has something collectively known as the "Honorverse," which is his very large science fiction future humanity, which is really good. However, I have to say that they're maybe a little too political. I like politics. And even someone who likes politics is thinking, okay, come on, let's get on with this. We're spending a little too much time here. I want a little more space battle and action.

The beginning of them, up through Book 7, I thought was really good. I mean, and I remember telling people, I mean, I was choked up reading these books in several places. They're just very powerful, and I'm a sucker for duty and honor and sort of the whole military ethics stuff, which these are steeped in. But in going for 12 books, which is what the whole series encompasses, we end up - he broadens them out, creating a world that is very complex. And in order to keep everything knit together, he gets into a lot of detail. And my sense is they're accurate inasmuch as, yes, all of the things he's talking about had to happen and have to happen. But, oh, it's just - it's a little - by Book 10, it's like, okay, it's seeming a little long.

So it is not the case that anything is unfinished, whereas some of the these you really - for example, the Lost Fleet Series, you need to get through the end of the sixth book in order to get the end of it. With the Honor Harrington Series, you would be fine if you went for half of them and just said, okay, I've had enough. I mean, and I'm really glad I'm reading them. But they fall a little bit short of my enthusiastic recommendation without any equivocation at all because it is dragging a little bit at this point, by Book No. 10. But for everything else, wow. I just - I recommend everything wholeheartedly.

**Leo:** All right. The chatroom's loving this. One of the reasons I know this is a great subject is because it stimulates conversation. Everybody has their favorite; right? And so people are throwing in their favorites. I'm going to throw in a couple.

**Steve:** Good.

**Leo:** First of all, one that I've not read, but JammerB has been saying, if Steve likes big, which we know Steve does, he says, you've got to read - and I think one of the reasons you haven't is because it's not available electronically - the Tad Williams Otherland Series. And I haven't read these either, but I see them in the bookstore all the time. If you browse sci-fi, you can't miss them because they occupy so much shelf space. But he says they're great. But not Kindle and not Audible. So that for me is a disadvantage.

**Steve:** So it's called "Otherland."

**Leo:** "Otherland" by Tad Williams. He says it's a big series. And he takes off on the Metaverse concept. And if we're going to say "Metaverse," I've mentioned already William Gibson's "Neuromancer." You've got to mention Neal Stephenson and "Snow Crash."

**Steve:** Yeah.

**Leo:** One of the great - Neal has a problem with finishing books. So sometimes - and this is not unusual in all kinds of authorship. But the big books, sometimes they trail off at the end, and Neal's notorious for that. "Snow Crash," a good example. But the first chapter of "Snow Crash," if you read nothing else, if you haven't read the first - go to the bookstore, just pick it up and read the first chapter and put it back. You've got to read that. Especially if you're - you've just got to read it. And you probably will continue.

**Steve:** If you're able to put it back, then it's just as well.

**Leo:** Exactly. Then it's not good.

**Steve:** But you probably won't be able to.

**Leo:** When we were talking classics, I briefly accidentally mentioned "Childhood's End" by Arthur C. Clarke. But you've got to read Arthur C. Clarke. "Childhood's End" is in a category of sci fiction that I love, which is not - it's hard science, twist ending. And I love the big twists. And as long as we're mentioning big twists, "Childhood's End" is one. I don't think it spoils it to say that there's a surprise.

**Steve:** No.

**Leo:** The other is Orson Scott Card's "Ender's Game."

**Steve:** Oh, "Ender's Game," yup.

**Leo:** Wonderful book. There's a whole series of mixed value. But you've got to read "Ender's Game."

**Steve:** Yeah. And there, again, that's one where it's just a great concept. It's, I mean, you just need to be exposed to the whole "Ender's Game" concept. Really interesting.

**Leo:** Now, we conditioned this at the beginning saying it's hard science. So of course you didn't mention two that the chatroom loves. Douglas Adams' "Hitchhiker's Guide to the Galaxy" Series.

**Steve:** Oh, I'm glad you mentioned it. You're right. But, oh, my god...

**Leo:** It's not sci-fi.

**Steve:** ...it's the funniest stuff...

**Leo:** It's funny.

**Steve:** ...I have ever read in my life. I mean...

**Leo:** So a separate category.

**Steve:** ...cleverly, cleverly funny, yes.

**Leo:** And that actually started, not as a novel, but as a radio show. He wrote the radio show, then novelized it. And if you're interested in funny sci-fi/fantasy, Terry Pratchett's Discworld Series is very, very funny and very, very good. And then I'm

going to throw in - and we've been talking about - and of course what's nice about sci-fi is there are a lot of new guys and gals writing sci-fi and taking it in very exciting and interesting directions. Steve has mentioned a few. I like one, and I don't know if you've ever - this is real hard science. Stephen Baxter? Have you ever read any of his stuff?

**Steve:** Oh, yeah, yeah, yeah, of course. All of his Time Series and...

**Leo:** Time Series, yeah. And I liked "Evolution," which isn't really sci-fi, but it's a fascinating book in which he begins at the beginning of life and continues through the end of the galaxy. In one novel.

**Steve:** Whoa.

**Leo:** There's not much plot. But it's an exercise, I think, in brilliance.

**Steve:** Wow.

**Leo:** Yeah. It's called "Evolution." And we've left out many.

**Steve:** There's a book called - oh, I know, I mean, there's a book called "Eon." I think "Eon" was written by Greg Bear, if I remember.

**Leo:** "Eon" is wonderful. In fact, I've been - it's funny that you should say that because I love Greg Bear's stuff.

**Steve:** Yes.

**Leo:** And I was going to mention him. Some of his stuff is not hard sci. Some of it is. I think he's one of the best current practitioners. I love his stuff.

**Steve:** Also I skipped Gregory Benford, who is a renowned physicist and astrophysicist. I did read during the last couple years the Galactic Center Saga, which is another organic vs. machine story. Really good novels, amazing characterization. I mean, I still have - I have the characters he created in my head. I mean, they just - they stay with you. "In the Ocean of Night," "Across the Sea of Suns," "The Great Sky River," "Tides of Light," "Furious Gulf," and "Sailing Bright Eternity" is his Galactic Center Saga, which takes us also from Earth to the center of the galaxy, which is what made me think of it when you were talking about the entire life of the galaxy.

**Leo:** And talking about scientists who write great sci-fi, and we've mentioned this

before, I know you like his stuff, David Brin and the Uplift Series. Amazing. So what's great - what's great news is, if you're interested in sci-fi, there's a huge selection. You've got to read the classics, which we've mentioned. And then you'll find that there are modern practitioners who are taking it to the next level in many ways. And of course you've got to read William Gibson, and "Neuromancer" especially. Which when I - "Neuromancer" for me was like "Matrix." When I saw the "Matrix" movie, I went out of there thinking my world has changed. And when I read "Neuromancer" I felt the same thing. Just really, really brilliant stuff. So, wow. We've given people probably 80 years' worth of reading between the two of us.

**Steve:** Yeah.

**Leo:** Lots of fun.

**Steve:** Good stuff. Good stuff.

**Leo:** I'm so glad we did this. Yes, Audible does have all of Orson Scott Card's stuff, including "Ender's Game." "Ender's Game" you'll like. "Ender's Game" is what turned my son on to sci-fi because it's about a kid.

**Steve:** Yup, exactly.

**Leo:** And a kid who, I think it's safe to say, saves the universe. So is that a spoiler? Maybe I've done that. I shouldn't say that. But it's fascinating. And that turned Henry on. And then he went on to read, and this is sci-fi, as well, in a modern fashion, Daniel Suarez's books, "Daemon" and "FreedomTM," both of which you loved, I know, and are brilliant.

**Steve:** Yup.

**Leo:** So, wow.

**Steve:** There it is.

**Leo:** We have to stop.

**Steve:** Big reading list.

**Leo:** Really, really great stuff. Steve, this year and every year, I just - one of the things I'm so grateful for is the chance to do this show with you. Your friendship, too, which has always been just cherished by me. I want to thank you for a great

year of great shows. And all I can say is we all look forward to Security Now! in 2012.

**Steve:** Well, and we already have a backlog of topics. We've got...

**Leo:** You thought when we started this show six years ago, oh, we'll never be able to go for more than a year. We'll run out of material. Nunh-unh. Nunh-unh.

**Steve:** Yup. No. No. And it's funny, too, because I ran across somewhere, maybe it's on the page, but we had this concept of a quick 20-minute synopsis of what happened during the week. And I don't - I know the early podcasts were very short compared to the, eh, we normally run about 90 to 100 minutes or so, and with never a stop. So, yes, I think there's no end in sight, as they say.

**Leo:** No. And we plan - we won't make the show longer, I don't think.

**Steve:** No, because we'd just exhaust ourselves.

**Leo:** But thank you for all the hard work you put into this show.

**Steve:** Always a pleasure. And it's great working with you, Leo. I really enjoy it and look forward to many more years.

**Leo:** Do go back to our back log, our back catalog of 333 episodes now, all on Steve's site in 16Kb versions. He's also made transcriptions available, which is fantastic. So if you listen to this, "Oh, I missed, oh, I missed," in a couple of days Elaine will have transcribed it, and you'll be able to go and search through all of them and cut and paste the stuff you want. That's all at his website, GRC.com, where he also publishes SpinRite, the world's finest hard drive maintenance and recovery utility, and lots of free stuff, tons of free stuff, including the legendary ShieldsUP! to test your router. And now you've got one more test to throw in there. Turn off WPS.

**Steve:** Yes.

**Leo:** You also can find video versions, as well as audio versions, on our site, TWiT.tv, going back 333 episodes. Thank you, Steve.

**Steve:** And we'll remind people that next week is a Q&A episode, so GRC.com/feedback. Send me anything you want to. We'd love your name and where you're located so we can let people know who's listening and where they are. And we will entertain questions. And then in two weeks we're going to plow into how it is that a fault was found in a protocol that all of our routers, our wireless routers, probably have enabled by default, which

allows a bad guy to get in in only a couple hours.

**Leo:** Wow.

**Steve:** Not good.

**Leo:** Wow. Steve Gibson, GRC.com. Have a great New Year's Eve and New Year's Day. And we will see you next Wednesday, 11:00 a.m. Pacific, 2:00 p.m. Eastern, on TWiT.tv.

**Steve:** Yay. Thanks, Leo.

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