**RedZone Podcast Episode #63: Frontiers of Ultimate Human Performance- with Steven Kotler**

Bill: Let's just dive right in. I want to welcome you to the show today.

Steven: Thanks for having me.

Bill:

[00:00:30] You've had this incredible string of success with your books, without "Abundance" and "Rise of the Superman" and with "Bold," and now you have a new book coming out. Why don't you just give me an idea about the context around the book and sort of how ... I guess it's not a trilogy. It's a quadrology. Four books in a row. Is there a word for that?

Steven:

[00:01:00] It's worse than that because a lot of it starts and it literally ... My investigation into kind of questions around ultimate human performance and how much can we level up our game, those kinds of questions. They go back all the way to like my first novel. They're there for sure. My investigation of flow is my second book, my first non-fiction book. I do more flow in my third book, which is really a look at empathy and the relationship between humans and animals. Then "Abundance" and "Bribe" and "Bold" and "Tomorrowland" and "Stealing Fire Now." I've got one note. I just hit it from a lot of different angles.

Bill:

[00:01:30] Yeah, no, it's definitely a theme, a major theme that's been super interesting to me. One story that I want you to tell the audience. It is a story that was very profound for me. It was the rafting that the individual ... I forgot his name, but he went down the Stikines River or something. It was a river in Canada.

Steven: Doug Ammons.

Bill: Doug Ammons, yes.

Steven: Doug Ammons.

Bill: You've got to tell that story because what I want to do is understand ... Obviously that's a guy, athletically very gifted, on the edge, but I'd love to kind of ... You tell that story, and then we can talk about how average human beings can start to tap into these potentialities.

[00:02:00]  
Steven:

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Well, Doug is ... Outside Magazine, which say what you want about it, it's certainly a bible of adventure sports, and they made a list of ... I think it was a hundred ... I might have the number wrong. It's been a little while since I've looked at the data, top adventurers of the twentieth century, and Doug Ammons is like number five or number eight, and nobody knows his name because he's a kayaker, and he's also a philosopher and a psychologist, and he runs two different psychological journals, and he's an expert martial artist, and the list goes ... He's a total polymath. He's an amazing human being and a musician, a mathematician. The list is really frightening, and a lovely writer on top of it. Insult to injury, he does what I do, right? He's really good at that too, and he's written a number of books on philosophy.

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[00:03:30] Anyways, but he's an all around bad ass, and the Stikine, which is the river you're talking about, is sort of like the Mount Everest ... Mount Everest is the wrong mountain because Mount Everest is not mean enough at all, but it's so big, it's so dangerous, it's so scary, it's so insane. It's got more near death class five, six rapids that could just kill you than almost anything imaginable, and Doug, it took him forever to run it, and he runs it the first time, and he pulls ... He does it the first time, and it's heavily assisted. They've got helicopter backup, they've got all kinds of stuff, and it goes pretty well.

[00:04:00] I may be screwing up parts of the story a little bit. You've asked me to tell a story that I haven't told since I've actually wrote it, so full disclosure, I think I'm getting all the details right. I want to give you as many details as possible because it's a crazy story. He comes back a second time, and they're going to do it unassisted, so no more helicopter support, they're going to carry all their own food. The thing about the Stikine is it's very, very, very long, right?

[00:04:30] Really committed rivers don't swallow you for days on end, and then once you're in there, there's no way out. Stikine is surrounded on every side by five hundred foot unscaleable cliffs, and if you do make it to the top of the freaking cliff, there's a hundred and fifty miles of Canadian wilderness where most things can kill you and will kill you. You won't get past the bears kind of thing. There's literally no way out. Once you start down the river, you have to finish the river. Once you go in ... Unsupported is a big deal, and it goes so horribly wrong, you have no idea.

[00:05:00] They get to the first mellow ... What is for the Stikine a mellow rapid, and it swallows Doug's partner. The first guy goes through. Second guy gets swallowed, kicked out of his boat, gets washed up after nearly drowning. He literally crawls out, and he realizes his boat is gone, so he either has to swim a near death rapid or barefoot with no equipment scale a five hundred foot cliff and hike out, and while Doug sat and watched, his closest friend scaled the five hundred foot cliff.

Bill: Oh, my gosh.

Steven:  
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[00:06:00] Free soloed, right? Barefoot, no gear, nothing. It was super traumatic and heavy and everything you could possibly imagine, so what does Doug do? He decides he's going to be the first guy to solo it alone unassisted. He comes back the third time, and for him to pull it off ... As kind of you mentioned when we were talking earlier, I work on flow states, right? These are states of intense focus and concentration, and we can talk about it then a little bit more, where performance goes through the roof, and for Doug to be able to pull off the Stikine, he was going to have to stay in a full present completely deep flow state non-stop for days on end alone in the face of some of the greatest danger ever.

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[00:07:00] So much danger, he told nobody. If something goes wrong, he's dead because everybody ... If he was like, "Hey, I'm going to go solo paddle the Stikine," it's essentially saying, "Hey, I'm going to go to the garage and shut the door, and I'm going to start the car, and I'm going to do some deep breathing exercises. You want to watch or set up a video camera?" You know what I mean? That's really the statement, honest to God. He tells nobody. Nobody knows he's done this. The reason I recount the story in "Rise of Superman" is both because Doug is clearly a deep, deep master of flow, and the whole point of "Rise of Superman" is what these top athletes have done to harness flow so successfully, and let's build a bridge between the extreme and the mainstream and figure out how we can use all this stuff for ourselves, and with Doug, there is a number of stuff, but there are a couple really kind of clear takeaway lessons from Doug, which I'm happy to kind of break down for you if you'd like.

Bill:  
[00:07:30]

[00:08:00] Yeah. I think what led me to you is I saw, "Gosh, there's the potential." I took my son to go white water rafting in Pennsylvania at the Yohogania. It was only a foot above the mean level, so it wasn't even near the super, super dangerous level, but it was such a exhilarating experience that ... They had the guides go up ahead, and it's like, "Why is that guide on top of that rock?" He says, "Well, there's an iron pole up there to fish you out if you get stuck under the rock," and so when I was reading your story, I thought, "God, this is super ..." You have this vivid details. I'm like, "How do you do this? How do you do this in mainstream and not just have to be out in the wilderness to get that experience?"

Steven:

[00:08:30] One thing that's also worth pointing out out because kayaking is not a sport people are familiar with, right? The one thing that is worth pointing out is that of course action sport athletes consistently ... Who's the biggest bad ass and which sports is more bad ass? You know what I mean? Those are questions that discussed fairly frequently on chairlifts for certain. Usually fairly high at the top of the list are downhill mountain bikers. There's no engine, there's no armor. The armor's not super great, and you're moving at motocross speeds down a mountain, very tiny trails, and the people that downhill mountain bikers go, "Oh my God, they're totally crazy," are the kayakers.

[00:09:00] The only people I think the kayakers do it to are the wing suit flyers, which I think is ... They win, right? The ace jumpers, wing suit flyers, they win, and then honest to God, the heavy duty kayakers because if you're measuring in terms of chances to die if you make an error, which is the rating scale, I think probably motocross probably comes in between kayaking and mountain biking because those guys just break colossal amounts of bones, it's amazing. They don't seem to die, but boy, they break like fifty things at once.

[00:09:30]  
Bill:  
Let's go into some of the ... We've given people that story that got me super excited to reach out to you, and then I know you've got ...

Steven: Let's make it practical.

Bill: Yeah, and you brought it down to a really practical level, which in and of itself these stories are fantastic, but what's really interesting is that your mission has been about how do you make this accessible for people, and what is going on chemically, and maybe ... I don't want to go too far ahead. Maybe you can just kind of backtrack and just tell us a little bit about what's going on chemically, and then how you're making this actionable for people.

[00:10:00]  
Steven:  
Yeah. Let me break down a little bit of a neuroscience of the why. Let's start simply.

Bill: Okay, okay.

Steven:

[00:10:30] For those who aren't familiar with flow states, they are technically defined as optimal states of consciousness where we feel our best and perform our best. More specifically, they refer to those moments of raft attention, total absorption, where you get so sucked in by the task at hand that everything else seems to disappear. Action awareness will start to merge, your sense of self will vanish, time passes strangely. Sometimes it'll slow down and you'll get a freeze frame effect. If anybody's been in a car crash, sometimes it speeds up. Five hours will pass by in five minutes.

[00:11:00] Throughout all aspects of performance, both mental and physical, go though the roof. The numbers ... For example, just to put it in a business context, when I say they go through the roof, McKenzie Business Consultancy did a ten year study of top executives in flow. On average, top executives reported being five times more productive in flow. That's five hundred percent more productive in flow. Technically, they could come to work on Monday, spend Monday in a flow state, take Tuesday through Friday off, and get as much done as everybody else in the company. If you put it in more ruthless capitalistic context, two days a week in flow, and you're a thousand percent more productive than the competition. It's a big number.

[00:11:30] More interestingly, I think, on the back end, McKenzie also found out that most of us spend about five percent of our work life in flow, usually without knowing it. The reason is flow is a spectrum experience. It short of exists on a scale from micro-flow to macro-flow. There are seven kind of core components that describe what it feels like to be in flow. These range from complete concentration on the task at hand to the stuff we talked about a second ago, self vanishing, time passing strangely, et cetera, right? Micro-flow is when a couple of those conditions show up. Macro-flow is when you get them all at once.

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[00:12:30] Micro-flow is what happens at work all the time. In fact, one of the most common instances of flow is conversations between middle managers, when you start into a conversation that matters, something heavy, so there's probably consequences, right? It's a work thing, so there's little risk involved, that sort of thing. It's not a flighty discussion, but you get into a serious discussion, and an hour goes by, and you don't even notice. That's a micro-flow state, right? Low down on the scale, but very, very, very productive. You'll notice that oftentimes those conversations are where we accomplish what we couldn't accomplish in a two-day meeting, right? You've had two days of meetings, and they don't work, but you fall into a conversation with the one person at the meeting for twenty-five minutes, get sucked in, don't even notice you're there, and suddenly all the problems are solved. It's a micro-flow state.

[00:13:00] Macro-flow, which is when all these conditions show up at once, almost feels like a mystical experience and was literally described by psychologists as a spiritual experience for the first seven years. Nobody had any idea this showed up in non-religious spiritual people until Abraham Maslow discovered that all successful people in the world seem to harness this particular altered state of consciousness, and all the successful people he had studied were atheists, which was first time somebody went, "Hey, wait a minute. Maybe this isn't spiritual. Maybe this has something to do just with the people in general."

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[00:14:00] Neurobiologically, now that we've kind of given you some of the benefits, a couple things happen that are important. The first is that our old assumptions about ultimate human performance, AKA flow, was what's now known as the ten percent brain methods of this, idea that we only use a small portion of our brain at any one time, so ultimate performance must be the full brain on overdrive, right? That was the longstanding idea about what happened in these states. Everyone just made movies. That movie that came out a couple years ago, "Lucy," was based around this, right? It's a total myth. It's wrong. The brain doesn't work that way, and it was literally like William James said something at the turn of the century that Dale Carnegie repeated badly, and then every self-help guru after Carnegie parodied it, and that's what happened, but it's not true at all.

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[00:15:00] In fact, what we see in flow is the exact opposite. Your brain isn't becoming hyperactive. It's deactivating. Huge swatches of it are becoming hypoactive. Hypo is H-Y-P-O. It's the opposite of hyper. It means to slow down or deactivate, right? Most of the areas of the brain where this is taking place are in the prefrontal cortex, the part of the brain that's right behind your forehead, right? Long-term planning, complex reasoning, sense of morality, sense of will. That's all prefrontal cortex, your executive functions. In flow, large portions of the prefrontal cortex are shutting down. This is happening because it's an efficiency exchange. The brain has a fixed energy budget. Cognition is extremely expensive, and the brain is always looking for ways to conserve energy.

[00:15:30] In flow, all of our focus is driven into the right here, right now. Focus requires a tremendous amount of energy, so the brain performs an energy exchange. It starts shutting down non-critical through spotlight attention systems. These shut-downs confer all kinds of performance benefits and explain a lot of what happens in ... What our experience is. Why does time pass so strangely in flow, for example? Time is calculated all over the prefrontal cortex, and as parts of it start to wink out, we can't perform the calculation, right? We can no longer separate past from present from future, and we're plunged into that internal now, or what researchers call the deep now, that eternal moment.

[00:16:00] What happens to our sense of self? Why does self vanish? Same thing. The self is calculated all over the prefrontal cortex. Lose the ability to perform this calculation when the prefrontal cortex shuts down, self disappears. We experience this, as relief, as liberation, right? We're kind of getting out of our own way. One of the reasons is ... A lot of this takes place in the dorsal lateral prefrontal cortex, which is a ton of stuff, but it's where your inner critic lives. Your inner critic, right? That nagging, always on, defeatist voice in your head. Your inner Woody Allen. In flow ...

Bill: That's a huge piece, though, shutting off that critic, right? That's probably something that kills, it's like Kryptonite for people.

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Steven:

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Think about what happens. Three things immediately happen when you shut down the inner critic. One, confidence goes through the roof because you no longer treat beating yourself up for everything you're thinking or saying, right? Confidence rises. Risk-taking goes up. Most importantly, creativity goes through the roof because we're no longer super critically judging all of our ideas. One idea is flowing into the next, is flowing into the next. We're in the moment. That flow of ideas, by the way, is one of the reasons flow has its name. That's what it describes.

Bill: Those are some of the flow triggers. Is that kind of a deep embodiment?

Steven: Yeah. Let me round out the neuroscience of flow just a little bit. I won't go into detail. We can talk about it if you want, but just let me paint the picture.

Bill: Sure.

[00:17:30]  
Steven:

[00:18:00]  
A lot of mistakes that people tend to make when they want to talk about the brain is that they want to say, "Hey, neural anatomy," which is what I just talked about, right? "This takes place there, so this is how we explain it." The brain's a system of networks. We can't really describe things at the network level yet. We can sort of say is we think when self vanishes, the default mode network actually shuts down, but we're not a hundred percent certain. Maybe. What we can talk about is neural anatomy, neurochemistry, and neuroelectricity, right? Where in the brains are these taking place, and the two different ways the brain sends signals back and forth. I'm not going to bother breaking down the neurochemistry of the ... Talk about flow triggers.

[00:18:30] I just want your listeners to know that there is a ton more going on in flow, and when people ask me to define flow, other than describing an optimal state of consciousness, I think it's critical to define it by its neurological function. Do we understand everything about its neurological function? No, but at least it gets us past kind of the new age language that has surrounded this stuff for a while and gets us down to the level of mechanism.

Bill:

[00:19:00] Just to make sure I understand and people understand the mechanism, what we're trying to say is when you feel a runner's high, like as a runner, you clearly come back at times and you feel this high, but there's something going on under the hood. What is that? Those are the endorphins?

Steven:

[00:19:30] What is going on under the hood, runner's high, which is a low grade flow state ... The first thing that is happening is you are getting what is called exercise-induced transient hypofrontality, meaning big chunks of the prefrontal cortex are shutting down. Simultaneously, you are getting ... In runner's high we're not a hundred percent what the exact cocktail is, but it looks like in flow you get the cocktail of five different neurochemicals: norepinephrine, dopamine, enandimine, endorphins and serotonin. Runner's high appears to be definitely endorphins, definitely enandimine, possibly dopamine and norepinephrine as well. We're not a hundred percent certain about the serotonin yet, but it looks like it. Runner's high is a version of flow. When you're talking about what's going on under the hood, you're talking about these changes in neurochemistry, these changes in neural anatomy. You're also talking about shifts in neuroelectricity.

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[00:20:30] The reason the neurobiology is important is your question. How the heck do I get more of this stuff? Okay, I get it. This is ultimately human performance. I could be five hundred more productive, more creative, take more risks. All this stuff is great. How do I get more of it, right? What's the practical side of it? The neurobiology is important because this is an altered state of consciousness, right? It's selfless, it's timeless, it's effortless, and it's information rich. Those are kind of its four characteristics of the experience. You want to understand what's going on because when it shows up in a wild altered state and you want to know how to maximize it ... Know how to bring it on, know how to maximize it when it's there, and know how to recover quickly and get it back when it's gone.

[00:21:00] Understanding the neurobiology at least at some level ... This mechanism ... You go back a hundred years, you wanted this state, well, you better pray to the muses, right? This was considered a mystical experience. Most people don't kind of realize that they can tune their consciousness for performance benefits. That's what we're talking about here. That's why I think the neuroscience is important.

Bill:

[00:21:30] Yeah. I find the neuroscience really huge. We've had these mystics from the Greeks to the Tibetan monks and yogis, et cetera. It's super interesting to find out what is happening because you've also explained how this can be very addictive states, and people can be just as addicted to meditation as they could to any other flow state, and so ... You mentioned certain very addictive chemicals that conspire ...

Steven:

[00:22:00] Yeah, all five of those chemicals that I just ... You're totally correct. The five chemicals I just mentioned, they do a lot of performance-enhancing things in the brain and in the body, right? They amp everything up from strength and muscle reaction time to pattern recognition, information processing. All kinds of great, crazy stuff. They're also pleasure chemicals. In fact, they're the five most potent pleasure chemicals the brain can produce, and flow is one of the only times you get all five at once, which is why flow is considered one of if not the most addictive state on earth. [inaudible 00:22:09] pointed out that flow, unlike a lot of other addictions which tend to leap backwards, flow is an addiction that requires you to gain more skills and kind of gives you a view of what might be possible for yourself in your life, so it's an addiction that leads forwards, but it is still an addiction.

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[00:23:00] Some of what we do at the flow genome project that we don't describe it this way is really addiction management because if you are going to play with flow ... We always say this is not for everybody, and we mean it. What we mean by that is ... We'll talk more about this when we talk about flow triggers, but flow is fundamentally addictive neurochemistry, really potent motivational drivers, evolutionary drivers, and you're playing with them, right? It's an experiential experimental approach, and you're absolutely going to get it wrong along the way. It's going to go wrong, and you're going to have to have the emotional control, the emotional understanding, the emotional awareness, the grip, the fortitude, and all that stuff to navigate through this stuff successfully. What happens when people don't is the artist community, which is amazingly creative, wonderful, and the highest suicide rate in the world, and why? A lot of it is because flow is absolutely fundamental to artistic creativity, and the highs are high, the lows are low, and you've got to know what you're doing.

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Bill:

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I think the leaders that are listening ... Our audience is going to be made up of IT leaders, business leaders that are really trying to navigate exponential technology change and their business being disrupted and really trying to bring innovation into their organization. I've often thought that while these technologies are boosting and accelerating that we need to figure out a way to ... Not necessarily to keep pace, but to be able to expand ourselves to ... Go ahead.

Steven: Please, expand ourselves to ...?

Bill: Yeah, I think it's important to be able to almost ... We haven't gone through a software upgrade in our own brains.

Steven:

[00:24:30] Peter likes to say, "Yeah, in fifty thousand years." Let me speak directly to IT, and let me speak directly to innovation. We'll get into flow triggers in a second. We'll get practical in half a second, but the reason I think flow is so important right now to entrepreneurs pursuing innovation, to people in the corporate world is that if you are going to compete in an exponential world, you have to be able to do two things. We highlighted these things, Peter and I, in "Bold," right? You need to be able to perform at speed, right? You need to be able to keep pace with the rate of change in the world, and you need to be able to think at scale.

[00:25:00] Thinking at scale is probably actually the harder one because the brain evolved in a linear environment, right? We do not naturally think ... We live in a global and exponential world with local and linear brains. Literally the environment the brain evolved to process was moved very, very, very, very, slowly. It changed to a place over millions of years. We don't live in that world anymore, and we have the wrong tool for the job. Flow is important because it helps you perform at speed. That's what McKenzie realized, right?

Bill: Sure, sure.

[00:25:30]  
Steven:

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Those addictive neurochemicals are the source code of intrinsic motivation. Drive goes through the roof, right? People who have high flow jobs show up early, stay late, work weekends. Everything's twenty percent time. They love their job, they're your highest producers and greatest ambassadors and have these employees, right? If you're lucky enough to be one of those people, you have the greatest job in the world, and you love what you do. Massive boost in motivation. How do you perform at speed, right? That's key.

[00:26:30] How you do think at scale? Lots of different ways to address this. One is you've got to be able to take in more information, process it more quickly and process it more completely. You're going to have to have accelerated creativity and accelerated learning, right? Those are the things you're going to need to do, and flow sort of provides all of that. The neurochemicals that show up in the state massively amplify creativity, and we can go into why if you'd like, but let's just say studies kind of done all over the world, including some that we've done at the flow genome project, show numbers of creativity spiking four hundred percent in the zone.

Bill:

[00:27:00] Steven, it's fear. I think we have this biological brain ... Maybe you can talk to us a little bit that sort of was a physical threat, physically threatened up until a hundred and fifty, two hundred and fifty years ago quite frequently. Now most of our threats in the western world seem to be less physically threatening and more digitally or concept threatening, and yet we still have this brain that has to deal with kind of expanding and thinking in a different way, yet we're still dealing with threat models that are impacting our thinking capability.

Steven:

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[00:28:00] Yeah, that's a great point. You're totally right. I think the way Peter and I talked about it in "Abundance" is ... Not the way Peter and I talked about it in "Abundance." One of the fear researchers that we talked to point this out, which is that our brain evolved process immediate threats. Tiger in the bush, right? We live in a probablistic world. The brain doesn't understand probablistic threats, right? The economy might nosedive, I might have to find a new job in two years. My wife wants to have a baby and I don't have ... Those are probablistic threats. Our fear response doesn't turn off until the threats go away completely, right? That's how it's built. That's what you do with an immediate threat. You get crazy and have fight or flight responses for a few seconds, but that's very energy inefficient, so when the threat disappears, you calm down. Probablistic threats don't disappear and we never calm down. We're living in this incredibly heightened state.

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[00:29:00] It's work because the adaptive unconscious captures mostly negative information. We're negatively biased because that's how you have to survive. The data, it varies, but people say we take in nine negative bits of information for every one positive. We take in six bits for every one positive. Nobody knows exactly what it is. Also, by the way, once you've taken in those negative bits ... This is Mark Hymen's work at Berkeley. You need to take in six positive things to re-tune your brain away from the negative things. The reason all this matters is there are different estimates to how much information we take in per second, but the biggest estimate out there is two thousand bits a second, and they shrink down to like a hundred and forty. They get really small. We're taking in tiny bits of information.

[00:29:30] The world at large ... Our sense gather, depending on whose numbers you want ... The most conservative numbers are eleven million bits of information a second. The high end numbers are four hundred billion bits of information a second. You're conscious of two thousand bits. If you're only getting two thousand bits of information, the vast reduction of what's actually going on in the world, and you're negatively biased to only see the stuff that scares you, innovation demands you notice everything else, and you think at scale and outside that fear box, right? You have to actively tune your brain to do this. You can't sit by passively and let just sort of life happen to you and your brain run the show if you want to innovative because the fundamental architecture of the brain is going to work against you. It's why in "Bold" we ... Everybody we interviewed talks about rational optimism is one of the strategies for thinking at scale.

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[00:30:30] What we're talking about right now is the neurobiology underneath optimism, right? What does optimism matter? One of the practices we use ... You want more flow in your life? One of the best things you can do is start keeping a gratitude diary. There are a lot of reasons why. In optimal psych they think a gratitude diary, gratitude lists are one of the three most potent things you can do to massively improve your mood. They find that ... They do a very simple version by saying in the morning you write down three things you're grateful for and then a paragraph about one of them. Do that every morning for thirty days and see what happens to your perspective and to the information you're taking in and to your ideas and how many ideas you're generating and your mood. Just take a look. You're going to switch one of the big filters of the brain. You're going to start taking in more information.

Bill:  
[00:31:00] You know, this is so good because a lot of the audience are going to be strong left-brainers and desperately want to develop more of this right brain piece, so it's interesting. We've started out the conversation with a lot of the reasons why and some of the chemistry around it. The gratitude journal, I'm assuming, fires up a ton of the chemicals that are going to need to be patented into the brain to be optimistic, correct?

Steven: Less important. Let's take one ... Your brain on fear, okay?

Bill: Okay.

[00:31:30]  
Steven:  
What happens as the brain starts to get afraid is that the networks ... It is hunting for information, right? Information is coming into your brain, and your brain is saying, "What the hell does this mean?" It's searching a particular pattern, a search space for the answer, right? The more afraid you are, the smaller that search space. Does that make sense?

Bill: Absolutely.

Steven:  
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[00:32:30] What it looks like neurobiologically is tight clusters of neurons. To use the most extreme example is OCD where they can't get out of the fear loop, right? What that literally looks like is a chain of your brain going in circles literally, very tight clusters, right? What you want access to is all your data banks, all your memory. Unless you're in a crisis situation where there are only three options: fight, flee or freeze, you don't want those limits. You want every memory you've ever had, everything you've ever learned if you're trying to solve a puzzle or a problem, right? Be creative, whatever. You need to open that up. How can you open that up? Meditation is one tool, very useful. Another one is gratitude.

[00:33:00] What happens with gratitude, it is very, very ... What a lot of people don't realize, and this isn't entirely true in humans ... It's completely true in lower mammals, but not true exactly in humans. It's very hard to feel two conflicting emotions at once. It doesn't tend to work, right? Fear and curiosity, animals cannot feel both at once. Dogs do not feel both at once. They will switch back and forth, and if you've got ... I run an animal sanctuary with my wife, and we have large packs of dogs, and we get to see this all the time, right? Where they're literally switching back and forth. We can be a little bit gray, but it's sort of an either/or. This is Brene Brown's work. Gratitude is on the other side of shame and guilt and sometimes and often fear, right?

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[00:34:00] What happens is when you are writing down things ... I like to do ten things a day when I do my gratitude practice. You are remembering the things in your life that are not scary, that are going right, and by doing this, you're opening the brain up to more possibilities. You're making the brain ... Optimism matters because you're taking in more and different information. If you're just focused on the negative, you're taking the same information in all the time, all the time, all the time. Why this is so critical ... You can see why this is critical for creativity and innovation. Let's talk about flow for half a second. We keep dancing around flow triggers. Let me just stop and explain this from one more perspective.

Bill: Okay.

Steven:

[00:34:30] Flow states have triggers. We know about twenty of them. There are probably more, but the first thing to know is the most obvious. Flow only shows up when all of our attention is focused on the right here, right now, so all these triggers drive attention one way or another into the right here, right now. Their attention hacks. They're the twenty things evolutionary biology shaped your brain to pay the most attention to, okay?

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[00:35:30] One of them is what I call creativity, but it's really pattern recognition, the ability to link ideas together. When we link ideas together, like you fill in an answer to a crossword puzzle, you get an answer right, we get the neurochemical dopamine. It's a reward chemical. It shows up whenever we get an answer ... Notice a pattern, detect a pattern. We also get a little bit of norepinephrine. Dopamine and norepinephrine don't just show up as rewards for pattern recognition. They tune signal the noise range, shows in the brain ... You said get technical, which is a fancy way of saying they amplify pattern recognition. Once you get a little dopamine and norepinephrine flowing through the brain, one good idea tends to lead to the next, tends to lead the the next. Creative ideas spiral, right?

Bill: We've all been in situations where that's happened. They start building on each other, these ideas.

Steven:

[00:36:00] They feel better and better and more excitement and whatever. One of the other things that norepinephrine and dopamine do is that drive focus and attention. Not only are these ideas showing up, we're paying more attention to them, right? If you can get that loop running while the brain's pattern recognition system is searching a super wide database of potential solutions to the problem, you're under the best possible conditions for massive breakthrough insight, which is why flow states lead to major breakthroughs in technology and [crosstalk 00:36:09].

Bill: That's why it matters.

Steven:

[00:36:30] If you want to perform at speed, you are going to need big insights. There's no other way around it, right? If you're going to keep peace in an exponential world where you're competing against genius innovators coming from everywhere because we're global and we're a network and we're linked, you've got to stay ahead of the curve, right? As Peter says, today, if you're not disrupting your business, someone is doing it for you, right? One of the only ways to stay ahead of the curve, to perform at speed, to think at scale is frequent access to flow, and one of the ways to do this is this creative trigger.

[00:37:00] One of the ways to use the creative trigger is you need lots of new information coming in so your brain can start making connections. Really simple hack here, by the way. I tell people in the flow ... In flow fundamentals, I think this is actually probably in the course that you're taking right now, read twenty-five to fifty pages a day in a book outside your main discipline.

Bill:

[00:37:30] Yeah. I haven't got to that part of the course, but that is so ... I don't know what is going on in the brain with that, but being able to link up ... I'll read poetry to my kids at night, and it's really interesting seeing all of a sudden during the day, I'm like, "Why is that line in that poem link up totally unrelated to some concept I'm studying technically?" It's just really interesting.

Steven:

[00:38:00]

[00:38:30] It's not. Let me give credit where credit is due. Josh Waitzkin wrote "The Art of Learning" who is really I think one of the smartest guys working in high performance today. Love him, great guy, amazing ... He's got an entirely educational organization, theartoflearning.org, that literally does this in schools from that level where they try to ... one of the secrets to creative thinking and to driving flow is learning how to make connections across domains. Literally you can do this in education by teaching the same ideas, closely related ideas in history, English, math, you surround an idea and it shows up in all these different domains, and you're creating the conditions for pattern recognition. What happens is kids start making those connections, and here's the bonus. There's the thing that you need to know that's most important.

[00:39:00] Quick shorthand for how learning and memory works in the brain. More neurochemicals that show up during experience, better chance it has of living in short-term holding into long-term storage, right? Flow, massive dump of neurochemicals, massively accelerates learning. Studies done by the US Military shows that learning spike four hundred and twenty percent in flow. To put that differently, [inaudible 00:38:55] levels ten thousand hours to mastery. The research consistently shows that flow can cut that in half.

Bill: Wow.

Steven: On top of everything else, you're not only being really creative while you're in flow, but you're also remembering what you're doing. It's burning it in. You're coding in new habits in high speed, so this is becoming a part of your skill set along the way too, not just this miracle altered state that shows up occasionally. You can bring it on, you can precipitate it, and it really does level up your skill set.

[00:39:30]  
Bill:  
That's the second hack that's interesting. You can read across domains. One of them was meditation.

Steven:

[00:40:00] Meditation is quite ... There's two reasons meditation matters. Meditation matters because it helps you down regulate your nervous system so you're less reactive, you're less emotional, you're less fearful. That matters with flow because risk-tasking is a flow trigger obviously, right? Flow follows focus. Consequences catch our attention. To walk this flow path, you need to be vulnerable. Brene Brown likes to say that every day creatives have to head into the dark, which I love. I think that's an amazing insight, right? You have that level of risk-tasking, it's fundamental to success in the modern world, and it's fundamental to driving flow.

[00:40:30] If I'm doing this organizationally, I'd say, "Look, companies that are really good at this have the Silicon Valley fail faster, fail forward motto." Everybody thinks that's about rapid experimentation, which it is, which is phenomenal, it's great. It allows you to take a lot of risks with ideas, but this is also ... You need to create space for failure so people can take risks naturally. That motto is an organizational way of creating space for failure because otherwise organizations are built for safety and security. They're stayed, they're conservative. They don't allow people to take those kinds of risks.

[00:41:00]

[00:41:30] I also think if you're serious about hacking flow in your life ... By the way, you don't need physical risks. Emotional risks, social risks, spiritual risks, intellectual risks, take your pick, creative risks. You have to practice on a daily basis taking risks. You've got to do it inside your sweet spot, right? If you're super shy and you're almost afraid of other people, then your job this week is to ask somebody for the time. Next week it's to ask two people for the time, right? If you're a big wave surfer and this week it's forty foot waves, then next week it's forty-point-one feet waves, right? Slow progress. That slow progress is important.

[00:42:00]

[00:42:30] Also because the second flow trigger we're playing with here is probably the most important, what's called the challenge skills balance. We pay the most attention to the task at hand when the challenge of the task slightly exceeds our skill set. You want to stretch but not snap. Emotionally, it means that flow sits near the midpoint between boredom and anxiety. Boredom, not enough information here, not paying enough attention. Anxiety, whoa, way too much information, I'm paying too much attention. In between is the sweet spot, the flow channel. That sweet spot is outside our comfort zone. It's just slightly, but you're going to push past your comfort zone, so you're going to have to be better at risk-taking, you're going to need to practice risk-taking to hit this kind of golden rule of flow, and you're going to have to great at it. You're going to have to do it on a daily basis.

Bill: Experiencing flow is not about experiencing comfort. It's just outside of the range of comfort is what you're saying. Is that right?

Steven:  
[00:43:00] We experience flow when our skills are pushed hard, right? Hard. You push them too hard, you get a huge fear response. Don't push them hard enough, you're bored. You're not interested. Let me put this into ...

Bill:

[00:43:30] It's super interesting because it's really a delicate balance. You brought up this really important point about being vulnerable, which means that you have to be willing to take a risk in a situation. For example, if you bring up the idea that you're an east coast company that's not used to Silicon Valley thinking and you want to bring in innovation, and that puts you in a vulnerable spot. It spikes fear, and yet you're just outside of your comfort zone, so that's a good space for you to potentially trigger flow.

Steven:

[00:44:00]

[00:44:30] Okay. Yes and no. Yes, you're totally correct emotionally. One of the things I think about with companies, the scariest thing in the world is what happens after a CEO says, "I got it. I got the solution. Let's innovate," right? Those are really scary words from a CEO for a lot of reasons. One of the things that I believe is I think everybody wants to innovate. I think that's the point, but if you really want to teach high performance and innovation, you've got to build a solid foundation. A solid foundation means you've got to understand the fundamentals of individual high performance then organizational high performance later on, but I think you ... It's sort of like if you want to affect change on a football team, no coach is going to let you near the football team. They'll let you train up the other coaches. They're really scared about what information is getting down to their players, right?

Bill: Right.

Steven:

[00:45:00] They're terrified, right? For good reason, right? Football is hard, it's intellectual, it's rigorous, it's challenging, and everybody has to do a very specific job right. There's a lot of wisdom on how to do that job right. They're suspicious of outsiders for very good reason. The way to work with football teams is to work with the coaches. One of the things I like when I think about how can a company innovate, I think you start, A, by taking the C-suite of the company, training them up in fundamentals of high performance, individual high performance, fundamentals of flow so they can build on top of that foundation, and then you can start talking about innovation.

Bill: Yeah, that makes a lot of sense.

[00:45:30]  
Steven:  
Please, continue.

Bill: No, go ahead, Steve. I interrupted you. If you can continue on that path, because I think you're absolutely right.

Steven:

[00:46:00]

[00:46:30] There's the other option, if we're going to go down this tandem. Maybe your listeners care about this. The other option that I think is critical, and this is not just my work, it's Peter's and Salim Ismail's and John Hagel at Select Consultancy. We all agree that if you want ... Corporations have corporate immune systems. They're built for safety and stability, right? Over long periods of time. That's how they're sort of set up. Unfortunately, corporations don't have long periods of time, right? [inaudible 00:46:08] says forty percent of the Fortune 500 companies, today's Fortune 500 companies, are going to be gone in ten years or less. That's radical, right? That's very short time for success, but as a general, corporations, they're built to move slowly so people can have jobs and so nobody screws up, right? That's why when the boss says innovate, everybody freaks because how the hell do you innovate in an organization that was designed from the bottom up for safety and security?

[00:47:00] You build skunk works is the answer. You move innovation to the edge of the corporation. You clear the bureaucracy out of the way. You have the skunk works report directly to the CEO, definitely not to the CMO and the CFO, right? You build skunk works in a very particular way. Skunk works are really interesting because they're one of the most highest flow environments in the world because there are about twenty flow triggers, and if you follow Kelly Johnson's rules, his original rules from the very first "Lockheed Martin Skunk Works" for building a skunk works, you're essentially building a skunk works around seven flow triggers, so you're creating an innovation accelerator, flow amplifier, and you're moving it outside the corporation.

[00:47:30]

[00:48:00] When Peter goes in and talks to companies, big companies about disrupting yourself or somebody else is going to do it for you, he says set up skunk works, move them outside the company, right? Steve Jobs moved the Macintosh outside of Apple when he wanted to do this. Literally do what Jobs did. Challenge the company. Say, "No, Lisa and Apple too, I know it's making all our money, but it freaking sucks. We're going to build the Macintosh and put you out of business," right? Challenge your own company. Do it at the edge, though. Do it in a high flow environment. I think those are the two choices for innovation.

[00:48:30] I might be completely wrong. I am not an organizational innovation expert. I have just been looking at the world's most innovative companies for twenty years because I had to figure out what's going on. I see either CEOs really changing their behavior or people doing it at the edge. By the way, if you really want to scale up and go big and innovate, you've got to read Salim Ismail's "Exponential Organizations." If you're not doing those ten things, or at least one, you're crazy at this point. That's what competition is.

Bill: As our readers are listening, your book "Bold," it talks about the skunk works concept you just mentioned, and I've never heard you talk about the individual, but I love that your focus is on the individual because you really can't affect that change unless you have those individual players really deeply understanding the flow triggers and how they get themselves into high performance states.

[00:49:00]  
Steven:  
Let me ask you a question. I'm going to say something awful out loud that I've never said in public before, but I'm going to say it.

Bill: Please, go ahead.

Steven:

[00:49:30] I seriously am. With some really amazing exceptions, Google, Facebook and a bunch of companies like that, as a general rule, when you have an employee in an organization and you don't know what to do with them, you put them in human resources. You like them, they're not great, you can't fire them for whatever reason. Often they end up in human resources and hiring, which is an incredibly dangerous and crazy thing to do in the first place, but what I've discovered is that when I go in and train up an organization, I train up the C-suite in flow, it's fantastic, right? They're totally down and it trickles through the rest of the organization.

[00:50:00] When I have to work with human resources and come in through that level of gatekeeper, then I'm threatening to everything. I have to jump through a million hoops, and everybody has not invented here syndrome, and you want to be really, really, really innovative and you want to bring in all this cutting edge stuff. "Yeah, I got the cutting edge. It wasn't invented here, so I don't know if we can really sell our bosses on ..." Maybe somebody wants to play that game. I don't have time. I don't care.

[00:50:30] I always say ... Honest thing about Steven that they'll never say on a podcast, but there's the truth. The people I mostly care about are the leading ten percent or the trailing thirty percent. I want to know who's on the cutting edge, who's on the front end, and I want to work with them. Usually the people on the back end are the people who tried so hard and got their ass kicked so bad that they just can't figure out how to get up off the mat, and I like working with them. Everybody else in the middle ... If you're interested in being average, cool, great, awesome. Society absolutely needs this to run, but not what I'm doing.

[00:51:00]  
Bill:

[00:51:30]  
I think the tip of the spear is that you're going for the critical few which then influence the mass. Even if you impact them a hundred percent at the head of the spear, even if you have a trickle effect when it finally gets down to the bottom of five percent, that's still a force multiplier in an organization of a thousand or five or ten thousand employees. Let's talk about your new book because what I was really interested in is your partner in crime with the book, Jamie. I only heard a little about the book, and I know you probably can't talk about it a whole ton, but you have found that there's more people interested in these concepts then probably you were aware of at first. I'm interested in just kind of what's the thesis? What's the narrative around the book, and what can we expect to see from it, and what can you share with us?

Steven:

[00:52:00]

[00:52:30] Thank you. The book is called "Stealing Fire: How Silicon Valley, Navy Seals, and Maverick Scientists are Revolutionizing how we Live and Work." Harper-Collins us publishing it. It comes out February 21. You can pre-order now through Amazon, right? Thank you, please. Advertisement done. As a way of explaining of it, let me just tell you what happened and where the book came from. After "Rise of Superman" came out, before "Rise of Superman" came out, Jamie and I at the flow genome project, we were working with elite high performers, primarily military athletes. Occasionally some artists, but that was where we were, right? Really elite high performers.

[00:53:00] Suddenly, book comes out, and a broader conversation starts taking place, and we find ourselves on Wall Street, in Silicon Valley, in businesses in middle America, all over the place, right? For me, personally, it is a little peculiar because what I am doing is I'm lecturing businesses on harnessing an altered state of consciousness, give it's a state that we have a hundred and fifty years of research into, but it's an altered state of consciousness and I am ... Fortune 500 companies want to hear about how does this altered state of consciousness make me better. It's a little weird, right? There's no way around it. I can't quite believe what's going on, but that's not the strange part.

[00:53:30] Afterwards everywhere we went, whether it was the US Military, whether it was Fortune 100 companies, whether it was top companies in Silicon Valley, afterwards people were rushing up to us going, "Dude, yeah, that was great. That was awesome. This flow stuff, it's rad. I feel it all the time. I'm going to incorporate your ninjitsu, but man, I've got to tell you, we just did a two week silent [inaudible 00:53:39] meditation retreat. We came back, we were out of minds and we were so productive. The whole time is micro-dosing. We're still assigned on a regular basis to solve creative problems, and we're going skydiving too to trigger flow and amplify ..." On and on and on.

[00:54:00]

[00:54:30] We're trying to promote one altered state of consciousness really quietly and sneak it in the back door, and everywhere we go, everybody's sampling from the full ecstatic tool kit. What we started to realize is it wasn't one or two people. It wasn't one or two. It was everywhere we went for five years essentially. We started to realize a number of things. We started to work some numbers, and we started to realize that if you look neurobiologically and kind of define altered states that way, and you kind of measure our economy, you realize that people spend trillions of dollars a year trying to alter their consciousness. Most in terribly sloppy ways, but this is going on to one-sixteenth of the global economy already.

[00:55:00]

[00:55:30] What is happening right now is people are getting much more precise with which altered states they're interested in. We're getting much more precise in our neurobiology, but what we're really seeing is a secret revolution in altered states of consciousness at highest levels of business and society and culture, and these states are leading to radically different ways of doing business and radically accelerating innovation along the way. It's really about a revolution that is already sort of here for emerging forces that are kind of picking up and driving this forward and really what it means for society. What's wonderful about it and what's dangerous about it. As you pointed out with flow, upside, downside. Got to know both sides of the coin. That's what "Stealing Fire" is about in the quick and dirty nutshell.

Bill:

[00:56:00]

[00:56:30] First of all, I think that "Stealing Fire" and sort of this group of books that we've talked about, I really believe that people need to understand we're dealing with a certain pace that we're probably not engineered for, a pace of existence right now, and I think this type of material and information allows us to have the possibility, the hope that we can up-level, upgrade, software upgrade at least in our brain of what's possible. The link at the business level is massive. The link at the individual human level is massive. Maybe as we wrap up, what do you think the top two or three or maybe five potential things that people can do ... I know we've mentioned a couple, that they can actually go research themselves about possibly ... Like you mentioned, meditation, we mentioned a little bit about athletics, like running, and we mentioned mindfulness, but what are some other things that people could potentially start to look into?

Steven:

[00:57:00]

[00:57:30] Let's start at the most basic level possible. Flow requires focus, uninterrupted concentration. Research consistently shows three and four times a week, ninety to one hundred and twenty minute blocks of uninterrupted concentration. Organizationally this is a radical restructuring because you need to be able to hang a sign on your door that says, "Piss off, I'm flowing," for a hundred and twenty minutes at a time, and during that period of time, you're off email, you're off instant messages, your phone is turned off, you are not looking at social media. I like to do this first thing in the morning. I get up at four AM and I write from four AM until eight AM, or if I'm in research mode, I research. If I'm working on something for FGB, my hardest task, I do it first. I do it before my work day actually starts, and that's what I do. If that's not possibly because of your schedule or your home life, you can do it at the end of the day, or you have to import it into your office. If you're not doing that, you're losing. You can't even get into the race.

[00:58:00]  
Bill:  
You need a sacred block of time where you can just deeply get into a concentrated focus state so you can tap that high performance state.

Steven: Yes.

Bill: Okay.

Steven:

[00:58:30] By the way, the meditation ... I believe box breathing, which is what the Navy Seals use ... It's a very specific kind of meditation. I'm not going to break it down here. You can Google it. There's tons of information. In fact, somebody in our community built a box breathing app for it that's available through iTunes. It down-rates your nervous system so you are calmer, you'll take more risks. It's easier to stay in that challenge skill sweet spot. It will train up focus so that when you go into your uninterrupted concentration periods, you are better at staying focused.

[00:59:00] If you're meditating, if you're doing box breathing, ten minutes a day, that's great. That's a win. That's huge. Start out with four minutes and go up one minute a day. Stop at ten minutes. If you want to go crazy, go up twenty minutes, but I don't think you need to go beyond that. One of the things we look at in "Stealing Fire" is that a lot of the benefits that we used to think we could only get from long-term meditation practices show up very quickly, five weeks, eight weeks, with very short periods of meditation.

Bill:  
[00:59:30] I want to second that. I've been experimenting with breathing for now for years. I've used it with the Wim Hof cold ice bath. It has a significant very powerful ... Very, very powerful ...

Steven:

[01:00:00] You're going to totally back me up on this. The ninja move is you do an apnea training. You do box breathing for ten minutes, and then you do breath of fire, if you speak yoga, or Wim Hof's breathing if you speak Wim Hof, three minutes. You can follow it by ... I follow it by breath holds because I like to train the outer threshold of grit and see how long I can hold that breath, and I go full Wim Hof with it. You should be doing that every day. Also, because you get aerobic benefits from the breath of fire and the apnea breathing, box breathing, your VO2 max actually increases without aerobic exercise, which is crazy.

[01:00:30]  
Bill:  
Yeah. Those are amazing. I have found personally that it definitely pushes into a flow experience, and I can go into my meetings with very challenging situations much more steadied out and calmer.

Steven:

[01:01:00] Yeah. The best person to ... Josh Waitzkin, again, I'm going to go back to him. You go to his education organization's website. There's modules under all his high performance calendars, and he's got one about building your trigger, and it's basically a combination of visualization, meditation, breathing and a handful of other things that prime you to be as close to flow and [inaudible 01:01:05] as possible so that you can use it biggest meetings, and he thinks it's one of the most important things to figure out. He's got a great process for how to work backwards and do what's perfect for you, really neat.

Bill:  
[01:01:30] Steven, this has been a blast having you on the show. I highly recommend all listeners go pre-order the "Stealing Fire" book. I am going to go get that myself. Also, I'll pull up links to all of your previous material. Where do you want people to go to, the flow genome project, or what are your thoughts on LinkedIn, Twitter?

Steven: Yeah, if you really actually want to talk to me, you want to talk to me on Twitter.

Bill: Twitter, got it.

Steven:

[01:02:00]

[01:02:30] Which is Steven\_Kotler. I'm very responsive on Twitter. I'm all over Facebook all the time. I use it a lot, but I'm in eleven different places. Flowgenomeproject.com, you've got to go to if for no other reason, we have a free flow profile. Anybody can take it. What it does is it says staightologies. If you're this kind of person, you're likely to find flow in these directions. These are the kinds of activities to seek out. It's a really great first step. If you want more information on the flow triggers, go to my website, StevenKotler.com. Sign up for my email newsletter where you'll get all kinds of information about the cutting edge of technology and high performance, take your pick, but you'll also get a free .pdf that outlines seventeen ... That was where our research was at the time. I need to update it, I know, but seventeen basic triggers, how to use them, where they show up in athletes, sports, education, business, blah, blah, blah. Really actionable stuff.

Bill: Steven, we're going to put all of this on the show notes. I really appreciate you for all your hard work and getting this information out into the world. I hope we can have you on the show here again soon.

Steven: My pleasure. Thank you for having me.