Drew Boyd

Harnessing the power of constraints for innovation

Speakers:

Nick Skillicorn – Innovation and Creativity Expert and Host of Innovation & Creativity Summit

Drew Boyd

Expert Interview transcript:

Nick Skillicorn: Hello everyone, welcome to the innovation and creativity summit 2017, we are very happy to have Drew Boyd with us today. He is the author of the book Inside The Box and an expert in systematic creativity and a take on outside the box thinking. Drew welcome

Drew Boyd: Thank you, nice to be here.

Nick Skillicorn: Drew why don't you give our watchers and listeners a quick insight into on how you got into creativity and innovation.

Drew Boyd: It's a great question, I feel like I have been in this field for a very long time, as I look back in my career, I have always been sort of creativity minded, I have always been in search of what is it that helps you really to produce an idea. My background even though I am an academic, traditional academic now in the sense that I teach creativity and strategy and other topics at the university of Cincinnati. My background is really corporate. I spent over thirty years in large organizations.

Most recently I was with the health care company Johnson and Johnson and that's where I really learned a lot about innovation and creativity because we had such a mandate to try to grow through innovation. We were pressured to really try many innovations method out there. My God I have spent millions of dollars, I have tried, I have travelled and I have done so many different things and that's where I really understand the landscape of innovation and creativity with a specific liking for what I have written a book about with my co author and that's what I teach now, this idea of systematic innovation, systematic creativity. So it's a more of a corporate background now mixed with academic and the two come together very nicely and I spend my time doing what I love.

Nick Skillicorn: What people outside of your clients probably know you best for is your book Inside The Box which is a cheeky take on this idea of what everyone says you need to do during brain storming sessions which is think outside the box. Why do people have this concept of a box, tell us a bit more about that.

Drew Boyd: it's a fascinating story, I never do this until we started writing this book, my co author Dr Jacob Goldenberg, I will tell you more about him in a minute. What most people think is that to be creative you have to think outside the box and everybody has heard of that phrase. It's become the universal catch phrase for all creativity, there is just one problem: the idea is flawed.

I think it's flat out wrong and what I pointed is the research about this phrase and the research that followed it that has proved it. Here is where that idea comes from Nick, you may have seen a famous puzzle, it's called the nine dot puzzle, and it's a puzzle because it has three dots in a role, three roles of three dots in the form of a box. The task is you have to take your pencil and with just four straight lines you have to connect all nine dots without lifting your pencil and it's tricky. Unless you know the trick and if you know, the trick is you have to extend your line outside the box to give yourself an angle to come down and complete the puzzle breaking the bonds of the traditional mental box that you put around this dots.

This puzzle was used in the 1970's by a researcher named Dr JP Guilford and when he administered this puzzle, only twenty percent people could solve it. And so he coined the phrase: if you can just think outside the box you can be more creative. Well here is the problem, two other researchers right after Guilford did the same study, the same puzzle, same conditions but they added a second group. The first group got the same instructions as the first group with Guilford gave his people. The second group got the instructions that to solve the puzzle you have to draw your lines outside the box created by the nine dots, well the first group, the control group again 20 percent could solve the puzzle. But what do you think happened in the second group Nick?

Nick Skillicorn: It sort of sky rocketed like much more higher

Drew Boyd: That's what you think but guess what: twenty percent. So no change whatsoever, so sadly this idea of thinking outside the box is a complete myth. Think about it when you tell somebody to think outside the box what do you really think?

What happens when the mind goes outside the head and there is this vast un constraint space, it overwhelms the mind, the mind suffers what we call idea Anarchy or idea chaos, it's looks and looks and looks unsuccessfully and drags down as a result and people are really frustrated. This is why brainstorming, 50 years of research has shown that brainstorming does not work.

I know some of your listeners today, your watchers or someone in your audience is not going to like that, I didn't like that when I first heard it until I read the data. So don't shoot the messenger folks. It's flawed and there is some great researched out there that explained why it's flawed and sadly its continued to be used today. I think because people don't just know what to do otherwise. But in fact not only that it doesn't work in fact it can work against you. If you want to do one thing to make yourself innovative, I will tell you to stop using brainstorming so it goes very much against the traditional notion of what most people have been used to.

Nick Skillicorn: So why then will you still think about thinking inside the box if this box myth exists?

Drew Boyd: The name of the book is Thinking Inside The Box and here is the story. It turns out that, based on a research done by my co author, Dr. Jacob Goldenberg, he did an interesting thing. What he did, he studied highly innovative products initially to find out what made them different from one another. What he found instead is that they had more in common. They tend to follow patterns and this patterns are in the majority of the innovative products you see around you.

What we believe is for thousands of years, every day inventors and innovators have used these patterns in their inventions usually without knowing it. And in doing so, they have embedded those patterns into the products and services that you see around you. Think of the patterns as the DNA of

a product or service, what this method is, what we have seen over and over works is if you apply this patterns into this tightly constrained environment inside the box, your mind works harder, smarter, the patterns essentially channel your ideation they guide your cognition for you, they force you to create an idea. And this is why the method called systematic inventive thinking or SIT for short is so effective. Certainly the most effective thing I have found, I can't find anything that works more consistently with better ideation than this, this is what the topic of the book is about. It teaches the method of it, turns out to be the five patterns, there's probably more patterns but these five turned to be the most prevalent you see out the world and the book teaches people how to use these patterns.

Nick Skillicorn: I am really interested to find out a bit more about systematic Inventive thinking, but just before that one thing that just came to mind as you were talking about setting constraints for the mind, it's something I talk about with my clients as well. Quite often what I talk about is from a strategic concept, when you ask people in a company to form ideas, quite often the best idea comes when they are given guidelines about what actually constitutes a good idea and that's when the people in the company set out essentially the borders that this ideas need to fit into.

Drew Boyd: you are exactly right. We call those constraints or criteria. When I work with a client, the first thing we did is established what are the criteria, and what are the constraints and the client says oh no no we don't want any constraints, we want all options considered. And you know what I will say to them Nick: no constraints, no project!

Because without constraints your projects are going to fail. Constraints and criteria indeed do form the box. Think about it does it make sense to generate ideas that are outside the criteria? No it's a waste of time. So you are actually on the right track. When I see teams struggle pretty much on anything, even a husband and wife when they struggle, it's because they are using different criteria. So when I bring teams together and start working with them and I see them debating things, there's a Time Out, (time out is the term we use in American football and probably other spots). Time out means let's sit down and talk about the criteria, because if you can't agree on the criteria, you never agree on the big issue. But if you can agree on the criteria and maybe assumptions then you are much more likely to agree and resolve and get yourself out on the productive path.

Nick Skillicorn: Not only that, I can't remember exactly who wrote this research, but there's also a research out there suggesting that there are a few things that hinder creativity more than a completely blank slate, a completely blank piece of paper

Drew Boyd: That's the point with a completely blank slate: I have seen teams do this all the time, they call it a white space, "lets craft a white space". White space is very frustrating. When I would be invited to this, I always find to convenient way to slip out of it because I know it was doomed without these constraints. That's the corner stone of the SIT method, the principle of constraint; constraints are a necessary condition for creativity to happen.

Creativity is virtually impossible without some type of constraints. You can see it in all walks of life. Not just in corporate business innovation but things like music or arts. I play guitar and you can see one of my guitar is here at the background, I love the story by a famous jazz guitarist named Bill Frisell and what Bill does to stimulate his mind for creative risk, is that he imagined he can only play on one string. Let's say the high E string. And so he forgets the other five strings and he just forces

himself to make music on one string. Well it turns out that it's one of the patterns, it's called the subtraction patterns. It's also a great example of how he is constraining his mind in this idea of the box by using just one string. You see examples of this all over the place.

Nick Skillicorn: So can we go into a bit more details on the SIT methods? How would you actually go about using this in a team, what are those five patterns that you were talking about?

Drew Boyd: Sure I will explain those patterns, let me explain an important premise that you have to buy into to understand this method. The method is five, what we call techniques, that are the pattern based techniques and a set of principles. One principle we have already discussed, the principle of constraint, let me explain another principle, probably one of the most important.

The traditional view in innovation and creativity Is that you have to start with a problem and then you brainstorm or do whatever to create a solution, problem to solution. What if I told you, you could flip those, what if I told you could start with a solution and walk backwards to the problem that is solves? That might sound crazy but guess what, humans are actually better at that direction than the other direction. Let me prove it to you. I want you to imagine I'm holding a baby's milks bottle, this milk bottle changes color when the temperature of the milk changes. So Nick tell me why would that be useful

Nick Skillicorn: I don't have kids so I haven't used that many milk bottles but either probably if you are heating up milk before you give it to the baby, that could be one issue or maybe there is the issue of milk cooling down and getting bacteria

Drew Boyd: Exactly, right it becomes an indicator to make sure you don't burn the baby or make sure you don't give baby milk that is sour in some way or not fresh. Even without kids, you are able to conceptualize that very quickly. Anybody in the world that I have ever done this little test thing with is able to do the same thing. But here is the interesting thing Nick. What if I had said to you instead okay we need to come up with ideas on how not to burn a baby with milk that is not too hot. How long will it take you to come up with the color changing milk bottle?

Nick Skillicorn: Probably half an hour or more

Drew Boyd: Okay half an hour or more, honestly maybe never. You are just being a little bit cocky I guess, it's okay cocky is fine. See the difference, even a half hour versus instant you already have the fluidity to go from the configuration (color changing milk bottle) back to its benefit from the solution back to the problem, you have that ability, we all do. So that's the cornerstone of this method and how it works.

Now what the five patterns do for you is they force your mind to create these configurations, they force your mind to conceptualize a color changing milk bottle when your mind wasn't likely to have done. So you apply the pattern to your mind, it comes up with color changing milk bottle and then you go, what would that be useful for and then you create an idea. Okay are you with me?

Here are the five patterns, first pattern is called subtraction, and I already told you that before, its subtraction, it sounds mathematical but that's not the basis at all. Subtraction means eliminating a core component, something that you thought was essential rather than taking something essential away.

Task unification. Task unification is taking a component and assigning an additional job. It has its original job and now it has an additional job. Something that it wasn't intended to do, something that first seems crazy.

Multiplication, many innovative products have taken a component and copied the component but changed in some qualitative, counter intuitive strange way. Once again to create that strange configuration.

Division, many innovative products have taken the component or the product itself, divided it physically or functionally and then re arrange it some way back into the system, once again in a way that it first seem absurd.

Finally attribute dependency, many innovative products, in fact the majority of innovative products, have taken two attributes: one of the product and one of its environment and created a correlation. As one thing changes, so does the other. Think of transition sun glasses, you know those products, the brighter the lights get, the darker the lens get, a classic attribute dependency. Or windshield wipers that speed up and slow down depending on the amount of rain, classic attribute dependency. Color changing milk bottle: attribute dependency.

What's true is that as you learn this method and you learn the patterns, you start to look around and realize oh my god these patterns, they are everywhere. This is the beauty of it, it's based on science, my co author's research is among the most respected research, it appeared in two of the most prestigious peer reviewed journals in the world, nature and science and it is a method by practice the one that I believe works better than anything else

Nick Skillicorn: Could you go back a little bit more on what exactly the research said, I know the people who attend this summit they love data and they love examples, how did you actually find out about these things

Drew Boyd: Yes, here is what Jacob's research actually did, if you go to our book site I have a website called drewboyd.com but we also have a book site insidetheboxinnovation.com and you can find a link to Jacob's research. It's a ground breaking research, truly it was. What he did was look at highly innovated products, what he looked at two types. This is subtle but important point. One group of products were successful in the market place and another group of innovative products were failures in the market place, they were still innovative but they were market failures. Many great innovative ideas don't succeed necessarily in the market place. What he found was this, for the innovative product that were successful in the market, a high percentage of those could be explained by one of the five patterns but the failed innovative products a low percentage of those could be explained by the five patterns, you see the asymmetry.

Nick Skillicorn: Can we have an example of one of each, what classified as a successful innovation compared to failed innovation?

Drew Boyd: I can give you an example, let me try I can certainly give you an example of successful ones and I'll think about one unsuccessful but I think I have one in mind. One example of a successful product will be for example if you look at automobiles, automobiles have a lot of these patterns in them; the rare window of your car has wires running through it. No do you know what these are for Nick?

Nick Skillicorn: They heat up the glass in case of fog or something like that.

Drew Boyd: Well they also do something else you know what else they do? For many cars they are the antennas, the radio antenna, that's a classic example of task unification. And another great example is in our book is the Sony walkman. The Sony walk man is a great story, it's accidental but it was a great example of subtraction. The vice chairman of Sony wanted to take a player with him to listen to his classical music but it was bulky. So he had an engineer take the speakers out and the recording function and all that is left is the playback function, it was much smaller and tinier here for music on long trips. Now think about how crazy that is, you have a tape recorder that has a recording function removed. At the time it seems absurd, why would you take the recording function out, why would you take the speakers out what it did was revolutionized music, revolutionized the way they consume music. Two hundred million Sony walkmans were sold. It led of course to the iPod and it led of course to the mp3 revolution and this is how people consume music now.

Nick Skillicorn: I remember back then I had a walkman I speak to a lot of my colleagues nowadays, they have never even seen a cassette. Back in the days.

Drew Boyd: So now a failed product, let me think of one I just saw one recently. What I do Nick is that when I see a new product come out, I try to explain it to one of the five patterns. If I can't, in my mind the odds according to the data, its chances of success are lower, I am not saying a hundred percent lower that it will absolutely fail but if I would invest in it, the odds are low. So here is an example it's a device that a guy out in Seattle created, I spoke to him, a young guy that created basically a machine that you place plastic glasses on and it fills a beer from the bottom. It eliminates the foam on it. The foam and the spillage is costly for the people that buys the beer. It's not costly for the beer maker because they love spillage because it makes them sell more beer and well that's the reason it failed. It doesn't follow any one of the patterns, it's a great idea but it just never saw the light of the day because the beer makers wanted nothing to do with it, they refused to back it or endorse it and actively went out of the way to keep it from getting it into the home. So spillage became a big part of their business model, imagine if you would lose ten percent spillage from traditional beer pouring in a tap when there's something like that in a bar or in a sport's venue so it didn't see the light of the day. I look again, I have looked at this patterns as predictors of success so if you are an investor or a venture capitalist or an equity private player, you might include these patterns as part of your due diligence as part of your vetting and decided if you would want to invest, if you don't see the patterns in this and their products and target products, then run.

Nick Skillicorn: so let's try if we can to take the listeners and viewers on a journey that sort of exemplifies an example of how you have used these patterns and SIT methodology in practice. I am sure lots of corporate secrets that you can't talk about is there a case study that you can talk about where you actually took a team that was struggling and helped them to find a solution?

Drew Boyd: Absolutely, some of these are documented in the book, let me give you a corporate one and let's say a less corporate but still very telling. The corporate one was with my former company that wanted to expand into the anesthesia business. They made medical devices so the anesthesia business seems like a natural adjacency to their business and they just had this gut feeling that something wasn't quite right.

He asked “Drew what do you think we are going to do”, well I said “Mike I just read about this book by Goldenberg and his research looks very compelling, why don’t you try it, let’s pilot it”, so we did. We piloted this on a one day workshop, we took this anesthesia machine, the first technique we applied was subtraction. Now here’s how this works, this is a machine that we have been using in the operating room, the laws the federal regulations pretty much everywhere require a machine like that not only to have a primary power supply but a back up battery because if the power goes out you would put the patient at risk.

Well this first exercise is the first application of SIT, my very first experience, I was In the room imagining to eliminating the backup battery. Everyone was screaming, they went hysterical like this is a waste of time, that’s against the law and they are all suffering from what’s called a condition called fixedness. Fixedness is a cognitive bias that makes it hard for us to imagine configurations like color changing milk bottles or back up battery-less anesthesia machine but to be true to the process, you ask yourself okay we have all the other components not just the backup battery: what will be the benefit?

Well turns out there are a lot of benefits: its lighter, it’s cheaper, easier to service, it’s more reliable. The backup battery takes up most of the foot print, the engineer told me, he said Drew if you could really eliminate the backup battery, the project becomes incredibly simple. So a lot of benefits. Now with this particular technique, you have to ask yourself what are the challenges, is there a way to replace the component with something else that is not the original component? And they thought about it and thought about it and finally one of the engineer said we could take a cable from another back up battery, say from the defibrillator to revive the patient, and you could connect it to our machine, there’s plenty of power on both machines.

When that idea came up the room got so quiet and they all looked at each other and they all started to get up and I go. What are you doing, I said, and they said we want to go back to prototype it. It’s already in their minds figured out, the electrical configuration, the volts and watts, Amps, the lengths of the cables and connectors and so they were able to break fixedness just like that.

I used this technique in a lot of strategy work. For example I will tell an organization we need subtraction and say imagine you have no sales force, you have everything else, you have all the products you have all the distributors, you have all the supply chain you said no sales reps, what would be the benefit? You ask yourself that first, there are a lot of benefits for having those sales rep, you train them, hire them and pay them, you don’t have to worry about the message getting out wrong, there are a lot of benefits, but the obvious challenge is how do you sell? And it forces them to think about other alternative models like social media, online, employing reps of other companies, employing different types of configurations, I kept going to different models and that’s what the technique does very nicely help you conceptualize new business models as well as every day configurations.

But the fun story I want to tell you is that when I taught this to third grade kids, third grade which is little people I don’t know maybe seven to eight years old, little youngsters, and what I did was when I teach them the method I want to see them apply it. I remember giving this kid name Sam, I gave him this big bright red university of Cincinnati umbrella and he was sitting with the umbrella, I said what technique do you want to use? He said I am going to use multiplication and I said okay, the way multiplication works is that you take one of the components, anyone, you create a copy but then

you have to change it somehow, it has to be different. I said Sam what component do you want to pick, he thought about it and he said I want to pick the handle. I said okay, I am scratching my head now I am thinking an umbrella with two handles, I didn't quite see it. I said Sam the second one has to be different, what are you going to do? He thought about it and he goes "I know I am going to have a handle here, and I am going to put a handle on the spike of the umbrella". Now I am really confused I am thinking I don't see the benefit of this at all, but that's how the method works, you start with color changing that is absurd and then you figure out the benefit. And I said "Sam okay what is the benefit that's what you have to figure out now", he thinks about it, he thinks and all of a sudden his eyes grow wide and he goes "oh Mr. Boyd I know if the umbrella is up and the wind blows it out you just turn it around you grab the handle and you are ready to go".

So even in the mind of a third grade child, they were able to conceptualize benefits. That's what the model, the technique, the method does nicely, it helps you people it guides forces you to create configurations that your mind won't to do on its own because of fixedness.

Nick Skillicorn: Drew it's been absolutely fascinating speaking with you before we go though could you give any one listening and watching one sort of piece of actionable advise if they want to start using the concept that you have talked about today, what's Something they can try out this afternoon?

Drew Boyd: A couple of things I now you asked for one, I think the key advice that I give to companies getting intrigued by this is think in terms of a pilot program. A pilot program keeps your risk small because there's a lot of psychology risk with innovation, you don't want to look foolish trying something with bean bag chairs and Frisbees. Innovation has this sort of a tainted image, you want to do something that if it falls flat on its face and fails you are not exposed, so pilot Is the way to box in that risk so to speak using the box metaphor for it. So think in terms of a pilot and I will do a simple technique like subtraction, the way you use it is you take your product or your business and you list out all the components one by one. So the components of the bottle, the caps the grooves the little ring here, the label, the bottom, these ridges and you list those all out and systematically you remove one at a time and simply ask: okay not that we are going to, but what will be the benefit?

That simple exercise deconstructing your products, not sort of unpacking it, will make you look at it differently and removing one of them will surely change your perspective around your products and services most likely leading you to an insight that you didn't have before. That's the beauty of it, it's fairly easy to practice like anything playing a guitar or interviewing guest it takes practice, same with this, you got to start somewhere and you have to realize that innovation really is a skill that can be learnt not some special magical gift you are born with, you can learn to be creative no matter where you are starting from on the creativity scale that will be my advice for people

Nick Skillicorn: It's exactly the same advice that I want everyone to take away from the summit everyone has creativity everyone can improve that and hopefully listening to experts like yourself, they can take the first step and actually implement what you are talking about. We are going to get all of the links that you have mentioned in the description and a link to drewboyd.com on the screen as well, so Drew thank you so much for being here and I look forward to speaking with you again soon.

Drew Boyd: I hope so Nick, all the best to you