

Introduction to Problem Solving Skills, Page 3

Video: Mythbuster's Adam Savage on Problem Solving: How I Do It

Link: <https://www.youtube.com/watch?v=BhAt-7i36G8>

Duration: 23 minutes, 22 seconds

Adam Savage problem solving transcript

I've said some of this before but, what I wanted to talk about today--this is all an introduction to talking about problem solving. I wanted to talk to you a little bit about my process of problem solving. uhhh, there are questions, basically I look at everything as, as problem solving. ummm and Francis Bacon, the painter, talks about this in a fantastic book, called the Brutality of Fact. He's one of the only artists I've ever read who actually can speak about things like truth and beauty and he doesn't mean these disparate out in the world concepts. He's actually talking about very specific ideas he has. And he talks about them very articulately. He says that every artist starts a project with a problem to solve, and even if it's an abstract painter, they--they have some type of formalism they want to apply to the canvas. And this problem solving, when you embark upon it, you embark upon a goal, you, you go through a set of steps. And I wanted to talk about my set of steps.

So the first question I asked myself is "What is the problem I'm solving?" And though this seems trivial and simple, you have to be super super clear about this. If you've been given a problem to solve by someone else, and you don't check to make sure you know what that pro- what that problem you're solving is, you're gonna screw it up because you and the person who's given you that problem aren't really clear. Jamie has this thing which he calls drilling the hole on the X. ummm, it is a test that many in our shop has failed. Jamie gives someone a piece of wood with an X drawn on it and says "Please drill a hole on the X." You'd be amazed by how many people have not been able to do that. They come back with four holes "Well, I thought maybe it should be this way." Or they come back with the hole near the X but not quite on. It's it's unbelievable, you need to be clear about what problem you're solving.

Second question, and I go back and forth about which one of these is more important, but in this order, second question is, "What is the big picture?" And this is one that I- that I've noticed that ummm, not a lot of people ask. Some people ask it. Those people that ask it, that wanna know what the big picture is, I always wanna work with them more.

"Where does the problem that I'm currently solving fit into a larger array? Am I solving a singular problem in and of itself, or is what I'm doing going to fit into something bigger? How does it fit in?"

"Can you see the whole picture?" Sometimes you can see the whole picture, but you need to see how what you're doing is going to relate to other things, otherwise, it's not going to relate to other things. In that case, I keep asking the question, "Can I see the whole picture?"

And there are times, I mean honestly, for the waterslide episode, I knew how that waterslide was going to work and we were gonna lay down plywood, and we're gonna lay down carbon, lay down vinyl, it's actually pretty straight-forward. The problems to solve weren't the overall picture, they were actually more like, how do you move 50 sheets of plywood in a reasonable period of time to build the ramp in two days. How do you grease down the ramp with soap, etcetera. So, in those cases, I see the big picture easily. But how the small parts line up in an amount of time that's reasonable. And as I go, I keep asking that question, "Can I see the big picture now?" And you keep on noticing, I keep on noticing, that as I keep on going, I fill in bigger and bigger parts of the picture.

"How much time do I have? Is there a deadline?" Now the Maker Faire is all about DIY and working, working on your own projects, working on things that you want. I do a tremendous amount of that and I thrive on deadlines. I find that if I don't have a deadline, I don't get things done. I want to give myself a challenge. If I'm- even if I'm doing something, I might be doing something like I have to make forty of something. As I'm doing forty of something, I'm thinking, "Well, how long is it taking me to do this one? Oh, three-and-a-half minutes, okay. Three-and-a-half minutes, I've got forty to do, times that, gonna be dhhh dhhh dhhh how much time I'm gonna finish by four o' clock? I wonder if I could finish earlier? Am I going- Is there a way to make this process go faster?" And I start doing the math I do in my head becomes this sort of zen meditation as I'm working, but it's all racing against the clock. And actually keeps me involved in the drudgery, I mean, doing repetitive tasks is really difficult. It's a key part in making anything and it keeps my mind on the total goal when I give myself those time- those time constraints.

"How am I doing now?" That's a key component of how much time do I have. "How much time do I have now? How much time do I have left? Where am I in terms of the goal that I'm going to reach? How precise do I have to be?" This is actually a really big one. How precise do I have to be. uhhh the difference- if I hand you a board and say, drill me six holes and about six inches apart. Well, one way you could do it is literally just estimate and drill me six hole and that takes about a minute. Another way is to go find a ruler and find a pen and carefully measure it all out and then you've taken 15 minutes, and, like, I'm asleep at that point. It depends upon how precise you have to be. Do I need the holes every exactly every six inches? Or do I need them approximately every six inches and this also has to do with how it's going to be seen. Is this something that needs to fit with another part, in which case it does need to be precise or is it something that can be really loosey-goosey? No one's going to see that it doesn't even matter.

Another question I asked, "What's my rhythm? What is my rhythm and how does it fit into this project?" I have learned very very much in myself a workflow that I like. I like to work fast. I like to work fast and my crew knows intimately that I hate to look for things. So before I start a project, I go everywhere in the shop and I get every tool that I need and I put it on the table. Then I get every material that I need and put it on the table. Then I get everything lined up so that I don't have to move once I'm in the sloops(?). Then once I'm rolling I wanna keep on rolling. That's my rhythm. And if there's a project where that rhythm's gonna get broken, I wanna know so I can, I can actually anticipate it.

This actually reached a level of absurdity when I was a model maker at industrial late magic. I had these toolkits which you can see on my website they're aluminum doctors' bags, and I filled them full of all the tiny tiny tools that you that you use as a model maker. It ended up being something over about 550 some odd tools, and because I hate looking for anything, even in those tool boxes, I managed to arrange them so that I could reach and grab every single tool without moving another tool out of the way. I actually ended up referring to it as first-order retrievability. And in the end, even leaning over into my tool box was too much for impatient me and I put them on scissor lifts, so that as I sat in my chair, they were at either side and I was able just to work and work, and put things back, and work, and move things and it made me fast, and that's the way I like to work unbroken, like thrush.

What are my resources? Resources come in several categories, and they all bear upon the what the problem that you're solving is. The budget, is there a budget? do you have control over it? if I do, how much latitude do I have? if it's my money, what is the project worth to me? when I was starting out, I actually, there was a whole class of jobs that I took that I would do the job for free, for labor the late will be free, but ask the parts that I was using to be paid for on condition that I get to keep the object when I'm done. And this satisfied me on a lot of fronts because I do like, special effects props for films, and I get to keep the school prop at the end, and that the the did manage to me is two-fold. One I love keeping things that I've built to refine on the keypad and more invested in it, and 3 I'm basically get someone else to pay me how to learn how to work a new process often on location.

Wait a second where am I? Here we are, budget. Budget is large. It's your money got to that location facility. Location. Does the place I'm working on solving this problem in help or hinder the process? I've worked in some really tiny spaces and I'm also, you know, sometimes a budgetary constraint. We can't afford the big space, we have to work in a smaller space, but we only have X amount of time, and I have learned over the years to examine it closely those little trade-offs because working in the smaller space may make the project take more time and become more expensive has you working the crap in space that it would be to invest at the front and in a space that's reasonable on when you're thinking about location. In solving a problem for us on the show.

It comes up all the time. Even the what season it is, what's the temperature? what is the weather? Even now the with the iPhones on on Mythbusters we're actually regularly looking at the Doppler radar of our location just to see how the shoot is gonna go. We were doing that just last week. And yet, temperature, humidity, in model making and special effects, their entire class is a processes that will screw you if the humidity is too high or too low. Even down to like watching paint dry on a super humid day, the paint's not gonna dry very well but there are, there are mold making processes that if it's too humid or to rainy, or too dry, they're just not going to work.

People. How many people do I have? Is the team big enough? Is the team too big? Uhh, the team too big can be just as bad as the team not being big enough. What is their morale like? Is it late? Are we trying to solve a problem after everyone's been working a full day? Or are they fresh? Umm, do I have all the skills necessary? Do I have all the skills necessary? umm, and

commencer with that, do I have realistic understanding about my skill level is for the problem I'm about to solve?

It seems weird that I'm, I'm going down this really fairly long list but it really is, uh, I realized as I sat down and wrote this over the last couple weeks, this is a checklist I go through for every every project. Umm, if I'm not very good at something is there enough time for me to get good at it to finish it or do I have to farm it out? How long is that person going to take?

I took lessons in playing pool from a former hustler, uhh, an illustrator named Bob Kipnis, who lived in my hometown, who's actually friend of my dad's for years before I knew he had been a pool hustler professionally for about twenty years. And, uhh I grew up with a pool table in the house, we'll ask Bob to come over every now and then to teach me some things about pool, and Bob kinda rocked my world. He actually said that pool is really really simple. He said that when you get into the crouch on the table, you're only ask yourself a few really really simple questions. You're thinking where is my cue going to hit the cue ball? Where on the cue ball? What is the cue ball? Where's the cue ball going to hit the object ball? and what are both balls going to do after they collide? He said, "if you can go into the crouch, and answer all three of those questions every single time you go into the crouch, you're gonna be a great pool player. And again, it took me another year of playing before I saw how, how not only true that was, but also how terrifyingly difficult it is to actually do something like that.

To ask those questions every single time you do something. It's a very difficult meditation. Umm, so while I'm working, those are the broad checklist of things that I look at when I'm embarking upon solving a problem. Obviously, all my, most of my problems on Mythbusters are, uhh, building problems but I-- many of them are also narrative problems. We're telling a story as we go, that story changes as we go, because we're telling the story honestly, and we often have to figure out where we are within the narrative.

But as we go, there is a set of questions which are being asked constantly literally every five minutes, these questions are being asked. Umm, how important is this particular step? How important is it that I get it right? Can I screw it up? or do I only have one bar of this special type of unobtainium? Is my machine deteriorating? I.E. me or the tools that I'm using? Is this a step I might be able to improve later? So that what I'm building is extended for my solution? Am I missing something stupid? Am I being too clever? Which is another way of saying, "Am I missing something stupid?" Is there a simpler way? Which is another way of saying, "Am I being stupid? Am I missing something stupid?" Am I sure how what I'm doing fits into the larger picture this is actually, I've talked about this before. Jamie and I have very different working styles, but we both actually have the same mechanism, which is, we have to build something in our heads before we can build it in the world. And sometimes, you you can't see the totality of what you're doing.

We just finished this umm, repeating arrow machine-gun, supposedly designed about twenty-three hundred years ago, and the device was so complicated, that Jamie and I had to build a scale model and then we had to progress about three-quarters the way towards building a full-scale model before we both fully understood the total machine. Now we also have experience

with our, with our, with our process to know what we can and can't fudge with as we go, uhh, but as we're going we're constantly taking this machine for building and putting the parts that are going into the mental picture, into that mental 3d model. What does the whole picture look like now that I've solved this specific part?

So in the end, the three questions that I'm always asking are, you know, uhh, how import-- where does this step fit into the whole, now that I've completed it? Am I missing something stupid? And how does the whole look, now that I've completed this step? Ahh, and how much time do I have now?

Again, I love setting artificial goals. If there is no specific deadline, I love setting even an artificial deadline, like, I wanna finish before I go to lunch. I love finishing a thing before I go to lunch. Uhh, do I wanna paint what I'm making? Do I want to add some extra process, or make it pretty when I'm done? Uhh, sometimes I'll race to the end of a project just so I could paint it in a way that'll annoy Jamie once we're finished.

Umm, I also want to describe that this is not a linear process. It is, on a graph, it goes all over the place, and there is a part that I have learned, and it doesn't at the three-quarter point in every project that I do, about the seventy-five percent mark, I finish most of the work, I can see the end, but it still seems kinda far away. At that point, in almost everything that I-- that I work on, I reach this point where I think, I have no idea what I'm doing. And it started, well, I mean it's been there forever. It got really bad when I was at Industrial Light & Magic. I would be working on something and, uhh you know, I work, like, quite fast life, so I'll build things two and three times before I'm finished with the final thing. But I built something and it'll be wrong, and I built something and it'll be wrong and I'll be waiting for someone to come up to tap me on the shoulder, and be like, it's time for you to go. You have, clearly, have no idea what the hell you're doing.

But I've learned that that's a part of the process. I've learned that even though I always feel like that and it-- I have to actually address it intellectually, because emotionally I always reach this point, and I actually have come to respect it in this this part of, it's kind of an honest intersection with how mystifying this process is. Honestly, every time I've embarked on a project where I thought I know how to do this, I have screwed it up. Every single project I have sauntered into, thinking, I've got this wired, I, I'd mess it up. I talked about that last year, and at the end, honestly, there's almost never this like fist-bumping, pump your fist in the air moment, where you're like, Yeah! I did it! I finished the project! Even when things I've been working on, on my workbench for 10 years, when I finally finished them, it's not like I go, "AWW YES!" I-- I'm just really satisfied it's done. It's actually like a, a much more quiet and personal moment. Umm, it's almost even sometimes a little bit sad. It's a little bit sad to have finished that project, start to think maybe, maybe, it could be better, maybe I should make uhh, maybe there should be another one, maybe uhh, maybe I need three, maybe someone I know wants one. The main question is "what's the next project?" And there is always another project. Thank you.