

## **Todd Zenger, MBC Online, Finding and Framing Your Problem**

This video focuses on finding and framing your problem. One of the central features of the value lab is identifying your core problem and the key subproblems that need to solve that core problem. We want to talk a little bit about that process of problem finding. Inherent in this theory that underlies the value lab is a belief that value creation emanates from solving problems, and it's something that saves time for your customer or saves time for a supplier. It's something that saves cost. It's something that increases service or satisfaction levels. It's something that increases quality, increases the volume of output. It could be that it's value that you are creating, not for your direct customer but for your customer's customer, and therefore your customer is able to create value from delighting more effectively his or her customer. It's about problem-solving. That can really be initiated through one of two ways. One is that you can simply find a problem to solve that no one else has thought about, and that the innovation as an entrepreneur really be, emanates from this unique problem that you have identified. I think Apple is an example of a company that identified a unique problem. Or it could be that everybody recognizes this problem, but you simply are innovative and entrepreneurial in the way you go about solving the problem. We're going to initially focus on the central role of formulating whatever problem you've decided to tackle, because in formulating that problem really provides the architecture for a theory about how to solve it. Einstein has famously said that, "The formulation of a problem is more essential than its solution." In fact, although this may be an apocryphal quote, it is widely used that Einstein said something, once we're asked, if you had a minute to save the world, how would you allocate your time? His answer was, "I'd spend 59 seconds formulating the problem and one second solving it." Simply highlighting this point that getting a problem formulation really makes the exercise of discovering a solution often quite simple and easy. Let me give you a few illustrations of the importance of this problem-finding activity. When Michael Dell enters the computing space, initially, what he sees is an industry that is dominated by a bunch of large manufacturers, largely selling their products through retail channels. What he observes is that everyone competing on cost; how can we produce the lowest cost PC in the industry? But what he recognizes is a unique problem. That is that the PC manufacturers have a massive amount of inventory that is essentially depreciating at about 10 percent a month. They would take in parts inventory a hard drive or a microprocessor, and its value would be declining by 10 percent a month. That's largely because of the pace of innovation. That is the same hard drive that in January might be 10 megabytes, this was a long time ago, by June, you might be able to buy that same product for half as much because they've already got one that's 20 megabytes that's selling for the same price. The point is that this stuff is rapidly accelerating in technology, speed, storage capacity. The products, these parts inventories are depreciating at about 10 percent a month. The problem was, a typical manufacturer was taking parts inventory, trying to be efficient in manufacturing it by blowing out a single product for a long period of time before it switched to a new configuration and a new model. Then it would take those finished goods, it would ship them to a retailer like Best Buy, would sit in their inventory for a period of time, then onto their retail shelves. The time between those key inputs were purchased and the product was sold might be 2-3 months. As a consequence, the value of those parts, the cost of those parts, it was diminishing over that three month period, something on the order of 25-30 percent. Another way to say it, is that they were depreciating in value at 25-30 percent. He recognized that the key problem that needed to be solved was how do you not just lower manufacturing costs, but how do you significantly reduce inventory holding? How do you deliver and sell high quality PCs without essentially holding inventory? Of course, this leads to a famous solution which is to mass customize PC manufacturing. Order comes in, the PC is manufactured not the lowest cost way to manufacturer, but

he's able to get those components into a finished product and out of the customer within two weeks. As a consequence, the cost of those inputs are 25 percent cheaper than their competitors simply because he's able to circumvent inventory holding. He sets up a very different manufacturing approach, very very different distribution approach, and in the process, dramatically lowers costs. What's the contrarian belief that he begins with? Again, the contrarian belief was that the central cost in PC manufacturing is this inventory depreciation or inventory costs, and it didn't have much to do with production costs or shipping costs directly. In developing this contrarian belief, converting it into a problem to be solved and then ultimately into subproblems, he composes a theory that really revolutionizes this. You see that he goes from contrarian belief to core problems. We can talk in great length about it, but he articulates subproblems, this leads to a theory, and ultimately to actions and investments and the discovery of solutions in order to bring about this theory. Let me give you a couple of other more mundane kinds of examples that highlight the importance of problem-finding and problem-formulation. For years, ketchup, Heinz ketchup in particular was sold in bottles that looked exactly like this. The core problem, at least one of the core problems that the company configured or thought about was how do we get people to feel good and okay about waiting for ketchup to come out of this dispenser? Solutions to this were to try to make this a feature, not a bug. That the anticipation associated with waiting for the ketchup was somehow a desirable thing, and they had Carly Simon sing her famous song Anticipation while the ketchup would slowly emerge from the bottle. But eventually, somebody at the company said, no, actually, the problem is that the ketchup does not come out of the dispenser very quickly. If we can solve this problem, we can actually dramatically increase the amount of ketchup we're selling and create an even better solution or a greater value creation by solving this more direct problem. Of course, that problem framing leads to essentially turning the ketchup bottle upside down, storing it upside down, or repositioning the label, changing into a squeezable bottle, and suddenly people are squeezing out mounds of ketchup on their plates rather than foregoing ketchup altogether because they couldn't handle the anticipation. Again, the key thing here is by getting the problem framing corrected leads to solutions that increase value creation. One other mundane example here, Coca-Cola in the 1800s, developed this iconic form factor that creates an enormous amount of value for the initial problem framing is if you're trying to compete with Coca-Cola, so you're Pepsi was, how do we deal with and create our own form factor that will have this same appeal, and they do their best to come up with this swirly image, which was also when some sense an elegant form factor, but nowhere near as successful as this iconic form a design standpoint, beautiful form factor that Coca-Cola created. What Pepsi then discovered and really lead to contrary and belief or an insight was that they did some market research and they discovered that people drink this carbonated beverage about as quickly as they purchase it. That is whatever quantity they purchase at the store, they take home and consume rather rapid. This then lead to a problem framing of a very different nature, which was, how do we get people when they step into the store? It's not worry about whether our bottles are ugly or more attractive than our competitors, but how do we just get them to walk out if they decide to buy Pepsi with large quantities when they buy it. This leads to what at the time was a remarkable innovation. This packaging solution that made carrying out six bottles really easy. This led to an enormous pickup in Pepsi's market share relative to Coca-Cola because suddenly they're able to walk out with large quantities of this product, and tremendous amounts of value were created and a better competitive position for Pepsi relative to Coke. Let me give you one final example of the importance of problem framing classically in US auto production. If you go back to the '80s, and the way they frame the problem was that look, it takes eight hours to change over a production line from one car to another car. As a consequence, problem they

were trying to solve was, how do we minimize changeovers? Because these changeovers take an enormous amount of time and therefore an enormous amount of cost. The other related problems associated with this would then be that if you're trying to minimize changeover, it means that you blow out one model for long production runs, which means you have to hold a lot of inventory before you then switch to another model. You also don't have much flexibility in terms of producing lots and lots of different models, because again, each changeover is very costly. You have a problem with customer responsiveness, product variety, variety of subsidiary problems that really emanate from this core problem. While the US companies are focused on, how do we minimize turnover time, Toyota of course, famously comes up with alternative problem framing, which is, how do we design this production system? Not necessarily to be lowest cost, but to have the lowest changeover time. Very easy to change from one model to the other models. The consequences of this, now we can hold less inventory holding, now we can increase the number of models that we can sell. We can be much more responsive to customers, and of course, Toyota famously comes up with this highly automated production system that allows for this very rapid changeover. By lowering model switching costs, we can reduce inventory, increase product variety, and improve customer responsiveness was their theory that emanated from this critical and distinct and unique core problem that they've decided to focus on. One of the beautiful things is that if you get your problem right and frame it well, and we've seen this a little bit in these illustrations already, is that it tends to reveal solutions. Anecdotes from classical history that illustrates this point, is that the mathematician, Archimedes, was given a challenge by the king or the tyrant as Syracuse, which was that the king was having a new crown made and he gave the gold to a local artisan to craft this new crown. But he was smart enough to know that this artisan could take half the gold, keep it, mix the other half with lead, and compose something that looked like 100 percent gold crown but was half lead and half gold. But the King knew that the same weight of gold and the same way to lead consumed different volumes, that one was more dense than the other. He took this crown that the artisan had made to Archimedes and said, listen, use your great mathematical skills and tell me the volume of this gold relative to the volume that I originally gave you. Because if you can do this, I can discover whether this artisan has stolen from me. To Archimedes is extraordinarily troubled. How in the world is he going to measure the volume of this intricate crown? All the geometry that he in trigonometry that he had mastered wasn't going to allow him to measure the fine detail involved in this intricate crown. He's thinking about this problem, how do I measure the volume of this oddly shaped intricate crown? In doing so, as he's thinking about this, he steps into the bathtub and of course, Eureka, light bulbs go off and he recognizes that he is this irregular object that's displacing water and he can measure the amount of displacement and in doing so, measure his volume or the volume of a crown. The story is that he related by discovering the solution that he hops up out of his bed and runs through the Streets of Syracuse naked screaming, Eureka, I have found it. The point of this anecdote is, again, with a problem in hand, solutions emerge at a problem, well-framed solutions emerge much more easily. He had bathed many times in his life, presumably or hopefully, but it was only this time that he sees this breakthrough and value creation that comes from a unique problem framing that he has in his head. Similar anecdote plays out is Steve Jobs makes his famous trip to Xerox's Palo Alto Research Center and sees remarkable technology that Xerox had been working on that involved a mouse and a Graphical User Interface and a little pointer that would click on that what you could touch icons on this screen and tap the mouse and it would open up a box. The whole Windows architecture that's used today was really pioneered at Xerox. Steve Jobs tours Xerox, sees this remarkable solution to a subproblem he's composed as part of his theory and is able to gain access to that technology from

Xerox, and it really becomes key foundation element of the Macintosh and ultimately of the corporation that is built. One of the key concepts is talked about in the lab is that one has to take this overarching core problem and from it articulate the key subproblems that need to be solved. For Uber, in order to solve its overarching problem, that needed to solve some derivative subproblems like how do we develop a cab-hailing technology? How do we manage payments and tips? How do we ensure or are addressed the problem of the uncertainty by which cabs have typically arrive. How do we overcome the awkwardness, discomfort, and uncertainty of driving with strangers? They were able to identify subproblems that emanate from this core problem and then use that to develop a causal architecture courses. We talked about Michael Dell does the same thing. Here's his overarching problem is how do we reduce the time between purchase of parts and their delivery has finished goods. The key subproblems then part of this theory were, how do we develop a mass customization assembly operation? How do we build a model that circumvents the need for any retail holding courses solution to that subproblem is go direct. Then of course, every consumer products company, how do we develop a brand name? Key takeaways, as entrepreneurs, your challenge is to find and frame great problems, you need to transform your expressed uncommon beliefs into a core problem, and then think about the critical subproblems and that these architecture or problems and subproblems will really form the basis for your theory of value.