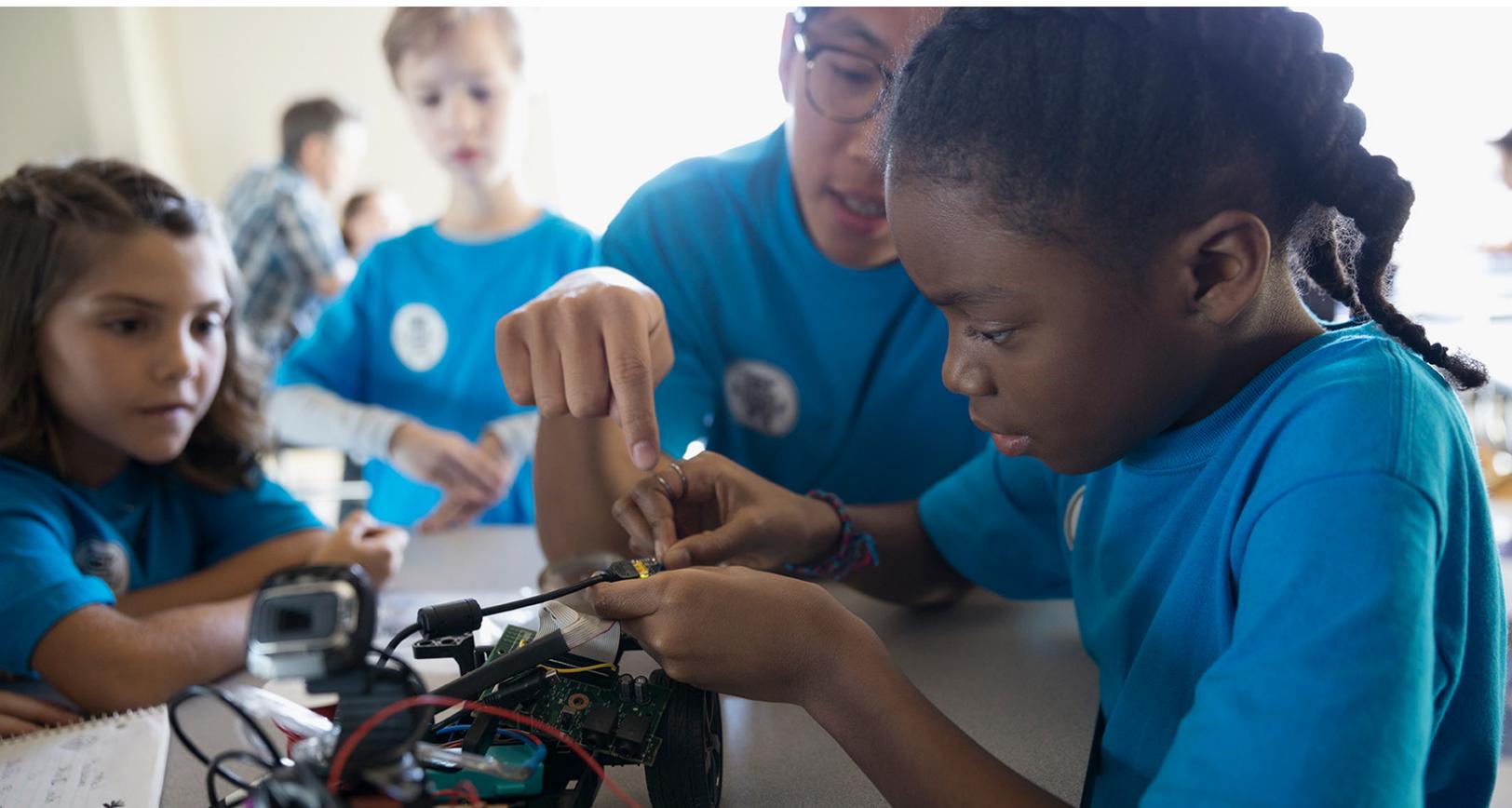


Want better strategies? Become a bulletproof problem solver

The value of creative and strategic thinkers capable of solving complex problems has never been higher.



In this episode of the *Inside the Strategy Room* podcast, McKinsey senior partner Chris Bradley interviews Rob McLean, McKinsey director emeritus, about applying a disciplined, comprehensive approach to problem solving. (For more conversations on the strategy issues that matter, subscribe to the series on iTunes.)

Sean Brown: From McKinsey's Strategy and Corporate Finance Practice, I'm Sean Brown. Welcome to *Inside the Strategy Room*. As the pace of social, economic, and technological change accelerates, organizations everywhere must make increasingly complex decisions in the face of an uncertain future. This is why the value of creative and strategic thinkers capable of solving complex problems has never been higher.

During today's episode, we have a conversation between Chris Bradley, a senior partner in our Sydney office, and Rob McLean, a director emeritus of the firm, a trustee of the Nature Conservancy in Australia and Asia, and director of Australia's largest philanthropic foundation, the Paul Ramsay Foundation. Rob, along with Charles Conn, is the coauthor of a recently published book called *Bulletproof Problem Solving: The One Skill That Changes Everything* [John Wiley & Sons, 2018]. Chris and Rob recently met in our Sydney office to talk about Rob's new book and how a disciplined and comprehensive approach to problem solving can be applied to almost any kind of problem—from personal decisions through to business strategies and on to some of the most complex challenges facing society today. We hope you enjoy listening to their conversation.

Chris Bradley: Welcome, Rob. It's just great to have you here on our podcast. You've had such an interesting and long career since you graduated in the '60s. How did that lead to this book, *Bulletproof Problem Solving*?

Rob McLean: I had no real plan to write a book, but I found myself at a Nature Conservancy trustee meeting in Washington. I was on a panel with Jim Morgan, a legendary Silicon Valley CEO, and Jim talked about this book that he had written. Then

I had the long trip home from Washington and thought to myself, "What would I write a book about?" I thought, well, the unifying thing is that I've had a problem-solving life and that involved my first real job at RAND in New York, followed by 25 years at McKinsey. Since that time, a lot of the work I've done has been with the Nature Conservancy, which is a problem solver in the environment—and more recently, in philanthropy.

Chris Bradley: It sounds like you got this inspiration to write the book. Tell me about the inception of it.

Rob McLean: It turned out that one of my fellow partners in Australia was Charles Conn, who wrote the original "7 easy steps to bullet-proof problem solving." I went and saw Charles in his role as warden of the Rhodes Trust at the University of Oxford and said I had this idea that we ought to write a book about problem solving because nothing really existed that shared the way to go about problem solving that we'd learned at the firm.

When I had that conversation with Charles, I talked about some of the things I was doing in conservation and social enterprise. And he talked about what he had been doing with the Gordon and Betty Moore Foundation and with other philanthropic foundations and how he taught the young Rhodes Scholars the seven-step process. So out of that, we agreed that we would have a crack at writing a book on problem solving. We spent a summer at the University of Oxford at Rhodes House together with my wife Paula, who is a book editor, and a team of Rhodes Scholars, who were our case writers and research assistants.

Chris Bradley: You've set yourself a high bar, calling this book *Bulletproof Problem Solving*. What makes you believe that this really is bulletproof?

Rob McLean: "Bulletproof problem solving" is an expression we used at McKinsey that meant that what you came up with to present to the client was ironclad. It really was a test of just how rigorously you'd gone about defining the problem, breaking it down, and doing the analysis.

Chris Bradley: So it's about the bulletproof aspect coming from rigor. What is a bulletproof problem solver then? And why do we need them now?

Rob McLean: What we've reflected on in writing the book is that by almost any measure, the world is more complex and uncertain. To our surprise, we came across some work done by the World Economic Forum that lists complex problem solving as the number-one skill for 2020. There's also work by the McKinsey leadership group that shows that organizations that have problem-solving capability in the top quartile earn something like 3.5 times higher total return to shareholders than those in the bottom quartile. It seems to us that it's not just an individual skill—it's also becoming an institutional skill in demand.

Chris Bradley: In your book, you not only explain to us why problem solving is more important than ever and more relevant, but you also go through how to be a bulletproof problem solver. What's your synopsis there?

Rob McLean: We've got some 30 examples that include individual problems, like "Should I have knee arthroscopy?" and "Where should I live?," and business problems, such as on competitive strategy, "Should I raise my prices or not raise my prices?," and "Should we go to court and sue people who are infringing on patents?" What we've tried to show is that it's basically the same process that underpins individual, business, and societal problems. Good problem solvers are made, not born. If you want to become an outstanding problem solver, it's within your grasp. We're not drawing a line around only dealing with problems that involve good knowledge of accounting or business. People can find their way into the book and into a range of problems that we think are all addressable.

Chris Bradley: I remember when I joined McKinsey, over 20 years ago now, and encountered the seven steps of problem solving. I remember thinking, "Where was this my whole university life?"

Rob McLean: I had a similar experience as dean of a business school in Australia. I saw the students

picking up fantastic capabilities in finance, marketing, and change management. But what I didn't see was a systematic process for dealing with relatively unstructured problems: the ability to define the problem, particularly in terms of what decision makers were looking for, or the ability to disaggregate the problem. Very few problems can ever be solved at the highest level. There's got to be some way to break the problem down into parts that you can address and then take that into a set of priorities, a work plan analysis, and then recommendations that lead to action. What I saw then, as dean, I continue to see now. College graduates, for the most part, do not know how to solve complex problems that we talk about in the book. And we think that's a real gap in education globally.

Chris Bradley: So they have depth in their functional wheelhouse, but if they come across a problem that doesn't fit into one of those taxonomies, we hit trouble, don't we? And you're right. More and more of the problems we're encountering, both as you get more senior in your organization but also as the world gets more complex, aren't going to fit in those neat buckets, are they?

Rob McLean: No, they're not. One of the things that we're very pleased about is that Eric Schmidt, the former chairman and CEO of Google, made the comment with our book that, at Google, they always hired for creative problem-solving talent above all else. We think that's happening with more and more organizations. It becomes not just a nice to have but a must-have for both business-school graduates and college graduates more generally.

Chris Bradley: One of the things I really love about your book, Rob, is these 30 cases and stories. It really brings it to life, and it allows you to see the common threads there. Let's start there but perhaps with what happens when you get it wrong. What's at stake here? What are some examples of when problem solving goes off the path?

Rob McLean: Often it's missed opportunity. We have an example in the book where in the 1980s,

IBM paid 20 percent to buy Intel, and it had another 10 percent of warrants in the company. It sold it for \$625 million in 1986–87, and that was worth \$25 billion a decade later. Similarly, it had the opportunity to buy 30 percent of Microsoft for \$300 million in 1986. And ten years later, that was worth \$33 billion.

Chris Bradley: We're all geniuses in hindsight. What was the failure of problem solving that you saw in those examples?

Rob McLean: It has to be that understanding of the market dynamics and the way that the PC industry was going to evolve. And as you know, IBM was quite a significant player in that business. The amounts of wealth that were created in this case were just quite staggering.

There are also examples from the personal level that we talk about in the book. I talk about whether I should have arthroscopic knee surgery. And then, in the social area and the environment, there's a lot of things that can go wrong. We give examples of whether you should trade off the loss of fish stocks in rivers in Southeast Asia, where there's huge hydroelectric potential. There's some very, very clever work that's being done by the Nature Conservancy and others to highlight that you can get 90 percent plus of the power by having minimal impact on the fish stocks. But if you go to getting 100 percent of the power, you have an enormous impact on the fish stocks and, of course, on the populations that depend on fish for their livelihoods.

Chris Bradley: What you're saying is that if you're not a rigorous, bulletproof problem solver, you're just going to accept common wisdom. That means you're going to accept a whole bunch of dumb risks, and you're going to say no to a bunch of really good opportunities. There's something about bulletproof problem solving that allows us to see what's not the common wisdom.

For several years, we've talked about strategy in terms of ten tests that define what a good strategy looks like. And test five says, "Do you have a

privileged insight or foresight?" The idea is that too often in strategic processes, we saw common math plus common data equals common wisdom. And therefore, clients were surprised that their strategy didn't lead to a terrifically differentiating or winning position. Talk to us about the problem solver's knack for getting that privileged insight—that insight that really makes the difference.

Rob McLean: So much of the time, I see it coming from a team leader asking good questions. We had a CEO of a resources company in Australia, Rod Carnegie. His mining company had its most significant asset with these trucks that move iron ore. One of the biggest issues it had was with maintenance and tire changes. Rod asked the question, "Who does this best in the world?" And the answer was Formula 1. So they sent a team off from the Pilbara to the UK to look at the whole procedure, processes, and protocols for changing out tires. It had a very significant impact on the way they thought about it. So that's an example of a question that led to a different way of going about things.

More frequently, the insight that I saw for years at McKinsey came from talking to people at the front line and, particularly, talking to customers. We have an example in the book of the Avahan project, which was funded by the Bill & Melinda Gates Foundation, that arrested the spread of HIV in India [*avahan* means "a call to action" in Sanskrit]. The leader of that project, Ashok Alexander, spent something like a year interviewing over 1,000 sex workers in different parts of India to understand what was happening to them, and a lot of it related to violence. Out of that interview process came the Avahan project, which basically meant that the community was engaged. The journalists, the lawyer from the community, and the women were able to send off a mobile-phone message when they were in distress. And that model was rolled out to 673 towns and villages in two years. They scaled it up really quite quickly. But the insight for the solution came from these women at the front line.

Chris Bradley: How did that differ from the more orthodox way of eliminating HIV?

Rob McLean: There was what you'd call a public-health view that said you should stop the transmission. The hypothesis was that it was because of men on the move at truck stops, and you could show that there were hot spots of the spread of HIV. That was the starting hypothesis.

But Ashok had two insights. One was that every sex worker had 20 to 50 clients. So there was a lot more leverage in working with the sex workers than the men on the move. That was one that didn't require much analysis, and he had that very early on with his problem-solving capability and discipline. But the way he describes the solution, he feels it owes so much to the learning he got from the women that he spent time with.

Chris Bradley: It's a great example of problem search, isn't it? Because the first problem is, "How do we reduce HIV transmission?" Then that led to the problem of, "How do we make sex workers practice safe sex more often?" And that led to the next problem, which was, "Why is it that they're not doing that?" Which came into these things about attitudes and threats of violence, et cetera.

Rob McLean: That's right.

Chris Bradley: That's a fascinating story. Let's continue in the strategy vein. Some might argue all we really do in our strategy work with clients is just good problem solving applied to a specific business context. What is it about the field of strategy that, in some ways, might bring out the best and the worst in problem solvers?

Rob McLean: Both good strategy and good problem solving involve getting clarity about the problem at hand, being able to disaggregate it in some way, and setting priorities. One of the examples I have is with serving in tennis, which may seem a little bit of a frivolous pursuit. I've used a game-theory framework for looking at it: Where do you serve in tennis? You have to think about your own strengths and competitor weaknesses, and you have to bring unpredictability to bear. The way that I've laid out a decision tree for where I should serve is based on all of those things.

Chris Bradley: How do you play to win in tennis?

Rob McLean: I'm a left-hander, so I have the advantage on the ad side of being able to serve out quite wide. However that makes me somewhat predictable about where I'm going to serve on key points. I have to have the ability to be able to serve down either the tee or the body, and that brings the unpredictability in—and often turns out to be the basis of a winning point.

Chris Bradley: That's interesting because a strength that is truly predictable stops being a strength, and that leads in the game-theory literature into mix-strategy equilibria, where the right answer is to mix it up in a certain proportion.

Rob McLean: Exactly.

Chris Bradley: What you're saying is when we're doing strategy, it's not playing tennis against the wall—against ourselves. There's an opponent in there who we've got to outsmart. I think that's one of the first really important insertions in the problem-solving process that's important with strategies. You're not bowling alone. You're not racing alone. There's someone else there, and what you do is going to affect what they do—and what they believe as well.

On this uncertainty point, that's another point where I think strategy differentiates from your more meat-and-potatoes problems. You've got to deal with the fact that you're making decisions now that last a long time. So therefore, 99 percent of the shelf life of your strategies are going to be in a world you don't know much about, because it's called the future. Talk to me about how great problem solvers bring uncertainty into the mix.

Rob McLean: I think they do several things. They try to calibrate what the level of uncertainty is and whether that's going to impact the range of choices they have. For what we refer to as "higher levels of uncertainty," we then bring out a tool kit that you're very familiar with that involves how you think about what the no-regrets moves are that you ought to

do. Usually they are about building capability. What are some of the low-cost options that you can pursue that position you in the space and that allow you to learn? And then figure out that timing for when you make a big bet.

One of the examples that illustrates this in the book is we looked at the resources company BHP, which was making a 50-plus-year commitment. That's a long time. It was 50 to 100 years. And we were able to satisfy ourselves the investment looked attractive.

We looked at uncertainty on two major dimensions. One was the iron-ore price, and the second was what happened to the Australian dollar–US dollar exchange rate. We looked at scenarios where the iron-ore price had an expected level, but then we had levels when it fell by two standard deviations, so we're covering 95 percent of possibilities, and then when it went up by two standard deviations. And then we looked at the range of possibilities of the exchange rate. That then allowed us to say we had a level of confidence that we had a venture that could both survive and prosper in the most likely scenarios—and even the worst of the scenarios. We were able to calibrate the uncertainty and have a way forward.

Chris Bradley: Putting a box around the uncertainty does two things. The first thing is that often, in the face of uncertainty, our clients will say, "Well, everything's uncertain, so it's an ambiguous world. Let's just muddle along." Or they say the exact opposite, which is, "Pretend uncertainty doesn't exist, and put it in the corner, and have it as the last page of the pack with risks and uncertainties." But if you're bringing it in the center and putting a box around it, what you'd see is that just because the world is highly uncertain, it doesn't mean that the decision should be uncertain, because in this case, what you found was it was worth proceeding under a very wide range of scenarios.

Rob McLean: But there was something that happened that was quite important in this. We talk in the book quite a lot about having team

structures that have diversity and that allow different viewpoints to be brought together. We had one team member who was very bright, but he played the devil's advocate in the project. We have an expression, which I know still applies at McKinsey, of having an "obligation to dissent." He took that very, very seriously. That required us doing the work to have a level of confidence about the solution: that even in adverse scenarios, we had a robust solution to this problem. That too often is missing in problem-solving settings.

Chris Bradley: I love that idea. If you're going to put a box around uncertainty, it'd better be a good box. That means you need lots of conflicting views.

Rob, since leaving McKinsey, you've continued your problem-solving life. In some ways, you've graduated from everyday business problems into problems that are perhaps more of a wider global nature in terms of environmental or social problems. And you coined this term in the book: "wicked problem." Tell us about what it's like to solve wicked problems.

Rob McLean: There are a lot of wicked problems. It's hard to say that they're solved. They keep on needing to be re-solved. But there are cases where I think some significant gains have been made.

Chris Bradley: What is it that makes a problem wicked?

Rob McLean: Take social problems, like obesity, which is one that we tackle in the book. Multiple causes is one significant dimension to it. Often, it's unintended consequences when you seek to solve the problem in a particular way that make it worse rather than better.

Chris Bradley: Or it creates other problems.

Rob McLean: Or sometimes there are just value disagreements among players about whether this is good, or bad, or otherwise. They're the kind of problems you have to find a way to pick apart—find ways to have entry to have impact, without feeling that you're tackling the whole thing at once.

Chris Bradley: Those are complex, messy problems where there's no benevolent dictator to make everything all right again.

Rob McLean: The example we use with obesity really reflects a quite brilliant piece of work done by the McKinsey Global Institute where they took the UK and arrayed some 44 interventions that would have the prospect of lowering those with obesity by something like 25 percent in five years. I don't think I've ever seen a more ambitious and rigorously set-out answer to a wicked problem.

Chris Bradley: That's a classic multiple-causes situation in which trying to find the right intervention is really, really tough, isn't it?

I want to talk about getting the conditions right for solving a problem well. In our book *Strategy Beyond the Hockey Stick: People, Probabilities, and Big Moves to Beat the Odds* [John Wiley & Sons, 2018], we talk a lot about the social side of strategy. What is it that gets in the way of the purest answers to strategy? And it's often got things to do with competing interests, and different perspectives, and a lot of bias to the status quo in existing power structures, and so forth. What are the big hacks you have in your book for getting the conditions right for problem solving?

Rob McLean: We do spend quite a lot of time talking about alerting people to biases. They're not dissimilar to the biases you list around confirmation, loss aversion, availability, and so forth. We also put great weight on team structures. What we might have said more loudly is that you have to have leaders who are prepared to look at sometimes quite-radical choices and real alternatives.

One of the examples we use is the case of mineral exploration, where a CEO agreed to anchor outside rather than anchor inside. In that case, it meant looking at the practices of the best companies in mineral exploration as well as the worst. And that turned out to provide a major insight to us about where exploration reported to the CEO, the level of science in the organization,

and the culture that supported it and shifted it to a much more successful strategy. But if you don't have leadership that is prepared to look at the redefinition of the problem statement, your chances of getting great problem solving are much reduced.

Chris Bradley: Strategists today have more analytical tools at their disposal than ever before. I don't want to age you too much, Rob, but you started with a slide rule, I think. Then you had the trusty Hewlett-Packard calculator, which people my age just can't use, because it's backward to us. And I started in Excel spreadsheets. But now there's thousands of times more analytical problem-solving horsepower and data to apply to it. How does a problem solver cope with all of that? How do you use these tools well?

Rob McLean: We say to teams that you always should start with heuristics and rules of thumb. For example, say we had a merger or acquisition, and there were three conditions for success that might involve the cost reduction and customer acquisition and retention. Now if each of these three conditions had an 80 percent chance of success, we'd say that if they were independent, there's only a 50 percent chance of success of the merger. Thinking that way around joint probabilities is where you start.

Chris Bradley: So have good priors.

Rob McLean: Have good priors. Then just start looking at the data.

We've got an example in the book about London air quality. I'd read a piece saying that 3,000 people had died in London seven or eight years ago because of PM_{2.5} [atmospheric particulate matter with diameter of less than 2.5 micrometers], the small particles. So I asked one of our researchers to pull down two data sets. One was on PM_{2.5}, and the other was on asthma hospital admissions in London. I gave him an hour, and he produced this diagram that showed these hot spots. There was enough in that diagram that showed there was something you'd want to explore more closely.

So before you jump into machine learning or major regression analysis, look at the tails—look at where the mean, median, and mode are. Those things then help you with the hypothesis that you want to set for a major piece of regression analysis or machine learning.

Chris Bradley: And somehow through that, you've even managed to link obesity to how good the footpaths are in a city. Talk to me about that.

Rob McLean: We know that obesity is a major issue. And we thought, as a team, "How would we start thinking about it?" The first thought thing was, "How would you compare caloric intake with caloric use in the US and Japan?" The team quickly got the numbers on that. It didn't take more than a half an hour. What we found in Japan was that they had lower caloric intake and that they had substantially more caloric use. And it was like, "Well, why is that?" Well, it was the structure of their cities—walking to the train station, walking to the office. So suddenly, we had this variable of walkability that we needed to explore.

We then asked one of our researchers to take a look at whether we could look at the US and look at differences between obesity in different US cities. He pulled together data on 68 US cities. We were able to determine that there's an enormous difference in obesity. Some 82 percent of the variance is explained by three variables: income, education, and walkability.

Chris Bradley: And walkability's the new thing no one was talking about.

Rob McLean: So just kicking around different ways to break down the problem, we came across something that was quite interesting that we think presents a major opportunity for cities to rethink their design in a way that aids walkability.

Chris Bradley: So far from replacing the way you might do problem solving, these new analytical techniques are just allowing you to go deeper and faster. What hasn't changed, though, is that classic, almost Sherlock Holmes exploration of, "Why?"

We are getting to a world where these algorithms are getting fiendishly good. And they're getting fiendishly better than humans are at doing certain things like, for example, spotting tumors. What are the chances that our strategists could eventually be made redundant by an algorithm? And what are some of the opportunities and the traps that exist for strategists around this world of machine learning?

Rob McLean: It seems to me that there's some terrific ways to use machine learning. You may be familiar with Kaggle, which crowdsources machine-learning problems. If you can put a data set of borrowers on Kaggle, something like 500 or 600 teams would come up with predictions for bankruptcy in the next two years from that data set. And the client will choose the algorithm that works best. So that seems to me a good use of algorithms.

Chris Bradley: Yes. And the idea that one very smart team sitting in an office building can beat 500 teams is laughable, isn't it?

Rob McLean: We also see it in the example we've got about using drones for beach safety. Having a drone with a camera and attaching machine-learning algorithms, we've shown in Australia that you can have something like 90 percent accuracy in distinguishing a shark from a porpoise and from a human. But you still require that lifesaver on the beach to see people in trouble. So you're coupling human capability with machine-learning capability to get a better outcome. We've gone a step further. I talked earlier about problem solving being an institutional skill that's being valued in the share market with total returns to shareholders. We think we're going to see a combination of mental muscle, which is the cognitive problem solving, and machine muscle that will distinguish the better companies going forward.

Chris Bradley: So it's almost as though these tools are forcing us, in some ways, to be more fundamental problem solvers because a lot of our brain load used to go in making the calculations, which are now happening automatically.

Robert McLean: Let me give another example. There's an enormous temptation now to just run algorithms over data sets and "boil the ocean." That was always something when I was learning problem solving that was anathema.

Take another example that's on Kaggle, which is the *Titanic* problem. The question they asked the machine-learning team, and I think it was close to 2,000 that had a crack at it, was: "Who survived the *Titanic*?" What came out of the algorithm was, people who weren't called "mister." It's amusing because you know that you could take a human, and you could ask, "What were the priorities to put people in the lifeboats?" Of course, the answer was women and children. So you can get there in a fashion with machine learning.

There's no question that there is this scope for better identification of disease and to save a

lot of labor. But we see the same value in doing problem solving, with defining a problem, breaking it down, having hypotheses, and testing them initially with simple data before you go on to run these algorithms.

Chris Bradley: Rob, thank you so much for your time on this podcast, and all the best with your terrific book, *Bulletproof Problem Solving: The One Skill That Changes Everything*.

Sean Brown: Thanks to Chris and Rob for joining us inside the strategy room. If you'd like to learn more about the strategic problem-solving techniques discussed in this episode, Rob's book *Bulletproof Problem Solving: The One Skill That Changes Everything* is published by John Wiley & Sons and widely available.

Chris Bradley is a senior partner in McKinsey's Sydney office, **Sean Brown** is the global director of communications for strategy and corporate finance and is based in the Boston office, and **Rob McLean** is a director emeritus in the Sydney office.

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