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UBIQUITY: As an expert on innovation, have you found that there are some companies that think they're doing innovation but are really not?

SCHRAGE: Boy. My immediate reaction is that there are actually quite a few organizations that have convinced themselves that if they think they're doing something innovative, then by definition it is innovative. And I like to call this "peer review notions of innovation" -- i.e., "if my community of people think it's innovative, then we're being innovative." But as you know, my perception of these things is that innovation isn't something that innovators do -- *innovation is what customers adopt*. And a supply-side definition of innovation guarantees the kind of self deception that you've described, because it is *the market* that determines whether something is innovative or not, and whether something is adopted or not.

And then there is an important critical next step. Just because an innovation is adopted doesn't mean that it's a successful business innovation. The challenge for business is not just to get customers and clients to adopt innovation, it's to get them to pay a premium for the innovation. You have to do more than just recover the cost of capital -- you have to make a profit margin. So the real innovation challenge is coming up with business models where people are prepared to pay a premium for the instantiation of those ideas.

UBIQUITY: Is there any particular academic institution that's particularly good at helping people come up with business models that encourage innovation?

SCHRAGE: No, and I say this as a member of them. I think academic institutions are not great at *ex ante* business models, they're only good in an *ex post* mode. Business schools are like pathologists: we do our best work with dead patients. What academics do, and what business schools do, and what economists do that is extraordinarily useful is that they offer frameworks for analyzing things. But do they actually offer platforms for business model innovation? No. a good background in macroeconomics or in behavioral finance can give an innovative manager or entrepreneur a very useful lens through which to view decision-making and behavior along an innovation axis, but in terms of actually suggesting methodologies that make one kind of success more likely than another kind of success, business school has not shown itself to be a wellspring of great ideas.

UBIQUITY: Then what about drama school?

SCHRAGE: What an interesting question, and it's funny that you say that. There are three kinds of reading that I do a lot of. One is history of technology, because I'm fascinated by recurring patterns in invention, innovation and adoption and the surrounding economics. The second amount of reading I do is in economics -- particularly behavioral economics, or cognitive psychology as it collides with economics, and examines how people invest in the face of risk and uncertainty. And the third group of reading is where I find myself reading books about improvisational theater -- books by Peter Brook, the theater director, books about the great animators, such as Chuck Jones, who did all the wonderful Bugs Bunny cartoons. I'm fascinated by interviews with computer animators, like the Disney people trying to adapt to CGI [computer graphic imagery].

UBIQUITY: What's the nature of the fascination?

SCHRAGE: The whole question of how you use a medium to establish a connection with an audience strikes me as directly analogous with how you use an innovation to strike a connection with a user group or customer group or with a consumer.

UBIQUITY: In looking for the sources of innovation, you conspicuously avert your eyes from the money people, and your recent piece in the *Financial Times* basically disparaged the role of money in fostering innovation. Your article created quite a stir.

SCHRAGE: Yes, though what I said was something so obvious it's surprising (a) that people didn't immediately agree with it, and (b) that it generated such vehement attacks. The idea is simply that the amount of money you spend on research and development has little to no correlation with the quality of any kind of innovation that you do. There have been a number of studies from groups like Booz-Allen and McKinsey showing that you have more of a scatter pattern than a positive correlation between the amount of money you spend on, quote, "R&D", and the quality of invention and innovation that you get. If you give me an additional million dollars and say, invest it, do I become a better investor because you've given me a million more dollars? Of course not. Or if you give you more time to do something, does that mean that what you've asked you to do makes more sense than it did before you gave me the extra time? Of course not. The issues are, how do you invest the time, how do you invest the money? And the idea that more time or more money equals a better result is delusional. Just because you give an R&D lab more money doesn't mean it will do better R&D. In the first and final analysis, R&D is an *input*, and most organizations need to be more concerned about how they assess and measure *outputs* and *outcomes* rather than inputs. The question is,

what's the quality of the output, not the quantity of the input.

UBIQUITY: Then what would a CEO or CIO be best advised to do? Certainly, not throw money at the problem, right?

SCHRAGE: Absolutely not. When I talk to C-level executives -- but more importantly, when I talk to people who run research or innovation initiatives within organizations -- we spend the most time talking about what kind of outcomes are they looking for. Do they want to come up with innovations that are faster, better, cheaper? Do they look to satisfying their best customers; or their most profitable customers; or their most typical customers? What I try to get them to articulate is, *what does success look like?* Not in a balance sheet sense, but what does success look like as your customers and clients pay, not just to purchase, but to adopt and integrate your innovations into the way they do business or into the way they lead their lives.

UBIQUITY: How would you explain this in terms of a specific industry?

SCHRAGE: The classic industry to look at is healthcare, where the issue is not how much do you spend on a procedure but rather how much time do individuals spend in hospitals and how frequently do they have to come back? Let's look at the example of coated stents, which are a terrific medical/technical innovation. It used to be that when you had blocked arteries you were given a by-pass, but there were all kinds of problems with ordinary by-passes, so then people with clogged arteries would be given stents. The problem was that, more often than not the stent became clogged again within two years and the scarring clogged up against the artery. So now the revolution with stents, a multibillion dollar business, is coated stents, a blend of the device with a chemical that basically interferes

with the blocking, the stenosis, of the artery. So you're looking at the outcome, and the outcome is not the stent itself, the dramatic increase in the time between when you have the procedure and the time in which the thing clogs up again. The fundamental point is that the revolution in healthcare is focusing not on inputs but on outcomes. We need to care more about outcomes. We need to have more innovative and creative thinking about what good and successful outcomes look like, whether they're in medicine or in telecommunications or in any other innovation-driven field.

UBIQUITY: When you talk to people about this, do you get puzzled looks, or do they seem pretty comfortable with what you're telling them?

SCHRAGE: I don't last long in organizations where I get puzzled looks. For two reasons: Number one, I get frustrated. Number two, *they* get frustrated. But I rarely get those puzzled looks. First off, I generally don't get invited to talk with organizations where I'd get puzzled looks because usually they've read my interviews in Ubiquity or my books or columns and it all sort of rings a bell and they see a pattern and there's something that matches their expectation or experience or problem or opportunity. So I have a highly self-selected group. Where the frustrations emerge is in the tradeoffs associated with these things.

UBIQUITY: Such as what?

SCHRAGE: Let me offer you my paradigmatic example. In the year 2000 I was talking with folks at Blockbuster, and that was back in the days when Blockbuster was going gangbusters and making lots of money. You know where 20 percent of their pre-tax profit came from? Late fees. I knew this wasn't sustainable, and to be fair to them, they also knew it wasn't sustainable. They saw companies like Netflix arise, and they also knew from every customer survey they

did that the single thing their customers hated the most was late fees. Furthermore, the Blockbuster business model distorted itself to exploit those late fees. What kind of promotions did Blockbuster run in those days -- 1998, 1999, 2000? It wasn't discounts, it was "rent three movies for the price of two" -- and that's not giving you a discount, it's essentially guaranteeing that you'll increase the late fee by 50 percent.

UBIQUITY: Pretty clever, actually.

SCHRAGE: Exactly. You run promotions that exploited the easiest money you ever made. You do nothing and you get paid for it. I've aspired to that business model all my life, you know, but it's not sustainable for reasons of competition and customer dissatisfaction.

UBIQUITY: So what happened?

SCHRAGE: So I talked with a Lord High Muckety-Muck at Blockbuster and suggested doing a very simple, very cheap test; I said, "Let's go to some of your stores and invite your customers to give you their e-mail addresses, and in exchange for that you're going to send them an e-mail the night before their rentals fall due, to remind them." But now let me digress briefly. I've asked this question at numerous CIO workshops, customer-sensitive workshops, et cetera: "How many of you would have done this experiment? It's obviously very cheap to do. The cost of the experiment is measured in the thousands of dollars, not tens of thousands of dollars, for a hugely profitable segment, and it's customer-sensitive."

UBIQUITY: And did they go for it?

SCHRAGE: No. Out of all these people only a handful said, "Yeah, I'd have run the experiment." That's because people don't want to put their easiest source of revenue and

profitability at risk. Now I did have some people say, "Yeah, I'd have been happy to do the experiment, 'cause I know that even if I alert the customers only a fraction of them will bring it in on time anyway, yet I'll end up looking good." But here's the point: Blockbuster could have run a \$25,000 experiment (just to pick an arbitrary figure) to give it insight into something that put at risk well over \$100 million worth of profitability. *But they wouldn't do it!* And the basic reason for not doing it was not that they couldn't afford to do it, but that *they didn't want to know*. You know, you're in real trouble as an organization when you won't conduct a cheap experiment to learn something important about your business, your profitability, and your customers. And that is the innovation challenge that organizations face. It has nothing to do with how much you spend, but about what assumptions you're prepared to challenge. But I don't mean to pick on Blockbuster, and they're by no means unique in failing to seriously think about what they're doing.

UBIQUITY: Then have you identified a Law of Cheap Business Experiments?

SCHRAGE: I guess that would be as good a name as any. What's new in the world of experiments is what networks allow us to do, and this is why bits are so intriguing as contrasted with atoms. With bits, we now have a much, much cheaper way to do business experiments about issues that matter to you and your customers or your supply chain now than we did ten years ago. The same cost curve found in Moore's Law or Metcalfe's Law that makes IP better, faster, cheaper, with more bang for the bit, also makes business experimentation more valuable -- and to get more value for less money if you're prepared to be innovative in that regard. But what is shocking to me are the cultural and organizational obstacles -- not monetary or financial obstacles but cultural and organizational obstacles -- to getting individuals and organizations to do cheap

experiments, so they can fail in a cheap model rather than in an expensive reality.

UBIQUITY: How are you using the word "cultural" in this context?

SCHRAGE: I'm using it in the sense of Economics, Psychology and Sociology 101. There are so many organizations that tell me they need more good ideas -- or need a finer or better filter to select out their best ideas -- or need to come up with new incentives to encourage people to be more creative and innovative thinkers who -- all together now! -- "Think out of the box"! Ridiculous! I'm telling you, it's all a bunch of whooey. Look, when I want to understand an organization's innovation culture, I don't pay any attention at all to the quality of its ideas. None. Zero. I've never, in my entire adult life, gone into an organization that with a little poking and prodding didn't come up with more good ideas than it knows what to do with.

UBIQUITY: Then how do you learn about an organization's innovation culture?

SCHRAGE: I learn about the organization's innovation culture as follows: I say that, when someone comes up with an idea you think is a good one and people say, "We can't do that because..." then whatever follows the words "we can't do that because..." is your innovation culture.

UBIQUITY: Examples?

SCHRAGE: "We can't do that because Marketing wouldn't like it. Legal wouldn't let us. The CEO prefers to do these things *this* way. It's too expensive. We don't have the time. We'd have to work with organization X and we don't *like* organization X."

UBIQUITY: What turns people into such dolts?

SCHRAGE: Internal imperatives. When I was a newspaper reporter and covered these organizations from the outside, I asked that question as well, because it just struck me as so stupid and counterproductive that individuals and organizations would make these breathtakingly dumb choices. But the problem is that when you do advisory work and get to see what the internal economics of the organization looks like (and see what people get rewarded for and punished for), what you realize is that these organizations have their own internal imperatives, and that what looks like a stupid and counterproductive choice from the outside makes perfect sense from within the internal economy of the organization.

UBIQUITY: What sorts of rewards and punishment are you thinking of?

SCHRAGE: Here's a typical one: When a corporate division gets rewarded for doing something on its own but penalized if it works with another corporate division. The penalty might be that revenues are split between its division and the other division, and instead of being credited with 100 percent of the growth, it's credited with only half of the growth. Then all of a sudden (and the two divisions really don't like each other division to begin with) it makes sense why the first division tried to do it all on its own. Now, from the outside that makes no sense, because *of course* you want to spread the risk and build the coalition. But from the inside, when you see how they get rewarded and how they get punished, it makes sense for them to monopolize the initiative. The ideal design for an organization is that the whole is greater than the sum of the parts, but the reality, more often than not, is that the parts are more valuable than the whole. That's why you have so many organizations break up, spin off, et cetera. And that's just as true for the innovation side as it is for the financial side.

UBIQUITY: Now you've written whole books about collaboration...

SCHRAGE: Yes, sadly.

UBIQUITY: ... so how does this problem fit into the notion of collaborating in multidivisional and multidisciplinary environments?

SCHRAGE: John, you've immediately zoomed in on a sore point. When I wrote "Shared Minds," my original book on collaboration, god, over 15 years ago, I was fascinated by the role that technology can play as a medium for collaboration. I looked at Watson and Crick, and Braques and Picasso, and Wilbur and Orville Wright, and Bardeen and Brattain and Shockley in the creation of the transistor, and Wozniak and Jobs, and Gates and Allen -- and I looked at all of these great collaborations and the role that tools and models and prototypes played in managing their creative collaborative interaction. But what I learned after doing that book and being brought in to do advisory work promoting collaboration within large organizations is that, as important as collaborative tools, techniques and technologies are, *you have to have an environment where there are incentives to collaborate*. You have to have an internal economy where there are appropriate rewards and incentives for collaborating, and appropriate disincentives for *not* collaborating.

UBIQUITY: Is collaboration always desirable?

SCHRAGE: No, we don't always need to collaborate. You don't need to collaborate to turn out the lights. You have to have a circumstance where you cannot succeed, cannot get promoted in the organization, cannot get extra organizational resources, unless you are deemed to be somebody who is a creative and cost-effective collaborator across the enterprise. The fact of the matter is that many

people have succeeded in organizations not because they're very good collaborators, but they've been successful as leaders on their own, they're not team players at all. A good friend of mine was once asked in a Silicon Valley job interview, "Rob, are you a team player?" And his response was, "Yes. Team captain." Now everybody I've ever told that story laughs, because they understand exactly what it really means, which is that we use words like "team" as a fiction and that teams aren't about collaboration, they're about a bunch of people with a common goal. But just because you have a common goal doesn't mean you actively and appropriately collaborate with your teammates. My book was about how people interact with a model, with a prototype, with a simulation, to jointly create shared value. It takes shared space to create shared understandings and they realized they couldn't create this value on their own. That's what collaboration has to be about, and it must be recognized explicitly and you must be rewarded explicitly.

UBIQUITY: How does this tend to work in practice?

SCHRAGE: Well, this goes back to your point about culture. Some organizations make it easier to collaborate than others. Goldman Sachs for decades had a dual head. At the very apex of the pyramid was a collaboration, and I think that sends a very clear signal to the organization. Look at how people get celebrated in organizations. What portion of corporate awards are given to, quote, "the best collaborations" in the enterprise as opposed to the "best managers" or "best leaders" or "best, team" in the enterprise? Collaboration is not one of those skills or competencies that is acknowledged as explicitly or as cleverly as it should be -- and that, to my mind, represents a failure of leadership and a failure of creativity. (But it's fine for me, because it creates a great market opportunity for people like myself.)

UBIQUITY: The last time we talked you mentioned in passing that when you first started getting to know computer scientists you often found them to be control freaks.

SCHRAGE: I'd revise that now to say that a lot of the people who went into computer science did so because they wouldn't have to deal with the ambiguities associated with managing people instead of managing code.

UBIQUITY: Then how are they at collaboration? Are they even worse than manager-types?

SCHRAGE: That's a really interesting question. It is my opinion that in the last 10 to 15 years, there has been literally a revolution in the computer science and software development fields, about the role and importance of collaboration. And there are two explicit practices I point to as being both responsible for and driving this cultural and individual change. Number one is the open source software movement, where individuals may write code in a shared space, building on other people's codes and making appropriate attributions and acknowledgments and submitting to compulsory licensing. And so you have basically the creation of a collaborative community around software development under the GPL, General Program and Licensing for open source. Number two is the programming methodology known as XP, Extreme Programming, and one of the interesting tenets of XP is what's called care programming -- the recognition that you're going to be a faster, better coder if you code with a partner who tests and checks and makes suggestions on your code. These trends have created a much greater openness to collaboration by programmers who previously were purely individualistic programmers.

UBIQUITY: What did you think of the recent scandal over a forged biography on the Wikipedia online encyclopedia, supposedly done as a joke.

SCHRAGE: I have to tell you, I'm never surprised when people act like people. If you think about it, the Wikipedia scandal is a bit like the scandal of spam. It's individuals making the choice to abuse the system fundamentally based on trust, as opposed to verification, for their own benefit. With spammers, they want the money. With this particular fellow, he wanted to play a quote, "joke" on people. One is self-indulgent for cash, the other is self-indulgent for ego. But this is why, and we've seen this with e-mail, and yes, we will see it with Wikis, we'll see it with Google, we'll see it with Amazon, we'll see it with all open source or open accessibility networks and systems -- and that is a migration from trust-based to verification- and validation-based systems. Phishing is a good example, too. As trust is breached, as people exploit those elements of the system that rely on trust, trust is going to be squeezed out by technical verification methodologies, and that's what's going to happen. So am I sad? Sure I'm sad. I'm also sad that half of my incoming e-mail messages are spam. It's an abuse of trust.

UBIQUITY: Let's talk about Michael Schrage for a minute. I know you're involved with the MIT lab, but I think of you mainly as a consultant and a writer. How do you think you would like it if you were plucked out of that and put on the top of some big organization? Not necessarily a computer kind of organization. Do you think you'd like to run a big company?

SCHRAGE: You know, it's funny that you asked that. I have several friends who do run big companies, and by big companies I mean, north of \$100 million and a couple of them north of \$100 billion; and I honestly say, no I wouldn't, and I'll tell you why. Two reasons: I'll give you

both the arrogant answer and the humble answer. The arrogant answer: Yes, I think I'm smart enough and have the skillset to be able to positively impact a large organization. That's my arrogant side. But now let me give you the humble answer. When I listen to my friends complain about what it is they have to do, I think to myself: Those aren't the kind of complaints I want in my life, with all the hand-holding that's involved, the emotional support. That's not who I am. I am a world-class project person, and if you've got a project and need to get some stuff done in 180 days that will have an enormous impact on an industry, a customer set, a deliverable, or whatever, then I'm a terrific person to have in the queue for you, working with you on these issues. But on a day-in, day-out, optimize-the-process, make sure the-trains-are-running-on-time basis, I would be a horrible person. Let's connect this to your earlier question, when we talked about theater and stuff. The kind of theater that interests me is not doing Hamlet every night for a year or producing "Dirty, Rotten Scoundrels" every night for a year and twice on Sundays. I'm from Chicago, and what interests me is "Second City"-style improvisational theater: variety and novelty within a framework, within a constraint. But doing the same thing day-in day-out would make me crazy. And a CEO does too much of the same thing day-in day-out.

UBIQUITY: What part of you or anyone causes you to feel that way? A distaste for boredom?

SCHRAGE: I would prefer to put it more affirmatively. There are other things I enjoy doing more, and I prefer having impact in other ways. It's somewhat like asking a really good athlete, "Why do you prefer golf over tennis?" It may have nothing to do with the athlete's motor skills, and everything to do with his or her temperament. I know one person who's a terrific athlete and a good golfer, but who will not golf. And you know why he won't golf? Because he's seen Tiger Woods, and it would just be too damaging to his

self-image to know that he could never be that good. There's something in his psyche that makes him not want to enter a field where he can't even imagine being that good.

UBIQUITY: You talked earlier about what drama and movies might show us about technology. Let's return to that subject.

SCHRAGE: Okay, well, why do we like a movie? Why do I like a movie like "Kind Hearts and Coronets"? Because it is a moment-in-time movie, and it captures that moment in time so brilliantly that it transcends the time that it captures. It is a period piece that, because it does such a good job of being a period piece, is a classic. Same thing with "It's a Wonderful Life" and with "The Wizard of Oz." And we can say this thing about technology too: that's why we admire certain kind of car designs, that the design captures a moment in time so well that it speaks beyond the moment, it appeals to us beyond the moment. That's why the Macintosh interface has held up as opposed to DOS. Who wants to do "command C"? Who does that anymore? Nobody. So the question is, What kind of aesthetic satisfies the problem for the moment, versus what kind of aesthetic satisfies the problem for generations?

UBIQUITY: What's the test?

SCHRAGE: The test is: When we try to redo it, when Peter Jackson does a remake of "King Kong," does the remake make us appreciate the original more or less or from a different angle (since the core of the story is the same). I think that's a really important questions for designers and innovators, because, in the first and final analysis, innovators may be trying to do something new but they're trying to do something new that still connects with the world.

And the nature of that connection is what I think is key. What's the aesthetic for that connection?

UBIQUITY: With regard to technology aesthetics, is there anything that particularly excites you as a new development?

SCHRAGE: All kinds of things excite me, but I'm very disappointed when people misunderstand where new value is being created. Two quick examples of that. The first is the iPod, which is the new black. You know the old joke, "This color is so chic, it's the new black!" The iPod's just so brilliant, beautiful, minimally designed. Where were we without our iPods? Now if you Google stories about iPods, you'll probably find that the ratio of stories about the design of the iPod to stories about the creation and management of the iTunes store is something like 110 to 1. When was the last story you've seen that has profiled the iTunes store? Never. What everybody talks about is the device, yet the device is meaningless without this wonderful vehicle to search and order and download songs for 99 cents apiece. So the irony is that the real value of the iPod doesn't come from its great design. I love the design, but what really made the iPod a success was iTunes, the ease of downloading, the ease of shopping, the guaranteed price. So why do people focus on the physical object as opposed to the infrastructure that enables it? I don't know, but I think the real innovation was not the device. The real innovation of the iPod is iTunes.

UBIQUITY: And your second example?

SCHRAGE: Google. In the workshops I do, I often ask people, "What kind of company is Google?" and 99 out of a hundred times do you know what they say? "It's a search company." And I tell them, "You're absolutely wrong. That's the exact wrong answer." Why are they wrong? Let's do a thought experiment. I'm going to give 100 order-of-magnitude improvement in the quality of search on Google, but here's the deal: in exchange for that 100-times

improvement of search you'll have to wait five minutes for the result. Now what do you think would happen to Google if you had to wait 5 minutes to get a much higher quality search?

UBIQUITY: Disaster.

SCHRAGE: Disaster. So here's the point: Google isn't a search company, it's an *instant* search company. If you go a Google search on me you'll see that it took say .25 seconds or .33 seconds. So what Google has done is like what McDonald's has done, and here's the irony: we do a better job of defining McDonald's than we do defining Google. What kind of restaurant is McDonald's? Fast food. Nobody goes to McDonald's and wants to wait 20 minutes. Google is a fast search company, instant search. But my point is, the speed is built in. It's implicit to the value, and we're kidding ourselves if we try to focus on the search aspects of Google and downplay the immediacy and speed aspects of Google.

UBIQUITY: That's an interesting way of thinking about it.

SCHRAGE: If it was a boring way of thinking about it, we'd be running into trouble.

UBIQUITY: Let's finish by thinking about your next book. What's it going to be about?

SCHRAGE: You know what? Since we last spoke, I actually do have an idea for a next book. I am potentially collaborating with a Daniel Kahneman, who won the Nobel Prize in economics in 2002. Together with Amos Tversky came up with very interesting views of how people make mistakes when they make decisions. He is one of the pioneers in cognitive psychology and the dysfunctions of cognitive psychology. I'm very interested in that because, as I said before, I'm fascinated by how people make investments in the face of risk and uncertainty. The other

book I'm interested in doing is about innovation as an act of persuasion: it's not just act of creation, it's an act of persuasion, and I'm very interested in the role of demos as a medium of persuasion in getting individuals and institutions to explore or commit to innovation.

UBIQUITY: Very nice ideas. Hurry up and write those books.

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