RS/RM3
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John Krige,
Interviewer

KRIGE: This is an interview with RS/RM3 at Georgia Tech on the 10th of January, 2013.

I'm beginning to get some clarity about some of the issues that really bother me intellectually and to get my mind around this. I've had a lot of interviews with people about process, but I'm always interested in how scientists come at the process and how they navigate their way through the process beginning with their project. So I want to suggest a dummy project, a simple project which I can connect to, and then I want you to tell me what I would do, where the traps are if I am a researcher here at Tech with a project like that.

Imagine I'm a researcher in space science. I am developing a rather nice fiber which can be used to parachute a payload down from a satellite onto Mars. This is a very smart kind of fiber. It has to have a certain tensile strength. It has to cope with certain kinds of forces, temperatures, environments, and the probable use of it will be to put a mass spectrometer on Mars to measure the constituents of the atmosphere. Down the road, I'm probably going to collaborate with the Swiss, who've got a really neat little mass spectrometer they want to use on Mars, but at the moment, I'm not there yet. I have this project from NASA and I'm beginning to develop my fiber. Now, the first question is—okay, I realize that all satellite technology at the moment is covered by ITAR. So, civil or military? So let's just bracket that for the moment because it just complicates everything. It's such a nice, simple example. Let's pretend that
Strom Thurmond hadn’t happened and that Obama manages to reverse this particular thing through Congress, so we don’t have that big overarching climate.

KRIGE: So I’ve got this little requirement where space science is possible and international collaboration is possible in space science, but, obviously, parachuting payloads is a thing of interest to many different people. If I have a parachute of very strong qualities, obviously, other people in the administration, particularly the DOD, might be interested in my parachute fiber.

So how do I go about this now? NASA has not placed any restrictions on publication. Is the first thing that I do, I take the database and see whether or not some properties of my fiber or my parachute might, in fact, require that I seek to be sure that no foreign student works on this? Is that how I proceed?

RS/RM3: Okay. Well, the first question is, you said fiber and you said parachute. So is the research that NASA’s spending for the fiber or for the parachute that requires some development of fiber or both?

KRIGE: Both, because the fiber might be for—we’ll call it the parachute itself or the fibers that connect that parachute to the payload.

RS/RM3: So it’s a project to develop a parachute that requires some fundamental work in fibers for some reason. And I’m the PI on all of that.

KRIGE: Right.

RS/RM3: So first question is, is does that fit under aerospace. Okay? And so we have to figure that out as to whether or not it’s actually, even if it’s funded by NASA—NASA funds non-aerospace things. Okay? Since you said it’s going to land on Mars, we can automatically think of it as aerospace, but it’s not propulsion systems, it’s not guidance systems, it’s not the normal kinds of things we think of related to aerospace. It’s not a satellite. Okay? So we’d have to
clarify whether or not BIS or ITAR or State Department would place that into the aerospace category.

KRIUGE: Why is that important?

RS/RM3: Well, because if it’s aerospace, then satellites and all that stuff automatically get put into a particular category, right?

KRIUGE: Of ITAR, ITAR-connected.

RS/RM3: It becomes ITAR automatically. So the first question is, is this going to fall into that box. Is it going to be thought of as satellites or other aerospace elements that fall into that category? So we have to worry about that, and I don’t know the answer to that off the top of my head. Sure, we could go through the database or we could seek advice from the export compliance coordinators in Aerospace Engineering who are supposed to know about aerospace and export control. There’s two of them in Aerospace Engineering. Or I could actually contact the State Department, the people that deal with ITAR. So I’ve got two or three options we could do there, or GT Legal. I would let them decide how to do that.

Let’s say it’s aerospace. Well, I’m stuck, right?

KRIUGE: Is that because of the global restriction?

RS/RM3: Because of the restriction. Let’s say it falls under the box of that ITAR category. So now I’m stuck, so I have no option. Whether they have publication restrictions or not, it still falls under that, so I’d have to get some kind of exception, which may be trivial.

KRIUGE: Trivial administratively?

RS/RM3: Trivial in the sense that the State Department says, “Yeah, don’t worry about it. There’s no publication restrictions. There’s no other restrictions on it. It’s okay.” So it may not be FRE. It may be, in Commerce lingo, EAR 99, which essentially says you can’t release it to
embargoed countries or people from embargoed countries. If it’s FRE, then it’s going to be in the public domain. We don’t know who reads it and we don’t care.

KRIGE: And any student can work on it.

RS/RM3: And in that case, there would be no restrictions on graduate students working on it.

KRIGE: Including a graduate student from Switzerland?

RS/RM3: From China or Switzerland or—

KRIGE: Hosted here. Right.

RS/RM3: Yes, anywhere. Right. So that would determine a lot of things, who could work on the project, as well as publication results of the project, etc.

KRIGE: So now let’s assume that it is FRE at this moment and we move forward, and now the Swiss want to work with me on putting their mass spectrometer on Mars, and that means that I’ve brought it to a certain stage of development where it can now actually be used successfully in a spaceship and it might have other uses too. The army might be interested in it, as well, because they could parachute people down to Earth with less—

RS/RM3: Let’s back up for a second. Did the research project include the funding and statement of work that got you to the point of having a product that could be used? Or you had the fundamental research funded by NASA and you continued working on it on your own, or Boeing or somebody funded the continuing development, or maybe the Swiss aerospace people or the European Union aerospace people. Swiss aren’t members of EU, but maybe other people allowed you to continue developing the product. Quite often what you find in FRE land is that the fundamental—that’s why it’s called fundamental research—stops at the point of possibly a proof of concept, but does not continue into development. I would call it projectization, but you could call it what you want, into development of a useful product, right, whether it’s a one-shot
for an aerospace mission or whether it isn’t. So the first question I would have is “Did all of this happen under—while I’m trying to do this project, was it funded all the way through to full-scale development and evaluation.”

KRIGE: Let’s presume it is, yes. Somebody has picked that up and said, “Yes, this is viable for our mission to Mars. We’re going to build that and use it on a satellite built by Hughes.”

RS/RM3: Cryptographers here in the College of Computing and Electrical Computer Engineering are creating new algorithms to encrypt information to protect it. Okay? All that stuff is fundamental research, FRE. They publish articles all the time about it, but if it becomes a product, then all of a sudden things change, because then it falls into the cryptography, in this case, the Department of Commerce cryptography world about limits on size of keys and all these kind of things.

So if I take this idea, this algorithm, this concept, and map it into a product and start either trying to sell it or trying to develop it or whatever, then all of a sudden all kinds of rules come into play. It may fall very quickly out of the FRE world and become a controlled product. Okay? So we get away with a lot of—what would I say—ability to not have to worry about export issues because things fall under the FRE or we find that’s an EAR 99 or somebody looked into the sex life of ants or something. You know, it just doesn’t matter. But this movement from research to development or the productization can change the rules a lot.

I mean, if you think about some guy that’s working—I’m trying to think of some examples—some guy that’s working on combustion, fundamental theories of combustion. Maybe it’s fluid-flow problems that could someday become a new thruster design or a new fuel for rockets. Okay? Well, if they take that fundamental research and then take it into the world of let’s make a new thruster, all of a sudden it’s no longer a fluid dynamics question; it’s now
rockets. Okay? So that transition often is where things come into play that originally didn’t come into play.

Or I’m developing a new technique of cramming more transistors onto a wafer. Okay?

And let’s say it’s some kind of design tool that I built that allows me to do that, or some concept of a design tool. That, in itself, may not be—it could be FRE or something like that because maybe it’s some theoretical thing about jamming and cramming, but all of a sudden now it becomes something where I can build a supercomputer that has certain characteristics that have become [an ITAR issue]. Okay? It doesn’t mean we walk away from it. It’s just you have to figure out where that transition point is.

KRIGE: And you trust your PIs to keep you constantly informed as they work through these various phases?

RS/RM3: Yes, it’s the only way we can do it, because in your aerospace example, maybe you decide to continue working on your fiber and your parachute. The problem is, our most useful ability to check is when you apply for a grant. Okay?

KRIGE: Because then you spit out your research agenda.

RS/RM3: Well, yes, you spit out the agenda, and you’re supposed to honestly answer the questions related to whether or not you think this is an export control thing or not. The export control people, and that’s primarily GT Legal, because of the volume of proposals we have, they do checks of keywords in proposals and also funding agencies and whether or not you answered their questions, to try to head this off.

KRIGE: Yesterday I had a long conversation with one of our colleagues about “specially designed for” and the ambiguities surrounding that term.
RS/RM3: “Especially designed for”? He insisted that this was a very important cut or source of controversy, and I didn’t get time or fully understand where that triggers in. Does this trigger in at the particular moment in which you say, “Look, this device that I am developing is specially designed for putting a mass spectrometer on Mars. It has no other applications. Therefore, it should not come under these restrictions”? Is that when it kicks in most importantly as a cut?

RS/RM3: Well, “specially designed for” is like when I described the crypto. So I’m doing the mathematics of cryptography and trying to come up with some new encryption technique. That’s not specially designed for anything. Right? When I move it into that application domain, it may be I’m specially designing it for the—there’s a DOD Security Group and I don’t remember what they’re called, but for radios to be used somewhere. All of a sudden, then, that becomes a problem.

KRIGE: What if I’m doing it for the Bank of America’s credit cards protection system?

RS/RM3: Well, again, the regulations, particularly the BIS stuff, Commerce stuff looks at it from a dual-use standpoint, so maybe yes, maybe no. Okay? If you have an encryption device in a Coke machine for some reason, you know, one of these electronic, nowadays, Coke machines, it’s not a problem to export the Coke machine because it’s part of the system, but I can’t individually, necessarily, individually export that little encryption chip that’s in the Coke machine.

KRIGE: So I use the “specially designed for” clause to allow myself to export the Coke machine with that thing built into it on the grounds that, well, it’s part of the machine?

RS/RM3: Yes.

KRIGE: Is that the way it does its work?
RS/RM3: Yes, right. It becomes a part of a system, and so it's like an encryption chip that you have in your PC that may be, by itself, not able to be exported. But if it's in your PC, it's okay, which is kind of goofy, right?

KRIGE: It is.

RS/RM3: Because if I'm a smart guy, I could go in and yank that chip out and do something with it. But that's the way the rules are today.

KRIGE: Okay. Part of something which can be exported without restriction.

RS/RM3: Yes. Right.

KRIGE: And then even though on its own it would be restricted, in that package, it's not.

RS/RM3: Well, they might have to get a license, but the license won't be prevented from occurring because the thing is a part of the system.

KRIGE: Let me go back to my research. I'm making progress on this. My smartest graduate student happens to be French.

RS/RM3: Okay. We won't hold it against him. [laughter]

KRIGE: Yes, right. I want to get away from Swiss because of the reasons we had a moment ago. Now we're getting to the stage of development and I want to keep him on this project. Now I'm going to need, as I understand it, to get an export control—I have to get special permission to keep him on the project.

RS/RM3: Yes, right. You're going to have to go to State Department and say, "I've got this French guy working on my—." If we're thinking it falls under the ITAR satellite world regs, then I'm going to have to get permission to keep this foreign national on my project.

KRIGE: Right. And, of course, if he's Iranian, I'm not going to get permission at all.

RS/RM3: The likelihood of you getting permission is probably small. [laughs]
KRIGE: And Chinese, probably smaller.

RS/RM3: Small, or North Korean. The embargoed countries, forget it. The shaky countries, maybe not, probably not. French—

KRIGE: NATO countries.

RS/RM3: NATO countries and those guys, you’ve probably got a better shot at it, especially since it’s NASA. It’s not DOD or something like that.

KRIGE: Well, it might be Hughes Aerospace that is going to develop this stage of the project with me.

RS/RM3: Yes. Right.

KRIGE: So in that case, they’d be moving out of NASA’s—

RS/RM3: NASA’s domain. Then actually what happens is that Hughes would be as worried about this as you are.

KRIGE: That’s true.

RS/RM3: And so actually they would probably be a help because they deal with this stuff all the time. You’d say, “Hey, look, I’m going to use this French student on the project.”

They might say, “Heck, no. I’m not going to give it to you,” or they may say, “Let’s figure out how we can get your waiver,” or whatever you want to call it to allow this to happen. Or they might say, “Here’s how you go through it,” or they might say, “You figure that out. Leave me alone. I don’t know.” But these companies deal with this stuff all the time.
KRIGE: Right. Of course. Waiver simply means that I’m now allowed to share information with him which I’m not allowed to share with anybody else and he’s not allowed to share with anybody else.

RS/RM3: The French kid?

KRIGE: Yes. That’s what waiver means, yes.

RS/RM3: Yes, it means you’re not—what would I say—doing a deemed export if you get the permission. Okay? That’s the fancy word for that.

KRIGE: That’s right. That’s right.

RS/RM3: I can’t figure out the word. You’re not deeming an export. [laughs]

KRIGE: When you discuss this project with him, it is not a deemed export.

RS/RM3: Right. That’s exactly right.

KRIGE: And he may not, of course, discuss it with anyone else.

RS/RM3: Yes. You have to put a code of silence around him [unclear].

KRIGE: Absolutely, absolutely. How does all of this intersect with Bayh-Dole? We’ve got some very entrepreneurial professors here in ECE, for example, men and women, I presume, who are very good at taking things from the R stage to the D stage within the framework of Bayh-Dole, which has liberated that energy. I mean, is Bayh-Dole trumped by, coincident with, in conversation with all of these EAR regulations?

RS/RM3: It’s here and there. Okay? It’s two worlds, academia and independent research labs, right? That’s what Bayh-Dole’s all about, is to try to foster that. This side is saying, “We’ve got to protect the intelligence or the technical advantage of our country, and especially not letting it in the hands of the bad guys.” So those two things can conflict, obviously. But you could think
of military technology. So in many cases, people would say, “Damn, if we could just have that in the commercial world, what are the things we could do?” Okay?

RS/RM3: And it’s like, well, yeah, that’s a good idea, but we’re not going to do it, for various reasons. So, yes, it’s in conflict or it’s in butting heads, but I don’t know how you reconcile that. But I think Bayh-Dole, when it was written, didn’t consider this as such.

KRIGE: Right. We’ll get to that a bit later, actually, about this timing. But if we’ve got a very dynamic person who’s making this development and he has his own company—

RS/RM3: We’re still doing the parachute?

KRIGE: No. Anything, any particular thing. Shall we say a new way of producing chips, and he’s got his own company to do that and he’s using a couple of grad students on that.

RS/RM3: Oh, well, that’s a problem. Okay? So go ahead.

KRIGE: Does he have to be aware immediately of these kinds of problems?

RS/RM3: First off, he’s a company. Okay? He’s a professor at Georgia Tech, but he has a company. Okay?

KRIGE: Yes.

RS/RM3: Those are two separate entities. When he is operating under his company—

KRIGE: On campus.

RS/RM3: I don’t know how you do that.

KRIGE: Using facilities that are here at Georgia Tech.

RS/RM3: That’s against the law.

KRIGE: But he has equipment here.

RS/RM3: He can get permission and properly lease and utilize equipment at Georgia Tech, but he cannot use that equipment to develop products or technology for a company that’s not at
Georgia Tech. That's against the law. You will recognize a guy's name, if I can think of it in a second, Joey Blasker [phonetic].

KRIGE: Yes, indeed.

RS/RM3: —who got hauled off by the GBI, was doing that. Okay? That was one of the reasons why he was doing it. So that's against the law. You can't do that.

KRIGE: So he can do the fundamental research here, but he cannot do the commercialization?

RS/RM3: No, he could do commercialization, and if it's funded as a Georgia Tech project or if it's funded independently, yes. That's okay, the commercialization side, but you said he's got a company.

KRIGE: Yes.

RS/RM3: Okay, so then what we have to do is we have to figure out what the company is doing on the company side and what he's doing here as a professor. I mean, it's a complicated mess, but the trick is to separate those things. If I'm the professor doing that, I would want to separate those things so cleanly that there's never any question about what's going on at Tech versus what's going on over here in my company. In many cases, people have gotten spanked because it wasn't clear. Even though it may have been perfectly fine, it just wasn't clear enough.

KRIGE: I have a friend at Emory who has developed a technique to deal with serious brain lesions caused by blunt objects, obviously very important in Afghanistan and elsewhere, and he has found that testosterone, a very simple product, has extraordinarily important effects leading to rapid healing in the brain.

RS/RM3: Awesome.

KRIGE: It is awesome work. He has a lot of external funding for this from the DOD.

RS/RM3: Sure. I'm sure.
KRIGE: If he wants to take out patents on that, he’ll take out those patents in consultation with Emory. How would it work?
RS/RM3: I don’t know how Emory works.
KRIGE: How does it work here?
RS/RM3: Anything you develop here at Georgia Tech is the property of the Georgia Tech Research Corporation. You have assigned the rights to intellectual property that you develop as a part of your employment contract here. With that is an agreement that if it becomes revenue generation, for whatever reason, Georgia Tech, in turn, will share the revenues from that with you as the inventor of record, with the school or department or whatever it is that you are a part of, and the corporation will do that. The corporation, well, they’re trying to make money, but also they’re trying to recover the costs, because they will file the patent, they’ll do the disclosures, they will do all the due diligence on getting the patents for you, the rights that are assigned to GTRC, and always to be negotiated.

KRIGE: Not simply one third, one third, one third.
RS/RM3: That’s the standard going in negotiations, but if you’re able to negotiate something different, that’s okay.
KRIGE: Again, in this case, with this kind of work, does ITAR and EAR cut across all of this each time? You have to make sure that if this is going to be commercialized, we have to be sure that it’s protected in certain ways, that you can’t have foreign students working on it because it’s obviously very important for, shall we say, Afghan soldiers in the field.
RS/RM3: Yes, but this is a case where he’s treating a disorder that is not unique to the military and it’s not unique to Afghanistan.
KRIGE: That is true.

RS/RM3: Right? I mean, the military is going to benefit, but it’s not going to increase their warfighting capability. It’s not a weapons system that allows them to defend the United States. So I can’t remember all the regulations and rules, but in this case, medical technology, in general, doesn’t fall under ITAR or EAR. In fact, there’s lots of exceptions. If this thing is in medical technology, it’s okay, whereas outside of medical technology, no, in particular, in signal-processing stuff with sonograms and x-rays and all those kind of things, if it’s part of medical technology, it’s fine, and that’s kind of part of being beneficial to the world and blah, blah, blah. So his thing, I don’t see that would be any kind of issue whatsoever.

KRIGE: In speaking to people, it seems clear to me that many of them, actually, simply say, “Look, all I’m going to do is FRE research. I’m simply not even going to go down the road of anything else more complicated because, frankly, it’s just not worth it.”

RS/RM3: Too much trouble.

KRIGE: Too much hassle. And there seems to be a distinct determination to fight shy of going beyond the level at which, or even going into areas where—obviously cryptology has no choice, I imagine, most of the time—areas where there might be any kind of question. In other words, they just simply try to—

RS/RM3: Avoid it.

KRIGE: —avoid it by not even taking it.

RS/RM3: Right, right. That’s a faculty member’s decision. Stanford, as a university, has that position. Okay? So that’s a faculty member’s decision. And you’re right. In many cases, they say, “I don’t want anything to do with that.”
KRIGE: Which might be taken to imply that this is having seriously deleterious effects on the kinds of projects which intelligent faculty are choosing, on the kinds of projects which they’re developing with their graduate students, simply because there’s so many paths not taken now by virtue of this bureaucratic machinery. Or would you say it’s not particularly causing a massive loss of opportunity?

RS/RM3: I don’t know how to answer that because I don’t know how much research is not being done based upon faculty’s positions.

KRIGE: Right. It’s counterfactual.

RS/RM3: Well, I just don’t know. I mean, that would be an interesting question to get an answer to, is of the X number of faculty here, how many of them have sworn off, you know, and only will do FRE, and in their areas of research, what are the kinds of things that could have been done, but they didn’t. A lot of faculty say, “I don’t want anything to do with DOD funding,” for whatever reasons that they had, which could, in fact, improve the quality of their work.

KRIGE: So this is just another one of the many considerations.

RS/RM3: Just another one of those kinds of decisions a faculty member makes, and that’s what differentiates us from industry, is that the faculty member decides.

KRIGE: Oh, right. That’s interesting. That’s interesting.

RS/RM3: So if I’m successful and I go through all the appropriate measures of the quality in my work, and I’m approved for that and I made the decision not to do anything but FRE, well, so be it.
KRIGE: Do you think, though, that it is having a major impact on the climate of research? I mean, historically, I’m an old scientist. I began science when so much was open and free and easy. We all valued international scientific exchange. We chose not to work for the DOD precisely so that we wouldn’t have to do classified work, and suddenly we find, hey, I’m doing unclassified work, which is what I always wanted to do, but I’m finding myself increasingly trapped in a huge regulatory machine. Is that, do you think, having seriously demotivating effects on people? They certainly complained about it about ten or fifteen years ago. Do you think they just now take that as par for the course?

RS/RM3: I think it’s all over the place. When I see what goes on and get involved in some of these things, it’s a royal pain in the butt for the faculty. It’s clueless related to the technology. I mean, that’s why I’ve got a job in this business, but the problem is, is it drives the faculty members crazy, because the faculty member says, “Well, I’ve got forty-seven ants.”

And they go, “Well, what’s the meaning of an ant?” And it goes on and on and on.

So it’s a cumbersome, difficult process, partly because there isn’t export compliance coordinators everywhere on campus. That’s one of the objectives Gilda has, to get us in place so that these dumb questions can be answered quickly, which I think most places don’t have. If you think about, in general, I don’t think most people have even thought about that.

The other part, when you said bothering researchers or impacting research, some people are getting caught up in that mess because an area that used to be kind of open is no longer open. The ITAR satellite thing is the greatest example, because my guess is there’s probably ten-to-one commercial-versus-military satellites floating around up there. I don’t know if that’s—I would guess so, and we could call NORAD and ask them. So it’s like, what the hell? What’s going on here? Sure, I don’t want to give some of these technologies to certain guys, bad guys like North
Korea and things like that. So, yeah, I’ve got to be careful and we’ve got to protect them, but do we make it under this military thing? I don’t know.

KRIGE: It’s certainly alienating some of America’s best partners, especially in Europe, who are traditional partners with NASA in space science and technology.

RS/RM3: Especially in the aerospace area. So, yes, it’s cumbersome. It’s difficult. I’m sure it is causing some redaction in research in particular areas that maybe are important, and, yes, it’s a lot harder than it used to be, just like everything else we do, right?

KRIGE: Yes, right. Much more bureaucratized, which is the thing that scientific researchers hate more than anything else on earth because it stands in their way of getting their stuff done.

RS/RM3: Yes, that’s right.

KRIGE: I know some of them who are like that, and they’re so frustrated that they can’t even get going because it takes so long to be clear whether it’s in the FRE or not.

RS/RM3: If it’s okay or not okay.

KRIGE: Yes, and the thing goes back and forth and around and about, and they’ve got the money, but they can’t kick in. Many are just saying, “To hell with it. I’m dropping it. I couldn’t be bothered anyway. Just do something else.”

RS/RM3: Right.

KRIGE: Let’s look at the long term. I mean, Georgia Tech began this whole process about six years ago, I think. I think Gilda and Steve started about six years ago. He told me—

RS/RM3: Steve did.

KRIGE: Yes, and that was sometime around the beginning. But in any event, this is a twenty-first-century activity, largely. Before that, probably we didn’t bother about this. The regulations were there, so why didn’t we bother?
RS/RM3: Because nobody was bothering us. It’s very simple. The government became aware that universities were doing things they shouldn’t be doing within the regulations that had been set. And then they started looking around and saying, “Oops, this is a problem,” so they started enforcing, which caused us to react.

KRIGE: And what started them looking at you?

RS/RM3: That’s a good question. I don’t know the answer to that. My guess is they started finding out through espionage circles or wherever these circles are, that a lot of technology was flowing out of universities to foreign countries that shouldn’t be getting it because we were kind of an open pipe.

KRIGE: Yes, but, I mean, is that saying something about the way that university research itself has changed, and that might be also partly linked to Bayh-Dole, I don’t know, kind of closer to product, closer to output of devices, and really very little, or less and less blue sky, but more and more people thinking about how can I turn this into a useful device, which, therefore, makes it a site of much more dangerous export problems?

RS/RM3: The answer, sorta, kinda, is yeah, and the reason why I say, “sorta, kinda” is it depends upon the individual. You will find the universities are all hot to protect and license intellectual property […].

KRIGE: Today?

RS/RM3: Today.

KRIGE: Not fifteen years ago.

RS/RM3: Fifteen, twenty years ago, you know, a Patent Office probably didn’t exist anywhere. But they look at it from a revenue standpoint. You know, it’s the dollars-and-cents game, is, oh,
my gosh, whoever invented aspirin at the University of so-and-so is making big bucks. And so that IP machine came into play, I think, before Bayh-Dole.

All of a sudden it became much more important, and then faculty started saying, “Shoot, that guy across the hall’s driving a Ferrari and living in a big house because he made so much money off this patent. I might be interested in doing that.” Some are; some aren’t. That’s why I said, “sorta, kinda.” Some people could care less. Other people will say, “I’m very interested in protecting my IP.” And there’s people around here who’ve gone through two or three companies, probably haven’t ever made a penny. They like to start companies, they understand the difference between research and companies, and it’s kind of a hobby. [...] So, yes, it’s changed. Yes, I think so.

KRIGE: And in that sense, this might be a kind of side effect of Bayh-Dole of this push towards entrepreneurship that suddenly IP becomes an issue, and when IP becomes an issue, people, of course, are thinking always about commercialization, and once that happens, they’re thinking about export, and once that happens, boom, the whole export system is brought into play unexpectedly.

RS/RM3: Right. But the export thing came into play because the government decided to come down on universities because universities were just letting everything out the door. So part of it was needed, I guess, and part of it became more complicated as we move into this more D side of R&D, yes.

KRIGE: It’s interesting, because in 1983 there was a huge outcry by the Secretary of Commerce in the Reagan administration about universities just being sieves over to the Soviet Union, because, actually, in détente there was a lot of exchange. It was opened up to the Communist Bloc. Universities were leaders in that, as they always are, because they love that and they
benefit from it enormously by dealing with very smart Soviets or Russians or whatever. And there was a huge outcry in the early eighties, which apparently then blew over, I suppose.

Then, of course, I think it emerged again under Clinton in the nineties, and I suspect it’s the China factor. The China factor must be part and parcel of this, and that, I guess, is linked with China’s capacity now. Who cared about China thirty years ago? They didn’t have the in-house capacity to exploit the stuff. I mean, if somebody’s going to steal your stuff and make good use of it, they have to have the infrastructure backup to do it. So there’s something, too, about the rise of China, I imagine. Is China the big elephant in the cupboard that is bothering everybody more than anything else?

RS/RM3: From what I understand, yes, because—

KRIGE: It’s a compliment to the Chinese, right?

RS/RM3: They’re overtly doing everything they can to steal everything they can. You’ve probably read the article about the router, the Chinese [unclear] those routers and switches, like Cisco, that they found that the technology that they were trying to sell allowed them to, in fact, infiltrate the networks of corporations and industry and everywhere else, and they banned them for sale in the United States because they were building technology that would allow them to essentially spy in our network infrastructure.

KRIGE: And the Chinese have a systematic—

RS/RM3: The very systematic approach.

KRIGE: —policy of hoovering up whatever they can.

RS/RM3: Sure. I mean, we find postdocs who show up here fully funded in somebody’s lab from China who, it’s funny, he’s been doing research for fifteen years after his Ph.D. in a
military lab in China, and now all of a sudden he’s doing a postdoc at Georgia Tech in somebody’s lab. I wonder what’s going on. So, yes, they are constantly trying to do things.

KRIGE: The State Department has cleared him, obviously, in terms of his visa, because he wouldn’t be here at all.

RS/RM3: From a visa standpoint, yes.

KRIGE: He’s clean, yes.

RS/RM3: The FBI has gotten some of these guys. So, yes, that’s a problem.

KRIGE: And is it predominantly China?

RS/RM3: I don’t know. I’m not privy to that, but I know that China’s a big issue.

KRIGE: In a way, it’s a kind of compliment to China. Let’s think back to it fifty years ago. It’s a developing country, and now it is really becoming a superpower also in terms of its scientific and technological capabilities, such that it is in a position to exploit these most sophisticated things that we develop to its advantage.

RS/RM3: Right. That’s one way to look at it. Another way to look at it is the reason why they’re scientifically and technologically sophisticated is because they’ve stolen—

KRIGE: [What about] foreign students. We should still welcome them, as is our tradition.

RS/RM3: Yes, I think so. I mean, I think we have to welcome them, and we have controls in place to try to minimize the potential problems with students. Every international graduate student is run through visual compliance systems that looks for denied persons, problem people, things like that. That doesn’t mean that there aren’t bad guys getting in. You have to be careful in certain labs with certain things. The other areas, happy, happy, happy. So, yes, I think foreign students are important.
KRIGE: Some people think we’re being completely paranoid and that we have far too many of these technology control plans in place than we need, we’re being overprotective, over-, over-conservative in terms of our worries about ITAR violations and EAR violations.

RS/RM3: Okay.

KRIGE: You think that’s okay? We should be?

RS/RM3: No, I just said okay. There are people that are upset about it.

KRIGE: But you would rather err on the side of prudence.

RS/RM3: I would rather err on the side of prudence because of the impact of being imprudent and what would happen to the university, and so I’d rather be careful and minimize the problems downstream.

KRIGE: Have you any idea how many projects in the total pack actually come under these restrictions, i.e., are not FREs? Is it 10 percent of our contracts?

RS/RM3: I doubt if it’s 10 percent.

KRIGE: Oh, so few.

RS/RM3: Yes, yes, 10 percent or less, less than 10 percent.

KRIGE: So it’s a relatively minor issue.

RS/RM3: Yes, most of the stuff—I’d like to say all NSF, but I know that’s an exaggeration. Almost anything that’s funded by NSF is going to—

KRIGE: Fall under that, right.

RS/RM3: Almost anything that’s funded by NIH is not going to have a problem.

KRIGE: So we need this huge, heavy machinery for quite a small part of our business.

RS/RM3: I mean, if you think about the bad guys—I hate to say that—the ones that are most inclined to have problems are aerospace, actually, and electrical engineering, College of
Computing, material sciences in certain areas. Right? I'm trying to think of who else. That's the majority of the areas where there are things that could be problematic. There's a whole lot of other areas around Georgia Tech where it's not going to be an issue at all.

KRIGE: I'm nearly finished. How does this differ from classified work? I mean, we understand that there's a wall around you when you do classified work. Now there's a wall around you when you do unclassified work. So what's the difference?

RS/RM3: Yes, that's a good question, and I try to think about that a lot to try to figure out, because if you have a controlled project, ITAR- or even BIS-controlled project, you've got to do all kinds of things, sort of like a classified project. So I'm not sure what the difference is, other than the bureaucratic baggage that goes along with classified projects is very, very special conditions, but, in general, if you think about GTRI, which does most of the classified work, they're just not going to even bother. They're not going to even try.

KRIGE: With a foreign student.

RS/RM3: Yes. In fact, if you look at any of the GTRI job postings, in almost all cases U.S. citizenship required.

KRIGE: Not even permanent residents.

RS/RM3: Yes, U.S. citizenship required.

KRIGE: Okay, they don't even go down that road. Okay, fine. So that's at least one important difference. In terms of space management, communication exchange, it's going to be very similar, I think, whom you can talk to, what you can say in front of who, it sounds like to me.

RS/RM3: If I've got an EAR—

KRIGE: It sounds like a weapons lab in this way.
RS/RM3: Yes, but if I’ve got a project that’s ITAR- or EAR- controlled and I know you’re a U.S. person, that fancy word they use, I can tell you everything about that project. Okay? If it’s a classified project and I know you have a secret clearance and I have a secret clearance, I can’t tell you anything about it unless there’s an exhibited need to know.

KRIGE: It’s the need-to-know argument.

RS/RM3: No, it’s much more restricted.

KRIGE: Right, the need-to-know clause is what makes the big difference.

RS/RM3: Yes, the need-to-know has to come into play in clearance levels. You’ve got many tiers of clearance levels on this side and on this side, and need-to-know and all this kind of garbage. Over in our world, you know, you’re a U.S. person, I can tell you everything about my project.

KRIGE: As long as my name is down on your list.

RS/RM3: Yes, you’re a U.S. person. I mean, so a guy could come from Stanford to visit me and I know he’s a U.S. person, okay, I can tell him all about my project.

KRIGE: Even if it’s under ITAR?

RS/RM3: ITAR starts getting scary, but in general, the answer is yes.

KRIGE: Of course, it’s this foreign national problem.

RS/RM3: Yes.

KRIGE: Export only arises when a foreign national is in the picture.

RS/RM3: Right, a foreign something is in the picture.

KRIGE: Yes, a foreign something is.

RS/RM3: So if you’re a U.S. person, you’re okay.

KRIGE: It’s quite strange.
RS/RM3: So there’s a huge difference between the—because if I told you about that, I’d have to kill you. You know, it’s one of those things, and we don’t want. [laughter]

KRIGE: No professors running around killing people.

RS/RM3: No, that’s right.

KRIGE: Not yet. Thank you, [...] I appreciate it.

[End of interview]