

**Science Studio Program**  
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**Melissa Williams**  
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*KEITH: Hello everybody and welcome back to Science Studio Program. My name is Keith Pennell and I'm here with Russ Chianelli as usual. And today we're down in Marfa, Texas, which is just a nice little town outside of the Big Bend National Park. And today we're going to be talking about the importance of the Big Bend National Park and Russ's going to be our guest.*

*RUSS: We're very happy to welcome to Science Studio Melissa Williams. She's from the Center for Big Bend Studies; she's an archaeologist. Welcome to Science Studio.*

MELISSA: Hello. Nice to have you here in town.

*KEITH: Absolutely. It's nice to be here. We've had a very enjoyable time. We've stayed at the old Paisano Hotel and I can recommend that to anybody.*

MELISSA: Did you stay in the James Dean room or the Elizabeth Taylor room?

*KEITH: I'm not telling you which room we stayed in. (Laughing)...inappropriate question (laughing). Anyway, Melissa, tell us—you're an archaeologist—*

MELISSA: I'm an archaeologist and an historian—

*KEITH: —an historian—*

MELISSA: I go both ways, yes.

*KEITH: This is wonderful. Tell us, how did you get into this as a career? Before we get on to your particular passion with Big Bend, how did you get into this as a career?*

MELISSA: Well, I did my seventh grade science project on the Hohokam of Central Arizona. I grew up in Phoenix. And my dad was a road engineer, so family trips were driving around Arizona looking at the pavement to see if the asphalt was up to snuff. My father would take a pen and put it down on the ground and take a picture of the road. He called himself a crack photographer. That was what we did in the summer was hang around with him; so while he was talking to the road folks, I would go wandering and I found my first pieces of pottery and—not so much arrow heads in Arizona—it was mostly pottery. But I collected them all and pasted them down to a piece of cardboard for my seventh grade science project.

*KEITH: That's a pretty tough operation in the summer in Phoenix. Doing it in the winter might be enjoyable, but in summer, that's not the best—*

MELISSA: Summer is tough. You don't do anything from about noon to 4:00.

*KEITH: So you were trained to be an observer then?*

MELISSA: Well, that's true.

*KEITH: And how did you progress then, from going around on hot summer days looking for cracks and getting into a career?*

MELISSA: Well, I had to leave Arizona to go away to school, you know, I had to get away from home. And so I came to Texas and went to Rice University, which had an archaeology department of two, Dr. Rich Blanton and Dr. Frank Hole. And Dr. Frank Hole said "Well, if you're going to be an archaeologist, you are a woman, so that's kind of tough, you need to specialize." So I ended up getting my Master's at the University of Texas in physical anthropology dealing with bones. I had intended to be the bone person that went along with the digs because gosh, a woman really couldn't run a dig on her own, so—that was 1970. Then I interviewed at the Texas Department of Transportation in about 1972 after I finished my Master's. And the fellow said, "Well, you're married." I said, "Yeah." And he said, "We don't send married women out on field projects."

*KEITH: Just single women?*

MELISSA: I was surprised, "You only want single women?" It was so—I did not get hired at TXDOT in 1972 because I was a woman.

*KEITH: Did you pursue that? I mean, have you gone back and asked them do they still have this policy of only single women going out in the field?*

MELISSA: Well, obviously they don't. Obviously, things have changed.

*RUSS: Or you could get a quickie divorce and get remarried after the dig (laughing).*

MELISSA: That's right, that's right (laughing). "Sorry, hub, I'm leaving." So I took a detour. I went into publishing and advertising for about 20 years.

*KEITH: Oh, so you've taken a big loop—*

MELISSA: Yeah, I did all kinds of things. I worked at "Texas Monthly" for a while in the '70s and then we moved back to Arizona and I worked at "Phoenix Magazine" and a couple of ad agencies. And then decided I'd had enough of the modern world and went back to school and got a Master's in history. And then from there went into cultural resource management doing historical archaeology and archaeology.

*RUSS: Really a labor of love, isn't it? I mean, you don't get rich being an archaeologist.*

MELISSA: That's right.

*RUSS: Because my son studied archaeology for a while and he said "Dad, I don't think I can make any money doing this." And now he's an engineer.*

MELISSA: You can make money but you can't get rich.

*KEITH: So, tell us, the Center for Big Bend Studies, it's at Sul Ross State University—*

MELISSA: The Center for Big Bend Studies is a department at Sul Ross State University. It was founded there about 20 years ago by an historian. And it was always with the idea of doing both the history and the archaeology of the Big Bend area. So for a long time it was about a person and a half, and what they basically did was publish the Journal for Big Bend Studies every year. And then Bob Mallouf came out here, I believe it was the mid 1990s, and said "Let's step this up a bit." So he started doing more archaeology and then casting about for more funding. And five years ago we got a huge grant and we've been doing tremendous amounts of archaeology under what we call the Trans-Pecos Archaeological Program over the last five years.

*KEITH: That funding was from the national parks or from the State of Texas—*

MELISSA: No, that was from—we get some funding through Sul Ross State University, we get some from private individuals, and we get some from foundations. And this big chunk was from the Brown Foundation.

*KEITH: The Brown Foundation. And that's centered where?*

MELISSA: That's in Houston.

*KEITH: And they just do things specifically like archaeology and history or—*

MELISSA: They do all kinds of things. In fact, they finance a lot at Rice University; several of the buildings on campus have the word "Brown" in them somewhere.

*KEITH: Russ and I are both taking note of this. The Brown Foundation.*

MELISSA: The Brown Foundation is very generous.

*RUSS: Could you tell us a little bit about—you make a distinction between history and archaeology, which is not something that's obvious to people that listen to this show. Could you discuss that a little bit?*

MELISSA: Well, first of all, neither history nor archaeology deals with dinosaurs. That's the first distinction you have to make. Because when you say—

*RUSS: —a paleontologist—*

MELISSA: When you tell people, “Oh, I’m an archaeologist,” they say “That’s so cool; I just love dinosaurs.” No, no, no. Both history and archaeology deal with human beings, the history of humans. History tends to deal with recorded history; archaeology tends to deal with cultures that didn’t have writing. That’s not totally true but in general, that’s true.

*RUSS: Because we would sort of think, without being in the field, that, well, the archaeology would give evidence to develop a history, or would you say that’s not accurate?*

MELISSA: Oh, I see what you’re saying. If you’re going to write the history of a people, you could do some of it through—

*RUSS: —say they’re buried here and the carbon dating shows it was this, so the history is that these people came in this period of time?*

MELISSA: That’s true. That would be a broader use of the word “history.” In the scholarly world when you’re talking history, when you’re talking about an historian, you’re talking about someone who goes basically through documents and photos and archives and puts together the history of a people through paper. Where an archaeologist would put together the history of a people through building remnants, pottery, flints, arrow points, whatever. But you’re right, they both reconstruct the histories of a culture.

*RUSS: Well, how about here. Here we are in Marfa in what, to us, is a very isolated place. Can you give us a little background? What is the archaeology and history that exists that we know of here?*

MELISSA: In the Big Bend—we focus on what we call the Big Bend area which would be south of here, and the Eastern Trans-Pecos which would be north of here. And in both of those areas we’ve had hunter-gatherer nomadic peoples for, what I like to say, 800 generations.

*RUSS: Okay, so 800 generations would be something like, what, how many years?*

MELISSA: It would go back to the Paleoindian period, about 6000 B.C. We have evidence all the way from Paleoindians of course through Archaic through Late Prehistory, Spanish, all the way to present day. There’s been people here at all times in the last several thousand years.

*RUSS: Okay, so as the Europeans arrived—who was here then?*

MELISSA: Who was here then? We had basically two divisions. This is a rough description of who was here. There were a group of people that were living along the river in Presidio and they were farming, using the water there; they were a more settled people. And then there was a group—

*KEITH: Farming what, corn, maize?*

MELISSA: Uh-huh, corn, beans and squash, c-b-s, the central diet of middle America.

*KEITH: You say that with such ease like everybody knows this. Corn, beans and squash.*

MELISSA: Corn, beans and squash, c-b-s. And then there was a group of people that were more nomadic that interacted with the people. We call the people on the river the La Junta people because that's where the Rio Conchos and the Rio Grand join; those are generally referred to as the La Junta people. Then there's the nomadic people which have various and sundry names depending on which archaeologist you're reading at the time.

*KEITH: So the people that were not nomadic, what was the sort of structure of their dwellings and their organized villages or whatever you would call them?*

MELISSA: They were one story adobe buildings.

*KEITH: Are there remnants of these?*

MELISSA: You bet there are. Not that people can visit; it's not like a national park site where you can park in the shade and talk to a ranger about it. But archaeologically we know that there's about five or six villages up and down the Rio Grande there near Presidio.

*KEITH: And if you go there now on an academic investigation or visit, what would you see? Would you see the foundation—*

MELISSA: Not much. I mean, you'd see kind of undulations in the ground. You have to do the digging to really see more. It's not like in Arizona or New Mexico where you can see the buildings.

*KEITH: So you've had to reconstruct this in your imagination from what?*

MELISSA: From the footprint of the buildings.

*KEITH: All right.*

MELISSA: From the post holes that you see in the ground. And you can see where the dirt changes, you can see where they would have patted down the dirt inside the houses and put their post holes and created the—

*RUSS: Also burials, no?*

MELISSA: Not a lot. For all the 800 generations that have lived here, we have very few burials that we've dealt with.

*RUSS: Because I notice about the same period—were you talking about 6000 years or 2000 years or something like that?*

MELISSA: We're talking more like—the Paleoindian period is 9500 to 6500 B.C., so if you make it B.P., that makes it about 10,000 years, mas o menos (more or less).

*RUSS: We have some in El Paso, burials, but they're younger than that.*

*KEITH: That's at the Keystone Heritage Park?*

*RUSS: Keystone Heritage Park, yes. Clear burial places that you can see.*

*KEITH: So when you say they're a single story, how do you know that? This really puts science in...you know, we just surmise—*

MELISSA: We also have—there is historical evidence. When the Spanish came north through the La Junta area, there are several descriptions written by Spaniards of what they saw.

*KEITH: In the same region that you're speaking of?*

MELISSA: Exactly. The same region, uh-huh.

*RUSS: Now, one of the questions that intrigues me is—and the reason I asked about burials—you find bone, right?*

MELISSA: Human bones?

*RUSS: Human bones.*

MELISSA: As I said, not many.

*RUSS: But if you do find one, it is a possibility that DNA is still intact for analysis. I know that there was some analysis in the State Washington, some of the DNA of people from that period. And they were saying that this was a European—*

*KEITH: Exactly, right. Remember that famous case on the river—I don't remember the river—but they found the remains of a person.*

MELISSA: Uh-huh.

*RUSS: A 50-year-old European with a bad hip from a knife wound, as I remember it.*

*KEITH: The problem was—*

MELISSA: His name was Charlie (laughing).

*KEITH: Well, but the most important feature was the fact that this was on Native American land and they were very reticent to let investigations be performed on these remains.*

*RUSS: Well, it even stopped some theses; eventually the students did get their theses, but—*

MELISSA: You're speaking of Kennewick man?

*KEITH: Yes, that's right. But the argument there that some people gave to me was the fact that the bigger issue was that it was proven to be a European. Now this wouldn't be Native American land and so the casino rights would be up for grabs.*

MELISSA: Politics, politics. But I would like to say that DNA is really one of the exciting new things that's coming along in archaeology. What we've got out here—we haven't done it yet but we're talking about doing it. They've done some in Arizona. Where they've taken what they call quids, which are the plant remains that the Native Americans would chew—sort of like we chew chewing gum, but they would be getting nutrients out of it. In archaeological digs you can find these quids, these little clumps of matted vegetable matter. And there's some thought that we can take those quids and extract some of the DNA that would have been in the saliva of the people that chewed it, so—

*RUSS: So they were sort of like chewing their cud with these leaves and—*

MELISSA: You got it.

*RUSS: —leaving these little—I don't know what you would call them—quids.*

MELISSA: Quids. And so there's some work to try to extract DNA from quids. We have a couple of—this sounds really odd but it's wonderful—from excavations every once in a while you'll find a hair. We maybe have three hairs now in the lab at the Center for Big Bend Studies that we're itching to see if we can't do something with DNA-wise.

*RUSS: How do you tell if it's an ancient hair rather than one you just dropped?*

MELISSA: Well, you know, when you're digging and you're digging very carefully with the paint brush, and here's a hair coming out of the wall on the side of your unit—you have white hair like I do, and it's long black hair, it's not yours.

*RUSS: I mean, it's remarkable to me that you can find these quids and you can find the odd hair—you've got three of them—and yet you don't find many remains of the people. What do you assume—*

MELISSA: It's one of the big questions. One assumption is that—of course the earlier the site, the more buried it is—and we know from this particular site I'm thinking of that was revealed in the cut of an arroyo, it's an Early Archaic site—and that's like 20 feet below the surface. So some of these early sites are so buried that we haven't seen them yet.

*KEITH: What about aerial photography or satellite photography where you can see the formations of areas that you cannot see from the ground, you know, where they could be underneath 20 feet, but some structural arrangement for a cemetery, for example, I mean—*

*RUSS: How do you know that there's not a burial ground out there that you haven't found yet?*

MELISSA: Well, of course we don't. We don't know if we haven't found it yet. I'm trying to think—we do use aerial photography; we've been using it as a mapping technique. With computer-aided aerial photography, you can do a map of a site much, much faster than doing it on your own. I've seen aerial photography again done in the Southwest where you have more architecture. We don't have that much architecture that we're dealing with.

*KEITH: But you might see certain patterns, you know, if you can get money to do an aerial survey, you may be seeing structural arrangements that you don't even recognize.*

MELISSA: It's a possibility. The other aerial photography I'm thinking of is where you see patterns in like the corn fields, you know like in Mexico, if there's a site in a cornfield, it affects the way the corn grows. And everything here is so arid and bare dirt, I'm not sure you could. But maybe you could.

*KEITH: It's worth a proposal.*

MELISSA: It's worth a proposal. We'll go after the National Science Foundation with that one.

*KEITH: You're listening to Science Studio. My name is Keith Pannel; I'm here with Russ Chianelli. And today we're talking to Melissa Williams from the Center for Big Bend Studies in Marfa, Texas. The actual Big Bend Studies is in Sul Ross State University in Alpine, Texas. We'll be back in one moment.*

Break for commercial

*KEITH: Welcome back to Science Studio. My name is Keith Pannell, Russ Chianelli. And today we're with Melissa Williams from the Center for Big Bend Studies, Sul Ross State University in Alpine, Texas. So, Melissa, tell us a little bit more about some of the pressures that you find to study the Big Bend region. What are some of the reasons that it's actually imperative to have such a center.*

MELISSA: Well, the big reason is, of course, looting. When you come out here from the big city, you look around and you say "Oh, there's nobody out here; it's very open and wonderful and I'm sure it's pristine." But everybody loves arrow heads and there have been looters out here for a hundred years. One of our major research focuses has been on rockshelters because that's been the target for looters.

*KEITH: By rockshelter, you mean a cave?*

MELISSA: No, a rockshelter is where—it's sort of halfway between a cave and a cliff. It's where the rock comes out far enough off the cliff that you can get shade under it during parts of the day. Maybe not all the day, but parts of the day. So it's not really a cave; it doesn't go back that far. There are a lot of rockshelters out here because of the terrain, of course, because of the geology. And we have yet to find a rockshelter that has not been looted.

*KEITH: And when you say looted, does that necessarily mean 20<sup>th</sup> or 21<sup>st</sup> century or can the remains of 6000 years ago have been looted 4000 years ago?*

MELISSA: 20<sup>th</sup> century, 21<sup>st</sup> century, yes.

*KEITH: Because you see the beer cans and all the rest of it—*

MELISSA: You see the shovels, you see the screens, yes.

*KEITH: You mean they leave that behind?*

MELISSA: Yes.

*RUSS: Systematically doing—*

MELISSA: Yes, yes.

*RUSS: Not just, "Oh, there's one there."*

MELISSA: No, no. I would say there's three levels of looters. There's the kind that walks along the desert and picks up a few pocketsful of arrow heads. And then there's the fellow that—I say fellow, it could be a girl—that takes buckets and shovels and screens and ladders and climbs up into the rockshelters and digs their way through.

*KEITH: Yeah, but in defense of that first category, I mean, if I'm out there walking around with my family and I find something that's interesting, what are you telling me to do? Just leave it there?*

MELISSA: Leave it, leave it, leave it.

*KEITH: Why?*

MELISSA: Context. I was trying to come up with an example for this. The way I like to talk about it is, if you go to a thrift store and you find a silver fork, it's really cool, but you don't know anything about it except it's in the thrift store. It's mingled and mixed with everything else. But if you find that silver fork in a house with its accompanying dishes and china and clothes and furniture, then you know something about the lifestyle of that family. So, it's provenience; it's context. If you bring a really cool point to the Center for Big Bend Studies and show it to me and say "Isn't this cool, what can you tell me?" I can say, "Well, it's about this big; it's made of this kind of material; because of its shape, it might be of the same age as this other one that we found that's the same shape but we found it in context and we can tell you the date of that one." And because they look sort of alike, maybe it's like that one. But maybe it's not; we don't know.

*KEITH: There's an ethical feature to this and there's a realistic feature to this. Leaving it there in context and yet perhaps no one else is going to see it, wouldn't it be better to simply say, look, if people are out there, find something, bring it to us at the Center. And if you could find some way to recompense or to have an exhibit and say, this was donated by such and such a person, wouldn't this be better than expecting people to just leave it there, which I think is probably unrealistic because most people aren't thinking in the depths of provenience and leaving it in a sort of pristine state.*

MELISSA: Well, we tell people—we deal a lot with private landowners around here, private ranch owners, of course. And it's not just open public land. It's their land and it's their artifacts. And they do want to pick them up. What we try to tell them is buy a GPS unit; if you're going to pick it up mark with a GPS unit—

*RUSS: —where you found it.*

MELISSA: —where you found it.

*KEITH: And then bring the information to you?*

MELISSA: Bingo.

*KEITH: So there's an educational feature to your program, then? You're going out there to try to persuade people that this is the modus operandi?*

MELISSA: Well, what we try to do—yes, we do do education. A lot of the archaeological education goes through the Museum of the Big Bend, which is a separate

department at Sul Ross. But our education is mostly with the private landowners because we need to work with them, cooperate with them, get their permission to come on their land to do our archaeology.

*KEITH: So that whole Big Bend National Park—when you look at Big Bend on the map—how much of that is private land and how much is national park and state and public—*

MELISSA: Well, the Big Bend National Park is, of course, national land. The Big Bend Ranch State Park is state land. And I couldn't quote you the numbers, but just looking at the map, that's probably a quarter of the area of the Big Bend.

*KEITH: And is there any clear distinction that the closer you get to the river, I would have thought, the more archaeological and historical value there is? I mean, if I'm here 6000 years ago, I think I'd stick pretty close to the river.*

MELISSA: Well, of course, the water patterns were different 6000 years ago. Some of these little dry creeks now would have had more water in them or there would have been more springs. That's not necessarily true. If you're right on the river and you can divert the water to your fields to irrigate, yeah, that's a different kind of culture. But once you get away from the river, there's plenty of sites; they're just a different kind of site.

*RUSS: This is something that—listening to this conversation—do you have any idea of what the population was. You're saying something about—*

MELISSA: Small.

*RUSS: —8,000 generations—*

MELISSA: 800 generations.

*RUSS: —800 generations which, I don't know, say five generations per hundred years or something like that. This may sound a little silly, but you could actually estimate how many arrow heads were made in that period.*

MELISSA: (Laughing) It's tempting. I will say that we've been doing an intensive survey in Big Bend National Park. And in that area—I've got the numbers here—we've surveyed about 65,000 acres or will have surveyed 65,000 acres when we're through—we've located about 1,100 sites. Now, those sites can be a few campfires and a few points, so maybe ten people at a site. Now, of course, we're talking about 10,000 years here, too.

*KEITH: Yeah.*

MELISSA: So what the population was at any given time, I would say probably a couple hundred.

*KEITH: Tell our listeners, how do you survey 65,000 acres?*

MELISSA: You walk.

*KEITH: You must have a lot of students.*

MELISSA: Yes, we do. We have the Big Bend National Park survey team which is probably about—it varies. We've been doing this for five years and it's probably about ten to twelve people.

*KEITH: Oh, you walk every inch; that I know.*

MELISSA: We walk about 20 meters apart. We walk so that you can see each other on either side. We do what they call transects; you go back and forth, back and forth. So you're looking at an area, you know, 10, 12, 15 feet on either side of you.

*KEITH: And how long does it take to do an acre with a team of ten people?*

MELISSA: It all depends on the terrain, of course. I mean, sometimes you're going up and down and sometimes you're going flat. On a good day you can maybe do 20 acres.

*KEITH: And you've got a plan and the project and a little diagram in your office to say the next 20,000 and the next 40,000—*

MELISSA: Exactly.

*KEITH: And when will you have completed this—this is like painting the bridge over the river—you know, you finish it and then you start again.*

MELISSA: (Laughing) Paint by numbers.

*KEITH: How long do you anticipate before—*

MELISSA: We're going to be—we're on the finishing-up end of it. We'll be finishing up this year.

*KEITH: Really?*

MELISSA: Doing the survey, uh-huh.

*KEITH: Okay, and then each student gets involved in this; and if they find an artifact, you have GPS, I'm sure—*

MELISSA: We have GPS.

*KEITH: So, now, does the student take that artifact and clean it and find out a little bit more about it or is it passed on to another member of your team?*

MELISSA: It all depends on the student's particular interest. Some of them just do survey, some come back and do lab work. But, yeah, in the field they write down everything they see. They come across a site, they map it, they describe it, they take notes, they photograph it, GPS it. And all that information gets fed back in to our analysis.

*KEITH: So what do you mainly find? You talk about arrow heads and pottery shards—that's the major—*

MELISSA: The big deal out here is the arrow points.

*RUSS: What about the petroglyphs and paintings that you would find?*

MELISSA: And rock art, yes.

*RUSS: You do find it here?*

MELISSA: Yes, a great deal of rock art is here. One of the interesting things we're doing at the Center is trying to define a style of rock art for this area. We've got the Jornada Mogollon in El Paso that's quite famous; and we have a Lower Pecos art to the east of us that's quite famous. And we're re-analyzing some of the rock art that was recorded earlier, we're re-recording it and recording some new stuff, and analyzing it, trying to come up with a definition of what is here.

*KEITH: And the pottery shards. Can you begin to discern a particular style or is a lot of the style imported from other locations? I mean, how does the pottery work?*

MELISSA: There's very little pottery. And what there is is usually found in the LaJunta area along the river. And a lot of that shows influence from the El Paso area.

*KEITH: What do you see as the most important ongoing project that you're involved with now? Apart from the ones that you've discussed?*

MELISSA: I think the most important thing that we're doing is pulling pieces together. Because there hasn't been any development around here in terms of, like Tucson or Phoenix or Albuquerque where there's been a lot of growth, that's forced the archaeology to have been done. With the exception of the looters, most of the archaeology here has not been analyzed. So what we've been doing in the last five years is sort of bringing the Big Bend area up to snuff. I mean, we were 50 or 100 years behind in terms of archaeological knowledge. So what we've been doing the last five years is racing around trying to find the pieces that are missing. We've done a lot of surveys, a lot of testing, some excavation. So what's coming up next is just to try to pull all that together and come up with the history of this area that has not really been written.

*KEITH: Okay, well I think that's about it as far as we've got time, Melissa. It's been wonderful talking to you. And it's very interesting to hear you because you're clearly part scientist and part historian and you're articulate about both these areas and it's been a great pleasure.*

MELISSA: Thank you so much. Thanks for making the trip.

*KEITH: We'd like to thank Tom Michaels and KRTS Public Radio for allowing us to come in here and use the studios. We'd like to thank Nolan Martinez back in El Paso, as always, putting this program together. And we'll be back next week.*