DISCOVERY 30TH ANNIVERSARY ORAL HISTORY PROJECT
EDITED ORAL HISTORY TRANSCRIPT

DR. CATHY OLKIN
INTERVIEWED BY SANDRA JOHNSON
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JOHNSON: Today is September 8th, 2023. This interview with Dr. Cathy Olkin is being conducted for the Discovery 30th Anniversary Oral History Project. The interviewer is Sandra Johnson, and Dr. Olkin is in Niwot, Colorado, and talking to me today over Microsoft Teams. I appreciate you taking time out of your schedule to talk to me for this project.

I wanted to start today by asking you about your background. I noticed that you started out in engineering and aerospace, and then when you got your PhD, it was in planetary astronomy and science, which I thought was an interesting combination, but, at the same time, probably something perfect for moving into the Discovery Program type missions. Talk about your education, and that pathway to planetary science.

OLKIN: Sure, happy to. Probably like a lot of people, when I was young, I wasn't exactly sure what I wanted to do. In fact, I started out in college as premed. That only lasted a little while before I realized that you could get a degree in aerospace engineering, building spacecraft, and I thought that was the coolest thing ever, so of course I would want to major in that. I got a bachelor's in aerospace engineering from MIT [Massachusetts Institute of Technology, Cambridge]. Then I went on to Stanford [University, California] and got a master's in aerospace engineering from there, and then I started working as an engineer at the Jet Propulsion Laboratory [Pasadena, California].

I worked on missions like Cassini [mission to Saturn], and this was before Cassini was launched. I was in the navigation section, which was Section 314 at the time, and doing orbit determination, and figuring out how to best change the orbit of Cassini to visit different moons was one of the things I did. That was really exciting, and as a part of it, though, I started to be able to go to the science team meetings of the Cassini team, and I heard them talking about questions about how did the rings form, and questions about the Saturnian system, and that's when I realized I really want to be a planetary scientist.

I took a turn and got a PhD in Earth atmospheric and planetary science at MIT. I studied Triton's atmosphere for my thesis, looking at stellar occultations.[1] As Triton passed in front of a star, the atmosphere would cause a bending in the starlight, and that taught us about the atmosphere. But your question is spot on, because having that combined engineering and science background was perfect for what I ultimately ended up doing over much of my career. My work on the New Horizons mission and on the Lucy mission, a lot of that was bridging that gap between engineering and science and making sure that the science that we wanted to accomplish, that the engineering could back that up, talking to the engineers, talking to the scientists, figuring out how to best do the missions. And so I would have never predicted when I started on this path that that would be where I ended up, but the background really prepared me well for NASA mission work.

JOHNSON: After your PhD, did you go to Southwest Research Institute at that point?

OLKIN: After my PhD, I was a postdoctoral researcher at Lowell Observatory in Flagstaff, Arizona. There, I was doing work on understanding Saturn's F Ring—it's one of Saturn's rings—

[1] Triton is the largest of Neptune's 13 moons.

and its tilt, its inclination, using the stellar occultation technique which I had used in my thesis. I also had been doing some work on Pluto as my thesis and continued doing that. Then, one day, Leslie [A.] Young, who was Deputy Project Scientist on New Horizons, she had an observing run at Lick Observatory [Mount Hamilton, California], and at the time, even though I was working in Flagstaff, Arizona, I was living in the Bay Area in California. She came by my house, and we were talking, and I had two young kids at the time, and she asked, "What are you looking to do?" Because I'd been a postdoc for a while. I said, "I want to get out of the house," because the two small kids, who I loved dearly, but I was ready to go back into the office. She said there was an opening at Southwest Research Institute, and it was an opening to work on the New Horizons mission, and that's how I ultimately ended up at Southwest Research Institute and working on planetary missions.

JOHNSON: Yes, and I understand wanting to get out of the house; I think most women do that have kids. You were working with New Horizons at that point, and I want to come back and talk about that in another interview, but as far as Discovery, were you aware that NASA was running the Discovery Program? With New Horizons being similar, this PI [principal investigator]-led model that Discovery and New Frontiers were both doing, but with Discovery they were smaller missions, the cost was less, and a quicker turnaround, how aware were you of what was happening with that, and what did you think about that model?

OLKIN: I was very aware of the Discovery Program. It's an outstanding program. I really like the model. It allows a lot of freedom in what you can propose to. Of course, New Frontiers is a great model, as well, but there, there's limited choices in what scientific opportunities you are

advancing. Discovery is a clean slate. It's wide open. I was very well aware of it, aware of all the opportunities that NASA was putting out for planetary missions. In fact, for the Lucy mission, the first time it was proposed was in 2010. That wasn't the year it was selected. I led the proposal. I was the principal investigator for that effort, so that was also called Lucy, and with very much the same rationale: to look at the fossils from solar system formation, looking at remnants of these small objects that didn't get accreted into the giant planets.

Interestingly, the Discovery 2010 Lucy proposal, though, was under a previous decadal survey, so, of course, the decadal surveys, they define the community consensus on what are the most important questions coming up, and the 2010 Discovery proposals were under one decadal survey, and then the 2014 were under the next one. Interestingly, the 2010 Lucy mission was not only to Trojan asteroids. It also went to visit a Centaur object because in that previous decadal survey, there was a large emphasis on both Trojan asteroids and Centaurs, as these primitive type of objects. Centaurs are objects that have come in from the outer solar system, and their orbits span the giant planet orbits. And so the 2010 Lucy proposal looked a little different. It was going to Trojan asteroids and a Centaur.

It also used an ASRG [Advanced Stirling Radioisotope Generator]. This was a technology that NASA really wanted to advance at the time, and so we were going to be able to use that technology for the Lucy 2010 mission. It had very similar instruments to the Lucy 2014 mission, a variance from the New Horizons missions to a large extent, with the addition of the ultraviolet spectrometer, which the ultimate Lucy doesn't have. We had that on Lucy 2010 because we wanted to go to a Trojan asteroid that showed evidence of outgassing, so some sort of atmosphere, basically temporary atmosphere, coming from the surface, and the UV [ultraviolet] spectrometer

would help us understand the composition of that material flowing out of the surface of the Centaur.

JOHNSON: Did it make it to the down select? Or did it miss the first time?

OLKIN: It missed the first time, yes.

JOHNSON: When the opportunity came for the 2014 proposal, what were you doing? Were you continuing to try to modify Lucy for another shot at it, or did the teams continue? I know you said you were the PI on that 2010 version, and, of course, the Lucy mission that flew, Hal [Harold F.] Levison came in as the PI, so talk about that in between time and what was going on.

OLKIN: Yes, the in-between time there was a lot going on. Even though Lucy 2010 wasn't selected, it scored well, and so that gave us a lot of confidence to propose again. Quite often, proposals don't win on the first round, and so you really do have to be patient, and learn from the first time, and improve it for the next time, so there was a lot of enthusiasm to apply again in 2014. There was some work going on, thinking about that, in kind of a low-level, in the background. But it was also a busy time because we were getting closer on New Horizons to Pluto, and I know we'll talk about that at another time, but the stories are interweaved a little bit.

JOHNSON: I understand that, and if you need to interweave them as you're talking, that's fine, if it makes it easier for you to talk. That's perfectly fine, too.

OLKIN: No, I think it's good to have a whole separate conversation about that, but I just wanted to throw that piece in, because that was a big part of what was going on at the time.

JOHNSON: Okay, that's good to know. Well, let's talk about that, then, when the team got together, for the next Lucy opportunity. How did that happen? How did that team form, and how many members, besides yourself, continued on with the second Lucy proposal?

OLKIN: Yes, there were some changes between the first and second Lucy. A lot of the people were the same, but because we didn't have that Centaur object, and also then we didn't have the UV spectrometer, of course the composition of the science team would change to reflect that. That's some of the things we worked on in that in-between time, especially when we had the new decadal survey and could understand which direction was going to be the most interesting for the whole community to research. It became really clear that visiting many Trojan asteroids to survey their diversity was going to be a key factor, and that's even basically the tagline of the mission: "Surveying the diversity of the Trojan asteroids." Because if you just see one asteroid, that tells you about one asteroid, but being able to see a number of different ones really does help improve that.

Back to the science team, so there were some people that were definitely on both Lucy 2010 and 2014, but there were new people brought on, and also some people rolled off, just because of the science differences. We obviously reassessed what instruments we wanted on the platform. We spent a lot of time trying to think about whether to have a student instrument or not. A student-led instrument is a really great opportunity for those students to dig deep, build an instrument, operate an instrument, but in the end, we decided not to put a student instrument on the mission,

and soon after we were selected, we spun up a program for a student collaboration. It's been really successful, and I feel like we've reached many more students than we could have with a student-led instrument. I think there's a place for both models in the NASA program to get that really deep experience with a student-led instrument, but also to have the broad experience of this thing called the L'SPACE Academy.[2] L-apostrophe stands for Lucy. We call our instruments L'Ralph, L'LORRI [Lucy Long Range Reconnaissance Imager]. Sometimes we drop that because it's just easier to say Ralph and LORRI. The L'SPACE Academy really has had an outstanding reach in being able to have students learn about what it's like to be on a NASA mission, and so that was one of those things that we were really trying to figure out and get right, and I'm very proud of.

JOHNSON: You mentioned the instruments. I think on New Horizons you worked with the Ralph instrument quite a bit?

OLKIN: That's right, that's right. I was the PI for Ralph over some of the operations period.

JOHNSON: Yes, and a lot of the instruments on Lucy were also on New Horizons.

OLKIN: That's right. LORRI and Ralph were on New Horizons, and it's not really a coincidence, because in both cases we're going to objects that have never been seen before, and we need to cast a wide net in understanding the geology and the surface composition, and those instruments really

[2] The NASA L'SPACE Program is a free, online, interactive experience open to undergraduate STEM students interested in pursuing a career with NASA or other space organizations.

are well suited to do that kind of science. With LORRI, you get detailed images. With Ralph, you can get color and infrared spectra.

JOHNSON: Were those teams pretty much similar for those instruments, for both missions?

OLKIN: They were very similar. The LORRI instrument on New Horizons was built at the [Johns Hopkins] Applied Physics Lab [Laurel, Maryland], and the LORRI instrument on Lucy was also built at the Applied Physics Lab. Hal [Harold A.] Weaver is a scientist there, and he played a key role in both of those. He was the PI for the LORRI instrument on Lucy, and for Ralph there was a strong presence from Goddard Space Flight Center [Greenbelt, Maryland] on both instruments, and Goddard provided the Lucy Ralph instrument, and the PI was Dennis [C.] Reuter, and he worked on both missions. The experience on the teams go much deeper than just the principal investigators. One single person cannot build and test and fly an instrument, and both Hal and Dennis have outstanding teams working with them, with lots of different space experience, to help make sure that the Lucy instruments are successful. The other instrument on Lucy is TES [Thermal Emission Spectrometer], and that's out of Arizona State University, and Phil [Philip R.] Christensen's group, and while TES didn't fly on New Horizons, it has lots of flight heritage on missions like OSIRIS-REx [Origins, Spectral Interpretation, Resource Identification, and Security–Regolith Explorer] and missions to Mars.

JOHNSON: Let's talk about the new Lucy team. You became the Deputy PI for this second go-round for Lucy, so talk about the relationship with Hal Levison, and how that came about, and that relationship between a PI and a Deputy PI, how that works, and your responsibilities.

OLKIN: Yes. Hal and I really, in many ways, complement each other. I had had a lot of experience on missions, and he has a lot of experience doing theoretical work on understanding these small-body populations, and so, to a large extent, we complemented each other in our backgrounds. That was really productive for the mission, I believe. I think we pretty much set out to be a team, working together, and it's not only the PI and the Deputy PI, but the PMs and the Deputy PMs, the project manager and the deputy project managers, and we had two different project managers once we got started: Mike [Michael] Donnelly, who had a lot of deep experience with other missions; and then, when he retired, Donya Douglas-Bradshaw came onboard and took us all the way through launch. Donya had great experience with ICESat [Ice, Cloud, and land Elevation Satellite], and, of course, other things, as well.

Then, we had two deputy PMs at Goddard, and one at Southwest Research Institute. John [P.] Andrews at Southwest Research Institute was our PM for the payloads, and he had a lot of experience from New Horizons, and then there was John Loiacono at first, and then he retired and Arlin Bartels filled that role, and then Vince [Vincent E.] Elliott, who is outstanding, he was our PM for resources, so really keeping the budget together, financials. We had a really strong team, because we all knew our backgrounds well, and they complemented each other.

If you want to extend your interviews, I would suggest talking to Donya Douglas-Bradshaw at Goddard.

JOHNSON: Yes, I have talked to her. I talked to her last week, so, yes, it was a good interview.

OLKIN: Oh, good.

JOHNSON: Yes, and I've talked to a few people now. I've talked to Dr. Levinson, and Arlin Bartels.

OLKIN: Yes, Arlin's good to talk to.

JOHNSON: Yes, and Donya, and Keith [S.] Noll.

OLKIN: Yes.

JOHNSON: Yes, and I have other interviews scheduled in the next month, with Rich Burns and Jessica Lounsbury.

OLKIN: Oh, good.

JOHNSON: I'm trying to cover that main team as much as possible, and I know about the changes because Arlin was trying to explain it to me, and it was oh my gosh, there were these people coming in, people going out.

OLKIN: Exactly, and I was trying to keep it relatively short.

JOHNSON: It's interesting how that happens with a team, especially Lucy being a long-term mission, too, it was an interesting time. I do want to talk about going through, trying to get this going during COVID, and that side of things, but let's talk about the competition itself, and how

that worked, and how you got through with, first, being picked with the down select, and then going from there.

OLKIN: Yes. We were selected to go on to phase A, which was very exciting. Right there, you know your chances are much better to be selected, and it's almost like it's yours to lose at that point. It's not entirely, but that's the way I kind of felt about it. And so we were all in, to make this the best possible mission that we could do. As I mentioned previously, it was really about sampling the diversity, seeing the diversity in the Trojan asteroids. One thing that we did was we added Trojan targets between the step one and the step two proposals. This was identified as something that the reviewers would want, and we were able to find two other objects, Polymele and Leucus, to fly by that could be added to the mix. That really helped, I think, improve our chances of winning the proposal.

Another thing that was interesting that was going on at the time is that the next New Frontiers opportunity had been released, and you can't miss proposing to an opportunity because you just don't know, even if you're in step two, if you'll make the cut, and so we were proposing to New Frontiers for a Trojan mission at the same time we were in step two for Lucy. An interesting aside was that Hal and I were on different teams, proposing to New Frontiers. He was leading a New Frontiers mission, and I had previously been a part of a different group that was going to do a New Frontiers mission, both to Trojan asteroids. We were competing kind of against each other in New Frontiers, which was just about to open up, and together in Lucy, so we were very clear, we're just not going to talk about New Frontiers, and we're just going to keep moving forward with Lucy and do our own things.

Then, the site visit was really exciting. The site visit is when you have a chance to have the reviewers come and talk to you for a very set amount of time, eight hours, no longer, because it has to be fair, across all the teams, and you have the chance to really answer any questions that they have. We spent so much time honing our presentations, really making sure that we were trying to get at what we thought they were interested in and leaving enough time for their questions. We had videos to show the orbits, and how the trajectory would work. We had large boards describing the scientific investigations per instrument, and it was just great to have the whole team pull together for that site visit, where the stakes were so high, and it went really well, so that was very exciting.

Then, we had to wait, to see would come out of the competition ahead. All this time, we're working on these New Frontiers proposals, Hal on his and me on the one I was on, and we knew that it should be coming out soon who was going to win the Discovery competition. I remember I needed to write, or finish writing, the whole instruments section on this New Frontiers proposal, and I had written many of these by that time, and like two days before it was due, we heard that Lucy was selected for flight. It was great. You've got to make the best of every opportunity there is.

JOHNSON: Were you expecting them to choose two missions at that point? Because it was Lucy and Psyche that got chosen at the same time.

OLKIN: Yes, there was a lot of conversation about would one be chosen or would two be chosen. I was really hoping they would choose two, for many reasons. I think the Psyche mission is a very exciting mission, and, of course, I wanted Lucy to win, so I was very excited with the two

selections that were made. I also was really hoping that they would choose two, because the whole basis of the way that programs are structured is that there should be more Discovery missions and then fewer New Frontiers missions, and then at the pinnacle of this triangle is the Flagship missions, and there's very few of them. And in order to engage the most scientists across many disciplines, and to have those next things feeding into more detailed New Frontiers missions and Flagship missions, you really need a broad base of many Discovery missions. I really thought the right thing to do was to do two Discovery missions, and, of course, there's cost implications there, but I was very excited when two were chosen. We like to talk about Lucy and Psyche as sister missions, and I really do believe that there's a certain cohesion between the teams. There's some overlap in the science teams. You're talking about small bodies in both cases, so it kind of serves a lot of the same members of the science community when we ultimately get all this data back down to the ground. But it was very exciting, yes.

JOHNSON: Yes, I was going to ask you if there was any back-and-forth with the Psyche team, what that relationship was like, since you both got chosen at the same time, and if there was overlap, so that's interesting, yes.

OLKIN: Yes, there's definitely overlap, and so Jim [James F.] Bell, who's Deputy PI on Psyche, is a co-investigator and leads our tracking camera on Lucy, and there's a number of scientists, like Bill [William F.] Bottke, who are members of both teams, and Rick [Richard P.] Binzel, who are members of both teams. And so all along I think people were really rooting for a close relationship, and I know I've certainly tried to make sure that we're doing the best to make the most out of the opportunity of having these two missions at the same time. NASA has a really amazing portfolio

of small-body missions. When you look across, there's Dawn and New Horizons, and then OSIRIS-REx, Psyche, and Lucy, and I'm sure I've missed a couple of them, as well, but it's the synergy across the science of those missions that's really going to advance our understanding of the solar system as a whole. They're not all going after the same questions, but because they are all small-body missions they're teaching us about how the solar system formed, and what it looks like today, so how it evolved, and I think there's a lot of synergy across the missions.

JOHNSON: As you said, it's feeding that information to the same portion of the science community, the same researchers.

OLKIN: Yes, and it also supports, I think, many other researchers, too, besides just the small-body community, because of course these small bodies make up what are the planets today, and so that gives more insight into how people study other objects, as well.

JOHNSON: I talked to Dr. Levison about that Nice model,[3] and how these small bodies feed into how the larger planets were formed, and how that idea came about.

OLKIN: Right, right.

[3] The Nice model describes a possible evolution of the outer Solar System in which the giant planets underwent a dynamical instability several hundred million years after the planets formed, which played a major role in shaping the present-day Solar System. The model can explain observations in the Solar System, including the orbits of the giant planets and several small body populations, such as the Trojan asteroids.

JOHNSON: So, yes, it's interesting. If you had to point to one or two things, other than you were talking about the decadal survey, and how things changed for this mission, but what do you think set this Lucy mission apart during the proposal and going through that process? Why do you think it was chosen; why does Lucy matter?

OLKIN: Yes. So Lucy matters because it's getting at questions that there's no other good way to get at. What do these primitive bodies look like? The Trojan asteroids, with the advent of the Neese model and other models for planetary formation, really showed that these objects are primitive, and can tell us about the deep history of the solar system, and where these objects came from, and so that gets to the diversity in the Trojan asteroids. Did some of them come from deep in the Kuiper Belt? Did others come from a little further inward? And so, really, I think that's the key for why Lucy was chosen, and it's backed up in the decadal survey, that this was a key question to be understanding at this time.

Part of that was on the basis of the theoretical work that had been done, and also the observational work that was done. We have spectroscopy from the ground for Trojan asteroids, but you can't see detail, so what you see is the overall surface of the asteroids, and we can see that there's a red population and a less red population. But we want to be able to look at surface features that are smaller so really trying to get at getting spectroscopy of a crater. Is there any recently excavated area where you can get and see what the inside layers of the Trojan look like, or what's the variety across the surface? Because from the Earth what you're seeing is the integrated, full surface. Getting up close and taking images of the geology and the surface composition, and then understanding the thermal inertia of the system and that's what the TES instrument is working to observe. TES observes the surface temperature, and we want to get

temperatures at different local times of day to understand the thermal inertia properties of the Trojans. These are all key questions to really understand what the building blocks of our planets were made of.

JOHNSON: Going along with that theme, and with the original and then the second proposal, but the name Lucy, talking about those building blocks and everything, do you want to talk about that just for a few minutes, about how Lucy was named, and why?

OLKIN: Yes. Lucy was named after the Australopithecus fossil, and so this is a fossil that was discovered in Ethiopia by Donald Johanson in the 1970s. It really transformed our understanding of early hominid evolution, so how the early humans came to be. This is very similar to what we're striving to do on the Lucy mission, to understand the ancient solar system instead of the ancient hominids, and so that's why we talk about understanding the fossils of the solar system. We're not talking about fossils in the same way—we're not talking about bones that were preserved—but the ancient record of what the solar system looked like that's preserved in the Trojan asteroids. I've always had an interest in archeology. The name Lucy just made a lot of sense, and it's, I think, a great name for the mission. I really like the idea of tying across different disciplines of science.

NASA missions take a team to make them work, and a diverse team of people: project managers, financial analysts, not just engineers and scientists. Everybody always thinks of them first, but it's much more than that. Understanding, I think, the greater context of science in the world we live in is really important, and the name Lucy helps to bring that to mind.

JOHNSON: I think it's a great story because of the way the original Lucy was named, and that whole connection with "Lucy in the Sky with Diamonds." This whole mission is very interesting because of that progression, and the naming, and then the involvement of these rockstars and everything with the plaque, which we'll talk about, too, at some point.

OLKIN: Yes. And just a little bit on that, about the name. That's another thing that's great about the name because it means so many things to so many different people. I know people whose kids are named Lucy, and they're like, "Oh, my daughter finds this mission so exciting because her name is Lucy." I know people whose dogs are named Lucy, and so they find an affinity to the mission. Then, of course, there's the whole "Lucy in the Sky with Diamonds," which is how Donald Johanson ended up naming the Lucy fossil, after that song. That brings in so many different cultural layers, of the Beatles, and that era. So there's kind of something for everyone in the name, which is great.

JOHNSON: Yes, and I've seen the publicity posters and everything, and the artwork, that very '60s, almost psychedelic artwork. It's a great way, I think, for outreach, which is something I know you're interested in, working with kids, and STEM [Science, Technology, Engineering, Math]. Why is it important to you to bring everyone into it, like you were saying how Lucy brings up so many different things to different people? Why do you think that's important, for these NASA missions to bring the public interest in, and to reach out to kids and education sources?

OLKIN: I believe it's critically important for NASA, and scientists in general, at NASA or not at NASA, to engage the public. For NASA, it's critical because taxpayers are paying for these

missions, and I believe that we have a responsibility to make sure that they understand why this is exciting, and what we're learning from these missions, and what investments we're making in the nation's workforce, and in scientific knowledge, on the basis of taxpayers' money. Right there, they're a huge stakeholder, and we should make sure to engage them all along the way.

Regarding young people, though, of course they're a stakeholder, but also, I think so many young people can benefit by understanding all the opportunities that are out there. I especially think it's important when we're talking to students, whether they're K-12 or college students, to make sure people understand the diverse team it takes to run these missions. I know so many people who've said, "Oh, I love what NASA's doing, I'm so excited about it, but I'm not going to be an engineer or a scientist." I tell them it doesn't matter. You don't need to be an engineer or a scientist. There are so many great jobs at NASA for a diversity of skills. If you're good at writing, you can be in the media department. If you're good at videography, there's a huge need for that so that we can share our work broadly.

One thing I love is we had this Lucy cartoon. Rosetta had a little cartoon figure, the Rosetta mission,[4] and I very much wanted something similar for Lucy, especially given the name. It just would lend itself to Lucy. The animation folks at Goddard did an amazing job in bringing this character to life, and we have so many little animation clips, explaining the mission using this character, and I feel like this is an example of not everybody who works on a mission is an engineer or a scientist. There's a place for everyone, and a lot of people don't recognize that, and I want to make sure that we're getting that message out so that we get the best of the best and can do the best work we can.

[4] European Space Agency's Rosetta mission was the first to rendezvous with a comet.

JOHNSON: Yes, and I think it's important, especially with getting young women interested, and to make sure that they understand. You went through engineering in the '80s, I believe.

OLKIN: I did, yes.

JOHNSON: So that was a little different. Not that many women were becoming engineers in the '80s, so I imagine you have experience with some of that being told that maybe it can't be done.

OLKIN: Yes, I went to school in the '80s, and there were very few women engineers, and over my life I've been told a number of different times that I wouldn't be able to do things like that, for different reasons, or it was just not encouraged. But my family was always very encouraging that I could do anything, and I always had a deep love of science that was encouraged, and so I didn't listen to the other voices, and that worked out well for me. But I do feel like it's important to stand up as a woman scientist, who's been part of these really interesting missions, and share that this is what I do. I mentor a robotics team. I know a number of the kids on the robotics team who've now gone into aerospace engineering, and they say it was because they could see a role model in me that they could do these things, because they knew me, and I'm just a regular person, and I could do it, and they could do it.

I feel like when I go to schools and talk to young kids, I want to demystify this work. There's a saying, "Oh, it's rocket science." Well, yes, rocket science is a little hard, but there's so many ways to be able to contribute, and there's a place for everyone. I truly believe that.

JOHNSON: Yes. I think that mentorship is important, to be a role model. It really is.

OLKIN: Yes.

JOHNSON: Well, we can go ahead and stop here, if you'd like.

[End of interview]