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**Civics 101**

**NASA**

**Hannah McCarthy:** [00:00:27] I'm Hannah McCarthy.

**Nick Capodice:** [00:00:28] And I'm Nick Capodice.

**Hannah McCarthy:** [00:00:29] And this is Civics 101.

**Nick Capodice:** [00:00:30] Today we're talking about NASA. Can you tell me Taylor how is NASA a civics topic?

**Taylor Quimby:** [00:00:43] Well NASA is a big government agency.

**Nick Capodice:** It's so strange. I feel like it's divorced from civics. I feel like NASA is a separate thing right.

**Hannah McCarthy:** [00:00:51] And I think maybe that's because NASA isn't making decisions that have to do with our daily lives right?

**Nick Capodice:** [00:00:57] Or our, yeah or our democracy, or the way, but I guess maybe it could maybe it is. So to understand all of this stuff we got in touch with Amy Shira Teitel. She's a space flight historian, a YouTuber, and she posts videos about things like 'why haven't we gone back to the moon' and 'why do people eat peanuts at launches'. Her channel is called Vintage space. Please check it out. And we talked to her via Skype. All right, I guess our first question is can you tell us what exactly NASA is?

**Amy Shira Teitel:** [00:01:36] NASA stands for the National Aeronautics and Space Administration. And it is a civilian agency that what its name says is, kind of the the main body I guess in the country about dealing with all the science and technology around space exploration.

**Hannah McCarthy:** [00:01:51] So why exactly was NASA founded to begin with?

**Amy Shira Teitel:** [00:01:56] NASA was founded as a somewhat in direct response to the Soviet Union launching Sputnik on October 4th of 1957. At the time there were a number of different agencies and military groups in the United States that were starting to deal with things that would eventually become spaceflight the U.S. Air Force was starting to play around with human factors the U.S. Army was developing rockets and missiles that could double as rockets for space flight. And then there was the kind of predecessor organization to NASA called the National Advisory Committee for Aeronautics that was starting to kind of look, it was really the established kind of bureaucracy around all things aeronautics. So like, if the Air Force needed a new plane the NACA would have the wind tunnel to test it. So all these things were sort of working towards the same goal but in disparate places. So it was ultimately Eisenhower, President Eisenhower, who realized in 1958 that if America was going to be able to respond in kind to this new Soviet technology in space it would need to bring together all the existing technologies under one umbrella. So that became NASA.

**Nick Capodice:** [00:03:02] Who does who does NASA answer to specifically? Well the administrator is appointed by the president. So at the end of the day it is only the president I think can make a decree that NASA has to act on it. The most obvious one is President Kennedy saying we're going to go to the moon and NASA saying I guess we're going to the moon.

[00:03:24] But you know at the same time because it is a civilian agency right, Eisenhower establish it as civilian not military because he really did not want space to become a battlefield for a hot incarnation of the Cold War. So it is in a way beholden to taxpayers as well although of course you end up with senators from different states looking to kind of help feed jobs in their areas, so you end up with NASA centers getting funded for different projects because it's the interest of voters in certain areas, but at the end of the day it all comes down to the president.

**Hannah McCarthy:** [00:03:56] And does NASA have anybody like an attorney general? Do they have somebody some secretary at the top who they have to answer to when the president isn't saying specifically, you know, time to go to Mars or the moon?

**Amy Shira Teitel:** [00:04:08] I think that would be the administrator or the administrator is the highest position at NASA. Anything the administrator decrees kind of trickles down to all the centers but then all the NASA centers the individual centers also have a director and then their own kind of leadership. Got it.

**Taylor Quimby:** [00:04:25] Can I jump in for a second?

**Hannah McCarthy:** [00:04:26] Oh yes of course!

**Taylor Quimby:** [00:04:27] What are the centers like? Is there like a moon center, Mars center. As fun as it would be if there was a moon center at NASA I know that the centers are some of them actually predate NASA were old NACA sites that were then folded into NASA, but they are the different sites that are all around the country for different kinds of research. So you have like the Kennedy Space Center is a massive site. It is where things are launched and then you have the Johnson Space Center which is another NASA site, which is where all the human missions are run from a mission control is out there. Then you have JPL, the Jet Propulsion Laboratory in Pasadena, California, which is where all the unmanned missions come from. And it actually works in conjunction with Cal Tech. So it's a little bit messier there but ultimately robotic spaceflight there, and then you have centers like the Glenn Research Center, and the Langley Research Center, and the Goddard Space Flight Center which is all earth science stuff. So each one has a piece of the overall NASA puzzle, if that's sort of a clear way to think about it.

**Nick Capodice:** [00:05:25] Yeah I'm interested actually in sort of how NASA interacts with all these other agencies in our government, because you know I really think it's fascinating that it's kept so separate from the military. But don't they kind of work together though sometimes?

**Amy Shira Teitel:** [00:05:40] There there is overlap there is definitely overlap. And actually that's one of the reasons that Eisenhower was the one who also declared that the first have asked not to be chosen for military test pilots. One of the rationales for that decision was that they would have some military clearance are ready and even though NASA was civilian there would probably be some secret aspects in the early days of spaceflight especially given that it was an incarnation of the Cold War that would maybe not be, would need to be kept from the public at least in the immediate future.

[00:06:10] So yeah and you know also not to mention the early rockets like the Atlas that is still launching missions today, that came from a missile that was built with the U.S. Air Force and the redstone launch the Merkur missions came from the army as did the Saturn 5. That was an Army group that was brought into NASA. Honestly I sadly can't answer the question of how the centers interact but I'm sure it's a lot of meetings.

**Nick Capodice:** [00:06:32] So if legislation goes through the public usually has an opinion. This is a great idea! This is a terrible idea. I'm wondering if back in the 60s was there any public opposition to funding something like NASA?

**Amy Shira Teitel:** [00:06:46] Oh yeah! Huge. People have this idea that NASA was like the golden child of the 60s and that Apollo was like a happy union of everything like, Apollo had a 50 percent approval rating when Apollo 11 launched. Now people don't remembers that this is right when civil rights was getting, like dominating the national conversation. Also women's liberation, also the Vietnam War. I mean the government wasn't doing anything that anybody liked by the late 1960s and there's always this talk that Apollo 8 which was the first mission to the moon, it just orbited didn't land, that it was sort of like, it saved 1968 in a way because everything was kind of the worst. And then these three guys went to the moon and they took a picture of our planet that shows no borders and no war it's just this beautiful oasis floating in space and suddenly lik,e okay this is bigger than all of us. But it's you know it was not something that people necessarily cared about.

[00:07:44] I mean NASA was living in this bubble of crew cuts and skinny black ties and white dress shirts and people were being killed on the streets in protest. I mean it wasn't exactly a great time.

**Nick Capodice:** [00:07:55] I'm thinking that Gil Scott Heron's song, "Whitey on the Moon".

**Amy Shira Teitel:** [00:07:59] That sums it up really well.

**Nick Capodice:** [00:08:01] So I think my follow up question to that is... It's a big one... Which is why? Why? I'm sorry. Why space?

**Hannah McCarthy:** [00:08:14] Yeah.

**Amy Shira Teitel:** [00:08:15] I mean, I know it's it's one of those ones that's like weirdly hard to justify I think. I mean why space in the first place like, because it's there. People have always kind of been fascinated with space and I'm saying like way back when and like the eighteen hundreds and 1900's. It's sort of been kind of feeding that curiosity that the more we learn the more we realize that we don't know. And I think a lot of this stuff ultimately comes back to us wanting to understand our own place in space.

**Hannah McCarthy:** [00:08:44] So all of that sounds so kind of lovely and pure and a blend of Star Treky. But of course in order to do that we need to get politicians to agree to fund this, to make all this happen. How does NASA factor into politics?

**Amy Shira Teitel:** [00:09:03] I think everyone especially people who love space specifically people who love space would love to pretend that space is free of politics but space is nothing but politics. I had a little an 8 year old girl asked me at a talk in Australia a couple of years ago why they went to the moon.

[00:09:20] And I just thought God, how do you explain international pissing contests an eight year old in a country that doesn't learn about the Cold War? It's all politics. It always comes down to politics. It's really hard I think for people to look at something like putting a rover on Mars and understanding why their lives immediately benefit. It's hard I think for politicians to then sell their constituents on why they should vote for space things. So it's so wrapped up in politics. But it also means that it is so stuck by politics. And the other thing the other thing that that kind of becomes a bit of a mess with NASA and being kind of governed at the very, very top the president and by an administrator appointed by the president, is that every administration has something different that it wants to do. But space doesn't happen in neat little 4 year packets.

**Hannah McCarthy:** [00:10:10] So how has the budget for NASA shifted over the years, because things like getting to the moon did happen... But obviously, well at least I would guess that the budget a little bit different?

**Amy Shira Teitel:** [00:10:23] Significantly smaller. Yeah NASA's budget has changed over the years and that it's much much smaller. So at its peak in about 1966 NASA was getting a little over 4 percent of the federal budget. So 4 percent of all of your tax dollars were going to the space agency. The money NASA got started to dwindle towards the end of the decade and it's kind of gone and ups and downs that never reached that high spending again. Currently it's about somewhere around 1 cent on the dollar so for every tax dollar one penny goes to NASA.

[00:11:00] I mean I can't math but that's just a tiny fraction of what it got in its heyday. Yeah. The problem is that you have to have leaders that come in and say they want to see some big thing happen but they don't want to increase NASA's budget. But you can't do something big like go to Mars with a couple cents on the dollar. You need to kind of get that funding.

**Nick Capodice:** [00:11:19] But you did, you said to us that it feels like that NASA is stuck. Do you have any idea of how to get unstuck?

**Amy Shira Teitel:** [00:11:27] Yeah I don't I don't know. I mean I think what it what it ultimately takes is someone with vision beyond his or her term as president or administrator because what we ultimately need I mean we can't go to Mars in five years. We can't get to Mars over somebody's term as president. If someone had the vision to do something that was like for the benefit of humanity that somebody couldn't come along and easily cancel I mean. But it's hard to have that kind of vision.

**Taylor Quimby:** [00:11:54] Or maybe, this is the cynical viewpoint Amy, is that maybe you need another Cold War.

**Amy Shira Teitel:** [00:12:00] Yeah I mean, that's the that's the one that I don't like to talk about but like it could be that you know if you know if China says we're going to put people on the moon and do this, America might suddenly be like all right here NASA, take 5 percent of the federal budget again and just do it. Make it happen now.

**Nick Capodice:** [00:12:15] What's what's NASA up to today? What kind of stuff are they doing?

**Amy Shira Teitel:** [00:12:19] Yeah people have this idea that NASA ceased to exist when it cancelled the shuttle program. That's not the case at all. The most visible thing that NASA is doing that we see is the International Space Station. There's still people up there all the time. There's also a lot of earth science going on missions that are currently mapping things like water level and rising sea level which is super important for us to understand what's actually happening with climate change. And then out of JPL we still have all the deep space robotic missions. The Voyagers that were launched in the 1970s are still sending back data. We've got the Curiosity rover on Mars and that's NASA mission and that's the stuff that's kind of visible. There's always stuff happening that people don't know about.

**Hannah McCarthy:** [00:13:01] Is there anything else you wish we knew about NASA before we let you go, Amy?

**Amy Shira Teitel:** [00:13:06] The one thing I try to get everybody to really think about when it comes to NASA is how much the technology that comes out of NASA ends up back on Earth with us because I think if people understood how much NASA really does for us like medically and everything every day, you might change your tune about NASA being a giant waste of money to put fancy smart people in space. You know I mentioned LASIK coming from line of sight over orbital rendezvous but there's like new mammogram technology that's able to detect much smaller cancers came out of not the technology, the technology that keeps your drink hot or cold in a thermos came from NASA. And people don't think about the connection to NASA. But I think if they did you might kind of have a better appreciation for just just how important the space agency actually is in this country

**Nick Capodice:** [00:13:56] That was Amy Shira Teitel, she runs the YouTube channel "Vintage Space" and she wrote a book about the origins of NASA titled, Breaking the Chains of gravity. We're going to quick break but we'll be right back.

**Nick Capodice:** [00:14:17] So Taylor we recorded this episode a few weeks ago and Hannah is not here today, she's out sick. But one of the main things that stuck with me is how political space is. This place that I thought politics did not exist, suddenly is everything. Space is nothing but politics and there is something you were talking with me recently, which is there's a, is it a new head of NASA?

**Taylor Quimby:** [00:14:39] The NASA administrator.

**Nick Capodice:** [00:14:41] Administrator OK. So what does that have to do with anything?

**Taylor Quimby:** [00:14:43] Well I think a lot of the stuff that Amy talked about about the intersection of politics and NASA and space sort of come together with this confirmation. Jim Bridenstine is a Republican member of Congress from Oklahoma. It's a former Navy pilot and he's actually the first head of NASA who is a congressman and previous administrators have been basically science professional so people who either came up the ranks through NASA or people who are scientists that sort of thing. So this was pretty much the most hotly contested and controversial confirmation of a NASA head in history.

**Nick Capodice:** [00:15:21] I have known what's going to be like with somebody who hasn't come up through the ranks being at the head of this very scientific organization?

**Taylor Quimby:** [00:15:27] Well I think for some people, that is the concern is that they just don't quite know what it means. But there's actually something pretty telling that might give us a hint of what Jim Bridnestine is going to be thinking about as the administrator. And that's because in April 2016 he put forth some legislation called the American Space Renaissance Act which he openly admits is less a piece of legitimate legislation that he hoped to pass, so much as I mean it sounds like a resume for what he thinks NASA policy should be. And there's a real emphasis on exploration and and an emphasis with that exploration on security, and some deemphasis on research especially sort of Earth Sciences Research which is a cause for concern for a lot of folks because he has hedged on climate science.

**Nick Capodice:** [00:16:15] One thing that Amy brought up that I had never considered is if you shift if you shift gears from say Mars to the moon you kind of got to start from scratch. You've been working on all this stuff for so long to change the mission is a huge thing.

**Taylor Quimby:** [00:16:27] Well well and this I think there's some interesting room for debate here because one of the things that Jim Bridenstine has talked about and that he's proposed is making the NASA administrator have a five year term to create some sense of continuity.

**Nick Capodice:** [00:16:40] To sort of help influence the next incoming president.

**Taylor Quimby:** [00:16:42] Right. And potentially to fund NASA under sort of larger multi-year project based stuff. So I think that would that would also maybe ease some of the problems that that Amy talked about of why NASA sometimes gets stuck.