

Oral History Interview Transcript

Course Title: Energy in World Civilizations

Institution: University of Chicago

Student Name: Zoey Papka

Interview Date: March 9, 2023

HIST 17522 Oral History Transcript

Zoey Papka (ZP:): I'm Zoey Papka. I'm a student in energy, the energy civ, and so for my second quarter, we're doing an oral history project for our final essay. And today I will be interviewing my dad, Michael Papka, about energy throughout his life. So, this interview is being recorded. Is that OK?

Michael Papka (MP): Yes.

ZP: Ok, so my first question for you is very broad.

This course is kind of looked at how energy in like many different ways from like starting energetics of how things are made to just generally different energy industries like oil and coal. So I wanted to start very broad and just ask how has energy changed throughout your life?

MP: Well, I mean, I think.

There haven't been any great changes in in, in my life. We had already kind of moved away from coal heat and so it was really just in terms of energy consumption. Just electricity and gas. Natural gas. That's kind of the primary sources of power.

I think you know the, your grandparents and the generation before us dealt with a a bigger transition there. So I I think the biggest probably changing like energy delivery mechanisms, I mean, I do remember the transition from Leaded gas to unleaded gas and that was kind of a major source of discussion during my kind of grade school years. I think what's more interesting in the last decade is the the push for renewables. Maybe back even in the early 80s. There was kind of a a run at at solar power, then. And you might even actually remember the grandpa and grandma probably had one of the first solar houses. It was used rocks to store heat and it. Radiated it out through the night but really not until 2000s, 2010s did you actually start to see. I think it's pretty interesting. I think solar and wind and those type of sources is is really come a long way and a great opportunity for the future.

ZP: So would you say like with the rise of renewable energies, we're going to see or like do you think that there will be a change in how we consume energy some of the course is kind of focused on how as Electricity and oil became more accessible to homes We like increased energy consumption a lot and did you notice?

MP: Well, yeah, so I think. People have a lot of a lot more things plugged in these days. I know that you know, once you have children, they like to leave the lights on. And so that causes more energy use. Yeah, I would say, you know. We didn't have all the devices when I was younger and only for your generation and. That, like iPads and iPhones and portable gaming devices and so there's just. Yeah, there seems like a lot more things plugged into the wall than when I was younger. And I think it's, you know, it's the readily available both the the technology itself being miniaturized and made accessible, just even advances in technology, making more things. Everybody has a computer. Everybody has a couple of computers. Those weren't necessarily, you know, available when I was, when I was younger. I didn't have my first cell phone and that till till I was done with school. And so, I think those advances and the fact that they consume energy kind of go hand in hand, both the available more availability and the prevalence of of technology in consuming it.

ZP: This brings me kind of into my next question. So our first like essay in in the class and our first like bigger topic was talking about how with this like change in the availability and energy like the way Americans and people in other countries like consumed food and how readily accessible like processed food was to them and how grocery stores kind of like carried food. And have you noticed any, like bigger changes in how like you like consumed food or got food from like your childhood to now, especially with like different kitchen appliances and?

MP: Well, I mean I I I guess. There's a lot of different ways to look at that. If I listen, you know. to the stories from Grandpa and Grandma [*My paternal grandparents*], Nonna and Nonno [*My maternal grandparents*]. Having you know refrigerators that used ice to stay cold, you know, changed kind of the dynamics of, like, how much food you would have at once. And now we have these huge refrigerators. So you could kind of go shopping and purchase a lot of stuff and keep it cold and keep it last longer so you're not you're consuming more energy in these big appliances, but also your consuming less energy and that you don't make as many trips to the store. I guess that's kind of both physical human exertion of walking to the store or or driving. I think the other thing that's interesting, if I was to think about energy, I don't really think about it in terms of processed food. If that makes a difference. But it does seem like there are, you know. The fact that they can ship. The idea of a local farmer supporting the region seems less of an issue. Now whether you can have mega farms and you can grow a bunch of stuff across. The country and ship it. Wherever it needs in a fast enough, at a fast enough rate that it stays good, you know and fresh, you get oranges from Florida and they can be here the next day and so, I never really thought about processed food and how that plays into energy use. We don't eat a lot of processed food, so. I guess I already thought about half thought about like kind of the the the notion of the independent local farmer who provides your food close to you seems to have kind of gone and that's kind of by the ability for transportation and refrigerated trucks and and the like. So, those all consume additional energy and kind of have moved us away from from that idea.

ZP: So kind of changing topics a little bit, I wanted to switch to talking about your job. So, have you noticed anything like major changes in like, energy as like a concept or just like or how energy is like thought of in the Department of Energy over the past? Like during your time working there.

MP: Sure so, well, the department itself. You know, has really kind of two missions. One is in the stockpile, stewardship of the stockpile of nuclear weapons. Which I have nothing to do with and the second is in kind of the security of energy for the nation. And so if you look at Argonne [*Argonne National Laboratory*] and what its initial role was, it was to develop the peacetime use of nuclear energy and that it has right. So there are the nuclear reactor and the the world can trace its lineage to at least to some of Argonne's designs, nuclear reactor used in submarines and all that. Unfortunately, you know, with things like Three Mile Island and and events like that. The deployment of nuclear energy in the United States, which I think was kind of a cornerstone of of DOE's [*US Department of Energy*] original formation, has slowed. Actually I don't think it it while we are we as the larger complex still does reactor design, reactor engineering that it's no longer such a major focus, and I think that's kind of disappointing. I think there are lots of opportunities there, safe opportunities that we just are pursuing as a country, which is continuing

to make our reliance on coal longer than it should be. So yeah, so the departments moved away, maybe from as much nuclear reactor work, but then again it's compensated that by expanding to the areas of looking at wind and solar and other forms, of course. As we move to a renewable energy base, energy storage is huge and so at least from the standpoint of looking just at our own little independent piece of the Department of Energy, Argonne national lab. There is a tremendous amount of storage work done there, in storage specifically in the form of batteries. And so that's that's changed and it continues to grow and evolve. The other thing I think that's interesting and it's not just the Department of Energy, but as you start to look at science as an enterprise, and science is a big you look at things like Argonne advanced photon source, which to continue to do more science into the process of being upgraded to consume more power, you look at CERN [*European Organization for Nuclear Research*] in Europe and the high energy physics experiments that happened there or are at Argonne sister facility, FermiLab [*Fermi National Accelerator Laboratory*]. That's science, big science has consumed more and more energy as time has gone on and in my 30 years at Argonne and being in the computing space and working with the supercomputers, you know we've seen kind of this growing of machine capabilities ever more powerful computers. They'll consume more and more electricity, and then the next generation will deliver the exact same amount of computational power for less energy and so we have this kind of consume a bunch of power to get new capabilities, but then? The next generation compute will use less power and give you the same and you know if you're always at the bleeding edge at the at the forefront of the computing, then you're always at that generation that's consuming more and more power and if we look towards Aurora, which is the next supercomputer that we're going to deploy. And we've allocated 60 megawatts of power to that resource and that's that's a significant change. In the previous generation of machines we're more in the tens of megawatts. And so we're looking at like a 6X increase in energy consumption. For on the positive side, you know a 100X. increase in computational power, but that desire and need to continue to do science has meant that we have consumed more and more energy each year.

ZP: So just a follow up question about like developing the plan for Aurora, what kind of like, energetics and like studying of how you guys determine how much energy you can allot for the machine to get it to be like as efficient as possible?

MP: Well, a lot of that's out of our control. A lot of that's kind of the the chip manufacturer integrator level. I mean we take how much power or how much energy we could consume into consideration. But it's largely delivered. Some of it I guess is site access and how much power is available at the site and we had to do a lot of electrical work to make Aurora happen. But sadly, at the end of the day, what it really comes down to is how much energy you can afford. A lot of what, Aurora's scoping is done is based on on budgets.

ZP: Ok, so just the last part of the interview is going to be about in class, we focus on like a few different regions of the world and looking at how they've used energy. And so you've traveled a lot for your job, and you've been to a lot of cool places. And I was just wondering if there's like some interesting things you've seen in different countries and how they use energy or like they talk about energy. And like what they're like, what you've seen is like different sources of energy?

MP: That's a hard question. And I think of all the places that I've traveled, they're all pretty western in their approach to it, so I haven't been anywhere very exotic. That isn't kind of using the standard things that that we see here in the States, and I think even like what I've seen that like stands out when I think about energy and is like I was. On the East Coast, in the Boston area for number of meetings over the years and just like the infrastructure the US hasn't really been very good about renewing its infrastructure and so like even just some buildings, just I remember being a Boston hotel that night after night the fire alarm would go off and it was all due to just bad electrical cabling inside it so, I think you know, the US is just not invested in its infrastructure. We, you know, continue somewhere to see the rolling brownouts on the West Coast. And so I think other countries might be better at that. I don't remember actually, really seeing any anything super interesting in my travel. I You know it's more renewables, more Nuclear energy use in the past in in Europe, even they've kind of shied away from from some of that, but you know definitely a push for more renewables. And but nothing really stands out.

ZP: I guess another follow-up question kind of in the similar vein is like thinking about like public transportation, like when I've traveled to like even like bigger cities because we live in a suburb, there's not a lot of transportation and it's hard to get around without a car. Have you noticed like in like Europe, how, like the infrastructure is different and it's based especially in like cities that are like larger how the infrastructure is better at connecting places as well as like I know like all of the EU countries are pretty well connected by trains and it's a lot easier to get to places while in the United States you have to drive pretty far to get to like another state, and it's hard to get places.

MP: Yeah, I thought about that. Over the years, so I just came back from Japan and it was extremely well connected. I I did take cabs, uber a bit, but for the most part you can get all over the country, via trains and buses, and so, one of the I think the biggest challenges for the US, as opposed to like Europe is just how big it is. And I it's often lost on me like. Why can't we have a better railway system or more? A better you know mass transit system and some of it has to do with scale, right? So if you I think if you look at the East Coast one could imagine doing a lot better there and doing a lot better on the West coast, the Midwest is kind of spread out and so, you know, even just from the state of the suburbs. We have Metra trains that go into the city and there's it's kind of a nice spoke model. You can kind of get to a train station, but then the trains are not as nice as the European train, as in terms of speed and and comfort. So, I don't know. I mean the questions I would ask there are more around, you know, do Americans feel more entitled? And so owning your own private car gives you more flexibility and freedom. And so you choose not to want to see your your country, your government invest in mass transit. You get to the crowding in the cities, you know, New York and. Chicago and they have, you know, quite reasonable mass transit systems but they don't really connect to the the farther suburbs that like you see in some of the European cities. But again, I think the US is the scale of the US in terms of just sheer size, is a challenge?

ZP: So I just want to finish off the interview with If you have any like other personal antidotes about just like any interesting stories about energy in your life or like anything that like Grandma or Grandpa had like told you or like kind of like?

MP: Hmm. Well, I think you know one thing that just pops in my mind so it is very interesting, now to be an electric car owner and how that's changed, you know after driving for 37 years to get electric car. And never really worrying about like getting gas because there's just plenty of gas stations having that having to think about, OK, where am I going to get a charge. So that's that's been different than probably something that you know won't be as big a deal for your generation. And for your kids generation that will, you know, hopefully they'll the country will just have a tremendous amount of infrastructure that makes that easy. But that's that's. Been a change in the sense of thinking about, OK, where am I going to get a charge? The other thing I think is interesting with electric cars right now is to get kind of ranges like you get with a tank of gas takes a considerable amount of time to charge up, right? So it's you pull up to a gas station, you fill up the whole car in 5 minutes and you're on your way. The fillable battery to go the same distance is an hour, an hour plus. And I think that's for for me at my age, that's been a something to think about, whereas I think the next generation that will be either fixed in the sense that they'll will charge batteries much faster or it will be part of just your day-to-day life, that the flow of things, charging cars fits into it. And that's one one interesting thing that I've thought about with respect to energy over the years or recently. The other thing I would think about is, you know, we had bought a house in the in the city [*Chicago*]. That was built in the 1800s, late 1800s. And as we did work on that house, it's interesting to see all the things that that house saw from kind of using coal to heat to the addition of electricity to the house, to the addition of the gas heat. And just you know that house itself encapsulated years and years of and changes in how energy was used in that home. I was always amazed as I was doing work, how you would stumble across Pieces of history in kind of that sense.

ZP: Thank you for letting me interview you. If there's anything else you want to add or yeah.

MP: No, this was very cool. Thanks for asking.