

Jackson Hart
HIST 17522, Professor Mead
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Oral History Interview

DETAILS:

Interviewer: Jackson Hart
Interviewee: Leland Hart
Date conducted: 5/21/24
Medium: recorded Zoom meeting

TRANSCRIPT:

Jackson – When were you first consciously aware of climate change?

Leland: Consciously aware of climate change would've been...in college, most likely in post-college, given I went to an environmentally aware college as well as grew up in a very environmentally aware place.

Jackson – So, when you say consciously aware, like, what do you mean by that? What did you learn, with regards to climate change?

Leland: So, climate change, which is now at the forefront of, sort of, man's impact on Earth, wasn't the main focus, call it, in the eighties and beginning of the nineties...back then it was on water availability, pollution, and sort of the first-order cause of pollution like bad air, and finite resources. In the later nineties-stroke-two thousands, the second-order impact of, call it pollution or fossil fuels, was climate change, and that was when it really when it started to become more...sort of first-order consideration, because at that time, both the science was becoming more robust, and second, because information is now available to everybody and data is more available, it becomes more prevalent. People are more aware of the environment if everyone has a weather station on their phone, for instance.

Jackson – So, do you think that learning about climate change – whether that was your first experience or what we consider our more modern interpretation of climate change – do you think that has changed your perspective on how, personally, you use energy, whether that's electricity or...or does that change your perspective on carbon footprint?

Leland: Yes, absolutely. Because the information is now out there and the data sets are more robust, whether or not I or someone else changes their consumption of energy or their

consideration of the environment, they're doing more aware that it has impact. For someone like me, it will be thinking about recycling more, it will be thinking about gas mileage, it will be thinking about what is the most efficient or not leaving the pool heater on, but because it's become so permanently in people's consciousness, whether people change or not that's up to them, but the knowledge of it and perspective of it for everyone has changed. For me, it's a pretty obvious one.

Jackson – I guess on a bigger scale then, than just your personal experiences with climate change and how that has shaped your perspective, I am curious to learn how your job itself...well, first thing, for some background knowledge, could you share a little bit about what you do for a living and, with regards to that, how your job connects you to the energy industry?

Leland: so, for a living I'm an investor – I run the performing credit business of Warwick Capital and in the past I've run a number of investing businesses, and part of is lending to all, or investing in, all of the industries that are out there, including very specifically the energy industry – whether it's oil and gas, mining, pipelines – my job requires that I know how they all work from top to bottom.

Second, I co-founded the infrastructure debt business while at BlackRock, and a large portion of that business is focused on the renewables sector: solar, wind, hydro, etcetera, so building that business and lending on a global basis to those kinds of companies has given me sort of a ton of knowledge.

Finally, at Warwick itself, we have two divisions: one is in the mineral rights industry – which is basically pulling stuff out of the ground – and we have a carbon transition business, which is focused on reducing the damage and reducing the output from the power sector and other sectors; that is the leading edge business globally, we've partnered with multinationals and we are at the forefront of looking at multiple solutions to lowering CO₂ expulsion by various manners all of which are under the CCUS header, which is carbon capture, utilization, and sequestration.

Jackson – I guess, then, my question is 'Why invest in carbon sequestration, or CCUS if you will?'

Leland: So, there are a number of goals that the U.S. and other countries are trying to reach that have a 2030, 2040, 2050 deadline to reduce carbon emissions, and people often ask what thing is going to solve it; the answer is, if you took all of the things being proposed right now, all of them could work and we'd still have work to do, meaning that there is not just one solution to the problem, you need them all. What we're doing is focusing on a number of the technologies that

allow for efficient CCUS and we're investing in those businesses right now, here in the US, and partnering with some rather large multinationals – people that make the industrial turbines that power the globe, quite frankly.

Jackson – For a lot of oil and gas companies, profit is a big motivation behind innovation and behind, basically, what they do...is carbon capture a profitable endeavor that companies can or should pursue?

Leland: Yes...for a number of reasons. All companies in the space are for-profit companies, so profit is their motivator. CCUS is an essential...it's where the world is going. Whether it's the right thing to do or people are forced to do it, you need to understand it and be at the front end, sort of like AI, computing, or chip-making. Some of the larger oil and gas companies, or much like the Middle East where they realized that pulling oil out of the ground made a lot of money but that's not where the future is, doing it either in a way that's better for the environment or diversifying away from it is kind of a key focus, so all of the large energy companies are also at the same time pursuing ways to make, effectively, what they've been doing greener, or now that you see renewables as a larger portion of power consumed on a daily basis, it shows where coal was the number one thing in the U.S. – 40 to 50% – it's now precipitously falling straight down and it's being replaced by renewables – those being solar and wind. What's happening is that the reason renewables aren't 24/7 other than in a country you've been to, which is Iceland, is because they only generate power when the sun's up, they only generate power when the wind's blowing, and as technology's improving on the storage side, it'll allow renewables to have a bigger impact, especially during peak utilization, so what the energy companies are realizing, much like the tobacco companies – all the ones investing in Juul, in Zyn, and those delivery methods of the same thing – is that they either get on the bus or the bus is going to leave. The equity markets, and the private and public capital markets, are rewarding that innovation and there's a lot of dollars rather eager to invest in the various methods of CCUS implementation.

Jackson – In that vein of thought, I guess obviously carbon sequestration is tasked with removing atmospheric carbon dioxide – condensing it, I think – and storing it...while you can view this as a beneficial alternative, or remediation of climate change, do you think this could enable larger oil and gas firms to keep investing in fossil fuels?

Leland: Yes. What's not going to happen is that tomorrow we don't use fossil fuels, again due to peak usage and due to...you always have to have a backup, and the only way that you can have that is by utilizing the old-school methods of power generation: coal, oil, gas (natural gas), it's a slope and the slope should pick up pace, but the utilization of those dirty fuels is going down and is getting replaced, and won't happen overnight.

When it comes to critical infrastructure, I can look out the window – you probably can too – and look at any large building, like a hospital, and you will see a big generator there, and that will be running off diesel – when you have to have power, you have to have a generator as back-up, so that's not going to go away completely, but the slope should become steeper for the replacement of carbon, of oil, gas, whatever as your main power versus renewables. That transfer's happening – it won't happen overnight – it will take not years, but decades, to replace.

Jackson – I guess my question is...when I think of fossil fuels, a lot of what makes oil and gas companies money is selling the stuff they extract, so my question is what makes CCUS lucrative in that regard...I guess my question is more 'what do you do with the carbon that you store?'

Leland: So, carbon capture is...you've got some plant burning fuel and you slap some shit on the smokestack and it captures it. Utilization is taking the carbon dioxide – usually you compress it – and turning it into something else. Usually you have blue fuel, you take the chemical and you make shit with it. Sequestration is you take it and sequester it – you put it in a place, usually that is in the ground. There are two ways it goes into the ground – there's type 6 facilities...that is a facility that is approved by the government to store CO₂. There are only two that are open in the U.S., one of which is one that our company is working with in south Illinois at the ADM plant – that's public, you should look up the project Broadwing – the other usage of it is...think of how people pump oil out of the ground...one of the sequestration methods that they've come up with is that you pump CO₂ into the places where the oil came out of and you just put it right back down there...that's a pretty passive and benign thing to do that's being done...it also allows you to get the final amounts of oil out of those areas too, so it does add to some efficiency. The reason you sequester is because, economically, you are paid to sequester, and I want to say that it's \$85/ton...there's a payment to sequester your CO₂ – you are paid, right now, the Section 45q tax credit for carbon sequestration, which you get paid \$85/metric ton of CO₂...

Jackson – Is that from the government?

Leland: Yes, it's from the government.

Jackson – So then, what's the incentive for a company running a plant that burns oil to install some sort of sequestration device on their smokestack if they're not the ones...

Leland: Oh! It's because the consumers of power want to be able to say they're burning green energy, and if you think of what's happening in the world of power consumption, power consumption in the U.S. – the graph is going up massively. This isn't probably something you've spent much time on, but I will send you an article...the biggest consumers of power today are Google, and Microsoft, and data centers and AI, and those companies want two things: they want

power, and they want green power. They *really* want green power. And so, for them, they want to be able to say they're selling green power, and the second thing – without question – is that they want to be behind the meter. What that means is you've got a U.S. power grid that is rather exposed to a number of things, in fact it gets infiltrated every day and you read about that every day, and we are behind on that. And so, a lot of these companies – like I'd use Google as one – want to make sure that just because the municipality or the state has a shitty grid, they don't want their services not to work or their data farm not to work because of that, so a lot of these companies are setting up their own power plants to do that, and so when they do that they want it not just to be their own, they want it to be green. It will come to a time where it has to be green, or greener.

Jackson – I was going to ask if they get some sort of tax incentive. Because I know the government pays the people who sequester the carbon, but I'm wondering if the companies whose stuff gets sequestered – like if Google has a power plant and they say, 'Ok, we're going to put a device on here that sequesters the CO₂, does Google get an incentive themselves, or –?'

Leland: No, I don't believe so –

Jackson – *Marketing* incentive.

Leland: Yes, they've all declared themselves carbon neutral by X date or carbon-free, so the only way they're going to get there is by doing it themselves and getting it moving, so they have a huge demand for that, so you can look up Google's division that does this, they're pretty active.

Jackson – Then, I feel like when I think a lot about climate change I think about greenhouse gas, and the ozone layer, and all of the shit that's in the environment like floating around in the air...does carbon sequestration, does that entail a smaller scale operation, like installing some sort of capture device on a smokestack, or can you extract atmospheric carbon dioxide just, like, from the air.

Leland: Both. Like I said, there's thousands of solutions – Bill Gates has been supporting this thing that looks like a reverse hair dryer that sucks CO₂ out of the air, it's this massive...it literally just takes the air, pulls CO₂ and compresses it...that has not shown to be as efficient as doing it at the source, but like I said, the answer is all of the above. You need all of the things.

Jackson – I see. When you say that you store the carbon you sequester...what do you mean?

Leland: You put it into the ground, into a well, and it stays there. Think about how oil drilling works. They put these machines way down into the ground, they go vertical, they go horizontally – which is fracking, which got a lot of gas and oil, and you actually get earthquakes and land settlement because you're actually just sucking stuff out of the ground, and like 'hey why don't we just put CO₂ back down into there?' Take the byproduct of what we burnt, and they're realizing that that can work.

Jackson – Would you say that there are any sort of environmental or health, like pollution-wise, risks of storing carbon in the ground?

Leland: Well, so not as...it really depends upon the ground – there's soil and rocks that are better for storing than not, but at the end of the day, if you're putting CO₂ where oil was...I'm not that smart, but that can't be worse...no, the side effects from storage...it's not like that isn't a consideration, but it's not an issue – it's done in a way that it doesn't fuck up the water table or the ground...you're not making it worse in that regard.

Jackson – Wait...this may be a dumb question, but are they storing the carbon as solid carbon dioxide...like they condense it into a solid or is it just condensed gas?

Leland: I believe it's a liquid.

Jackson – Then I think it has to be very cold...

Leland: Yeah, but it's under compression.

Jackson – (reading) carbon dioxide can be liquified under pressure provided it's temperature is...oh! 88 degrees and a pressure slightly higher than atmospheric – that's actually surprisingly warm for a gas.

So then, I feel like we talked a little bit about this, but maybe asking this question explicitly could be helpful...why would CCUS, then, be a viable option for reversing, or fixing, climate change or emissions.

Leland: CO₂ in the environment heats up the globe, right? Cutting it and reducing it and getting it back to normal will do the opposite, that's why.

Jackson – Would you ever be able to scale carbon sequestration to a point at which you could, theoretically, get the world to being carbon neutral...I don't know if that's the right word...?

Leland: The answer is yes, and read the 2050, and 2030 studies, the answer is yes...but it isn't just one...it's not just sticking it in mines. It's sticking it in mines, it's using the reverse hair dryer, taking CO₂ that's a byproduct of burning or making some shit and using that CO₂ to make cement – cement is a huge carbon store – and it's all of the above, there's not just one thing that does it. But can you reverse it? Yeah.

Jackson – I was just actually going to ask you if there's some sort of viable economic option for using the carbon that you store, but you said making concrete...

Leland: No – making concrete, making jet fuel, making race car fuel – there are numbers of blue...blue carbon usage I want to say it's called...oh, green hydrogen, blue hydrogen.

Jackson – Hydrogen?

Leland: So it's blue fuel.

Jackson – Where do you get hydrogen from? Wait so you use the sequestered carbon to make blue fuel?

Leland: Let me double check...so there are a number of industrial processes and goods into which the captured CO₂ could be used.