Technopolitical Regimes and Climate Change
A Transcript of an Interview with the Carbon Cycle

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Despite the urgent response that climate change demands, debate over climate change policy goes round and round without showing signs that it can rest long enough for action to be taken. Meanwhile, the situation with the atmospheric commons continues to deteriorate. In a desperate attempt to constructively contribute to the climate change debate and break through the morass, this paper engages with Actor Network Theory which affords practitioners the freedom to dialogue with the non-human. The result is a transcription of an interview with The Carbon Cycle. Using the concept of the technopolitical regime, The Carbon Cycle identifies two broadly defined philosophies that humans use to frame climate change policy. The two technopolitical regimes, what The Carbon Cycle calls the Interventionists and the Egalitarians, are informed by conflicting values. According to The Carbon Cycle, humans will need to face the difficult challenge of negotiating a policy response to climate change that lies somewhere between the interventionist and the egalitarian strategies. Depending on the policy approach taken, the implications for society-nature relationships and democratic governance are radically different and are teased out in this conversation.

Transcript of *Conversations* - Series 2, Episode 8

FM: Hello, and welcome to this edition of Conversations where I, your host Fergal McFergalson, interview the world's most prominent and influential commentators. This week I am speaking with The Carbon Cycle. Ever since it was discovered roughly 150 years ago, The Carbon Cycle has remained relatively hidden from the public's consciousness (Weart, 2003). But recent concerns related to climate change have thrust The Carbon Cycle into the international, intellectual, and policy spotlight. Tonight on Conversations, we will explore this extremely political issue and hear from a true insider. Please join me in welcoming to the stage, [dramatic pause] The Carbon Cycle!

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[6] *Editor's Note:* While Philip Barnes is an Associate Editor for New Visions for Public Affairs, his identity was not disclosed to other members of the board as they considered whether to accept this piece for the peer-reviewed portion of this volume. Barnes recused himself from voting on this piece. The only board member aware of the author's identity as an Associate Editor prior to publication was the Editor-In-Chief.

[Tepid audience applause]

[The Carbon Cycle enters stage left and waves to the audience]

[A series of faint boos reign down from the upper balcony level]

[The Carbon Cycle shakes hands with Fergal and sits in the guest's chair]

FM: Carbon Cycle, thank you for joining us tonight.

CC: Thanks for having me. It's a pleasure to be here.

FM: First let me explain to our viewers why we invited The Carbon Cycle to Conversations. We all know about climate change. Well, the climate change issue is being called a 'wicked problem' (Rittel & Webber, 1973). What that means is that climate change is so deeply embedded within a complex web of social, economic, and political interactions that untangling that web and offering solutions which are acceptable, democratic, and realistic is an extremely difficult task (Hulme, 2009). In the worst-case scenario, the climate change issue is insoluble. The frustration experienced by policy makers, academics, and concerned citizens leads some to throw their hands in the air and declare the whole debate a waste of time. They argue the planet is going down regardless of the actions we take and that rather than debating the ways to rearrange the proverbial deck chairs on the Titanic, maybe we should begin to reach for the lifeboats (Heinberg, 2004). Not ready to give up hope just yet, some others are searching for alternative approaches to resolving the issue, Plans X, Y, and Z if you will. Belonging to the latter group, anti-essentialist sociologists and philosophers of science have suggested, in their desperation to catalyze action on climate change, that we humans engage in dialogue with the non-human world (Latour, 2005; Sayes, 2014). Proponents of Actor Network Theory, as it's called, argue that maybe those non-human voices – which after all are part of that complex web of interactions – can send signals that will better inform our decision making processes and outcomes. It might be a long shot, but if we're likely doomed anyway, what have we got to lose? It is for this reason that we have invited The Carbon Cycle to Conversations. We hope to initiate a meaningful discussion and uncover new knowledge and perspectives on the climate change issue. So with that being said, Carbon Cycle, why don't you tell us a little about yourself. Let's start with your age. Just how old are you?

CC: Well, I guess I've been around for about the last three and half billion years, at least since the first photosynthesizing life forms emerged (Olson, 2006). So I've been around for a while. I really have seen it all.

[Muted and ironic chuckles from a few members of the audience]

FM: And what have you been up to during those 3.5 billion years?

CC: As you and your well-informed audience probably know, because I'm The Carbon Cycle, I'm involved in the global circulation of carbon-based compounds such as carbon dioxide and methane. Basically what I do is take those carbon compounds, move them around, and put them in the right place at the right time. I should mention that my options for where I can conceivably put the carbon compounds are somewhat limited. The atmosphere is certainly one location, as are the oceans, the soil, and photosynthesizers, such as plants and algae. My job is to shuffle carbon from one of those places to another. For example, if there is a lot of carbon in atmosphere I can store some of the excess in the oceans. Also, and this is important, I can take those photosynthsizers and with the help of heat, pressure, and millions of years, turn them into fossil fuels such as oil, gas, and coal. Throughout my lifetime, the movement of carbon has been fairly slow and steady. Pretty blasé. True, there are events such as massive volcanic eruptions that have increased the quantity of carbon that I have to deal with, but I am always able to handle it. I always have, I always will. (Riebeek, 2011).

FM: So you are in charge of mediating and regulating carbon exchanges between earth, air, oceans, and living organisms. Is that a fair assessment?

CC: Yeah, that's a good summary of what I do.

FM: And you mentioned that for most of your life you have been able to manage these carbon exchanges. Part of the reason you've been invited here is because that no longer seems to be the case. Please tell us about that.

CC: Well, let me make one thing clear before continuing. I am still functioning properly. You seem to be implying that there is something wrong with me, that I am malfunctioning in some way. That's simply not the case. I am behaving and cycling carbon exactly as I should be. So before we continue this discussion, I just want to make that point abundantly clear. There is nothing wrong with me or with the decisions I make on where to store carbon.

FM: Thank you. I didn't mean to imply that you were dysfunctional in any way. Please, continue.

CC: Sorry to be so abrupt but I've been feeling a bit sensitive as of late. So recently, in the last half million years or so, average concentrations of carbon dioxide in the atmosphere have fluctuated between about 180 parts per million and 300 parts per million (Sundquist & Visser, 2004). Don't be afraid of these technical terms like 'parts per million.' It's only a concentration, kind of like the amount of tequila in your margarita. The more tequila in your glass, the more potent your margarita will be. The same principle applies with me, except that carbon replaces the tequila and the atmosphere replaces the pitcher your margarita came in. Anyway, so the concentration of carbon dioxide in the atmosphere has fluctuated over time but it has fluctuated within the lower and upper bounds of 180 and 300 parts per million. For thousands of years, up until about two hundred years ago, the concentration was stable but a little on the high end, about 280 parts per million (IPCC, 2007). But in 2013, atmospheric carbon dioxide levels surpassed 400 parts per million, the highest concentration in millions of years (Gillis, 2013).

FM: So what does that mean?

CC: It means that there has been, in the last two hundred years, a new source of carbon and I am storing it in the only place it can be stored: the atmosphere. The current concentration of carbon dioxide in the atmosphere is about 30% higher now than it was two hundred years ago. That is a big increase in a short amount of time. Because the oceans, soils, and plants are saturated with carbon compounds, and because it takes many millions of years to create those carbon-based fuels, the only conceivable place that I can put the surplus carbon is in the atmosphere, hence the increase.

FM: What is causing that increase? What is the new source?

CC: The new source is something that I have never seen before. You remember that I said that one of my storage areas is fossilized carbon, right? Normally that carbon stays fossilized. It's buried, stored underground in either solid, liquid, or gas form. Well, you humans have discovered this store of carbon – coal, crude oil, natural gas, tar sands – and have developed a healthy appetite for it.

FM: What do you mean by healthy appetite? We can't eat coal, at least not yet.

[Audience laughter]

CC: That's right, but you still choose to consume it. You combust coal, oil, and gas and use the energy it releases to power your civilization. There is a good degree of truth, at least in my humble opinion, of that whole 'the Industrial Revolution was the beginning of it all' narrative. Carbon-based fuel sources were

certainly known about and used before the Industrial Revolution, but they were never consumed in such massive quantities. From 1850 to 2000, global fossil fuel consumption increased by more than 13,000 percent (Smil, 2008). Once you humans consume those fuels and use the power to create and sustain your complex global society, the carbon that was previously stored is released into the atmosphere. That is the new source. In two hundred years, you humans have liberated the carbon that it took me many millions of years to lock away.

FM: Okay, but what difference does it make? Shouldn't we be proud of that achievement?

CC: It makes a difference because the carbon that I intended to be stored underground is now being stored in the atmosphere. Remember that I have no option except to store it in the atmosphere. Well, that increased concentration of carbon in the atmosphere is transforming the global climate. The planet's climate is changing, hence the term 'climate change.' What you've effectively done is spike your margarita with extra tequila. The fossil fuel binge you are experiencing is equivalent to a drinking binge, and as the historian Alfred Crosby (2006, p. xiv) said, "binges often end in hangovers." If you want to be proud of binging then be my guest. Just don't start blaming me if you wake up one morning with a ripping headache.

FM: What about those people that say there is nothing wrong with the climate, that it is just a completely natural rise in atmospheric carbon levels and that we have nothing to worry about?

CC: Those people can say whatever they want. No amount of evidence, scientific or otherwise, will convince those people one way or the other because there will always be some level of uncertainty. My functioning and the climate's functioning are very complex phenomena to understand. But about 97% of the scientific community who studies me is in agreement that you humans are so active that I have no option but to store the carbon in the atmosphere (Anderegg et al., 2010; Cook et al., 2013). Maybe another 15% on top of the 97% might be enough to convince the skeptics. So because of the unavoidable uncertainty, people will ultimately have to pass a judgment on this issue. Let me say this however, instead of debating among yourselves whether climate change is actually occurring or not, what you should really be discussing are the responses that people have proposed. The true/false debate on climate change is diverting attention away from the important debate surrounding climate policy.

FM: What do you mean?

CC: Let me try to explain it to you using the concept of the technopolitical regime (Hecht, 1998). Technopolitical regimes are basically groups within society that design and use technologies to achieve their political goals. When it comes to addressing the changing climate, there are two main technopolitical regimes: the Interventionists and the Egalitarians. The Interventionists are those that think that I am malfunctioning in some way. They see me as being disorderly, primitive, and imperfect. Interventionists seek to know me scientifically, how I function, and what my relationships with other planetary cycles and phenomena are like. They make my complex functioning legible by breaking me down into component parts, each part being a simplification of the larger whole (Scott, 1998). For example, it is because of the Interventionists that I am able to tell you that the concentration of carbon dioxide in the atmosphere is 400 parts per million. Interventionists have me figured out, or at least they think they do. They argue that if you humans are going to seriously address the changing climate, it is imperative to understand my functioning and processes in scientific terms. But the Interventionists often forget that there are other knowledge systems people use to understand that the climate is rapidly changing.

FM: What do you mean? How can we possibly know that climate change is occurring outside of scientific knowledge? What other knowledge systems are there?

CC: Some people are able to acquire visceral knowledge of the climate because they experience it intimately day in and day out (Borg, 2007). While these people cannot know atmospheric concentrations of

carbon dioxide in parts per million, they can nevertheless perceive that something out of the ordinary is occurring. Many people with visceral knowledge of the climate directly experience my functioning on a daily basis. Maybe they work outside. Maybe they hunt or fish or are in some way intimately connected to natural cycles. They have not erected technological or psychological barriers between themselves and their environment. Their cultures, lifestyles, and agricultural systems evolved with my pre-Industrial Revolution functioning and they now know that something is amiss. For example when crops fail to grow as normal or when heat and rain intensity change quickly over short time frames, people with visceral knowledge are able to perceive the presence of changing climactic forces. Contrast this with people who work in air-conditioned buildings and who ride around in air-conditioned vehicles. Speaking of those vehicles, the Jeep Grand Cherokee has something called "climate control" (Jeep). I couldn't make this stuff up. The advertisement says something like, "With the push of a button the Jeep memory system kicks in for custom comfort. Select AUTO mode in the dual-zone climate control and experience tailor-made temperature. An advanced infrared sensing device automatically checks the temperature of the driver and front passenger, as well as the air temperature inside the cabin to create a customized, comfortable environment." What kind of visceral knowledge of climate change is possible when you can "experience tailor-made temperature" in a "customized, comfortable environment"?

FM: Let's get back on track here. What does this all have to do with technopolitics?

CC: Sorry. I get sidetracked sometimes. So the Interventionists make me legible so they can understand why I am storing the surplus carbon in the atmosphere. In their minds I am disorderly, primitive, and imperfect, and they believe that technological interventions, hence the name Interventionists, will make me orderly, modern, and perfect. Some interventions that have already been implemented or are being proposed are technologies and techniques such as market-based carbon emissions trading schemes, technology transfers from developed to developing countries, bioengineered trees that photosynthesize more rapidly, carbon capture and sequestration, and massive space sunshades (Coninck et al., 2008; Early, 1989; Jansson et al., 2010). The majority of Interventionists reside in technologically advanced countries where the rhetoric of progress and the technological sublime goes largely unchallenged (Marx, 1964). Most of those countries are also fiercely capitalist which contains a number of core beliefs about market dynamics, limitations to political interference, and the unassailable march of technological progress. From what I can tell, this is why the policy approaches of the Interventionists are primarily mediated through free market mechanisms, as in the case of carbon emissions trading schemes and technology transfers, or through high-technology solutions such as bioengineered trees, carbon capture and sequestration, and space sunshades. Taken together, these schemes, from market mechanisms to technological projects, are designed to reengineer my normal functioning and when they combine they create a much larger complex technological system (Hughes, 1987). Through this system, Interventionists are looking to achieve the maximum climactic and economic benefit at the lowest cost (Steinberger & Roberts, 2010; World Commission on Environment and Development, 1987). By conflating technology, politics, and economics, this technopolitical regime is future-oriented. The history of carbon compound releases and the nations responsible for them has no place in Interventionist technopolitics. Finally, rather than addressing the root cause of why I am storing carbon in the atmosphere – namely the overconsumption of fossilized energy – this regime is looking to maintain its status as the dominant technopolitical ideology. By intervening technologically into my normal functioning, the Interventionists are seeking to sustain their technopolitical regime, which is built upon a foundation of massive fossil fuel consumption, economic growth, and the commodification and manipulation of nature (Beckerman, 1996; Easterbrook, 1995; Hawken, Lovins, & Lovins, 2010). They want to take what they've learned about climate control in their Jeeps and apply it to me so that Western nations can continue to ride along in gas guzzling "custom comfort." Climate control really is the ultimate goal of the Interventionist regime.

FM: You've described the Interventionists, but what about the other technopolitical regime? What did you call them? The Egalitarians?

CC: That's right, the Egalitarians. I would describe them as people who value technological restraint, conservation, and, whenever possible, non-intervention. Egalitarians refuse to invest time and energy in high-tech projects such as space sunshades and genetically modified trees. For them, a tree that is genetically modified to accelerate the photosynthesizing process is no longer a tree – it is simply a machine for capturing and storing carbon (Russell, 2010; White, 1995). All of the intrinsic aesthetic, cultural, and ecological value associated with the original tree is lost once it is bioengineered and reconceptualized as a machine. Egalitarians are not technophobes or Luddites, however. They believe technological improvements can and should be made in the name of energy efficiency and conservation but they argue that the outcomes of these innovations must be democratically governable and benefit all member of society equally, not just those who can afford it (Illich, 1974; Ninan, 2008). Technologies that are human-scaled, socially and politically inclusive, decentralized, locally controlled, and often self-powered are the sorts of technologies that appeal to Egalitarians (Huesemann & Huesemann, 2011; Illich, 1973; Schumacher, 1973). On the economic side, Egalitarians reject market-oriented projects such as carbon emissions trading and technology transfer agreements which they see as advancing neocolonial tendencies and they also reject so-called objective rationales such as cost-benefit analyses of technologies to resolving climate change (Agarwal & Narain, 1995; O'Connor, 1989; Schreuder, 2009). Politically, this group is quick to point to the historical record of carbon emissions in order to demonstrate that governments and citizens of Western nations are responsible for the vast majority of the surplus carbon in the atmosphere. Egalitarians argue that because the developed world is responsible for causing climate change, they must be the one to bear the burden of addressing it. However, they must do so in an equitable and socially just manner such as reducing energy consumption and overall carbon emissions among themselves rather than shifting their responsibilities onto others (Hoerner & Robinson, 2008). The Egalitarians problematize the technopolitics of the Interventionists by arguing for climate justice, a concept that is designed to highlight the current and historical disparities in carbon emissions between industrialized and industrializing peoples (Hayward, 2007). Finally, the Egalitarian technopolitical regime directly challenges the dominant position of the Interventionist regime. The Egalitarians are looking to characterize the Interventionists as those who pursue an unequal, unjust, and socially and environmentally destructive policy agenda. Make no mistake, the two technopolitics are in conflict with each other (Newell, 2008; Sachs, 1993).

FM: What do you mean?

CC: Public problems and the policies proposed to deal with them are socially constructed with values and while Interventionists prioritize freedom as a value, Egalitarians prioritize justice (Stone, 2012). On this issue, it is going to be difficult to find the right balance between the two.

FM: Can they coexist, the Interventionists and the Egalitarians, or do we have to have all of one and none of the other?

CC: That's a great question and one I can't really answer. It's really up to you. I mean, the Interventionists want to use techniques and technologies to engineer me so the status quo can be maintained while the Egalitarians want to transition away from current conditions and see low-carbon and low-consumption living diffuse throughout the developed world (Hopkins, 2008). The two regimes are very different politically and technologically. Mutual coexistence will likely prove challenging over the long term. Ultimately, you humans need to have a broad-based discussion about how much balance you want to find between the two and about the potential consequences, positive and negative, of pursuing a particular technopolitical program. In that respect, I recommend that you emulate the Amish approach to managing change by forecasting and debating the possible social and environmental consequences of creating, adopting, and employing certain types of technologies (Kraybill, 2001). One problem that I see with your increasingly complex society is that you tend to have that discussion after the fact or when it's too late.

FM: Who should be part of that discussion? I mean, you're talking about an issue that has consequences for every person on the planet. Not only that, the policy decisions we make today will have a dramatic impact

on future generations. So it's not like the whole of humanity, including future humans, can sit around a table and talk this through.

CC: You're absolutely right. The inability of some communities to meaningfully engage in and participate in the debate is part of what makes climate change such a "wicked problem." Regarding those individuals not yet born, the one way to bring their voices into the discussion is for the presently living to speak on their behalf. And that necessarily involves passing a judgment on what future generations will want and need (Weiss, 1992). It's certainly a major issue for at least two reasons. First, it's almost stating the obvious to say that you are never going to make a 100% accurate judgment on the wants and needs of future generations. You'll have to accept that whatever decision you make will not be optimal. So rather than thinking about the impact of present decisions on future generations in absolute terms such as "100% accurate" or "optimal," maybe a more appropriate and realistic yardstick would be "satisfactory." Second, passing a judgment and making a monumental policy decision on behalf of future generations has ethical implications because you will unavoidably infringe on the liberty of future generations. No matter the technopolitical regime you chose, whether Interventionist or Egalitarian, you are going to structure the world for future generations in some way, which will limit their ability to fully express their as-yet-unknown values. There's no avoiding this, so the least you can do is acknowledge up front that you accept the ethical responsibility to speak on behalf of those not yet born.

FM: Leaving future generations aside, whose voices can realistically influence the "monumental policy decision," as you've termed it?

CC: Well, as you've said, the Actor Network for climate change is unfathomably complex so it's not like the whole world can sit around a table and debate the course of action. But even though you can't have a conversation at the global level, individuals can still engage at some scale. What might that look like in practice? It might look like a dinner-time conversation with your family. It might look like a climate change book club. It might look like letters to your members of government. Speaking of which, if you are currently a member of government, you will need to do a lot of listening, absorbing, and reflecting. It will require you to be extremely proactive and invite a plurality of voices to engage in the debate, especially those voices that lack the financial means to bend your ear. It will require you to critically investigate the possible social, political, environmental, and economic consequences of choosing a climate change policy approach, whether it is interventionist or egalitarian in nature. And perhaps most importantly, it will require a bit of humility on your part (Sardar, 2010). First, you need humility to admit that the choice is never going to be a perfect one. There is no silver bullet, so there is no room for a dogmatic position on this issue. Second, you should be humble when you think about the enormity of challenge, the unprecedented nature of the choice, and the implications for humanity. That should be enough to give you pause and compel you to take your responsibility seriously.

FM: We've got a minute or two left so is there anything else you'd like to say before we finish up? Any final words?

CC: I'll end with a quote from Lewis Mumford. He wrote that, "from late Neolithic times in the Near East, right down to our own day, two technologies have recurrently existed side by side: one authoritarian, the other democratic, the first system-centered, immensely powerful, but inherently unstable, the other man-centered, relatively weak, but resourceful and durable" (Mumford, 1964, p. 2). I believe that the policy response to climate change will involve a negotiation between the Interventionists and their authoritarian techniques on the one hand and the Egalitarians and their democratic techniques on the other (Szerszynski et al., 2013). This is the debate that you humans are going to have to have. The Interventionists are marketing their technopolitical regime as a planetary savior. They want to violate me by manipulating and controlling my functions. They want to replace my organic qualities with artificial ones by unleashing their technocratic system of economic markets and hypermodern technologies, eventually incorporating me into the system by transforming me into a productive machine (White, 1995). For them, climate control is really the ultimate

goal. On the other side are the Egalitarians. They support the development and use of democratic and human-scale technologies, those which are simple, governable, and equitable (Illich, 1973; Winner, 1986). Controlling my functioning through authoritarian technologies and large technological systems is completely unacceptable to them. Mumford's insights resound with the Egalitarian technopolitical regime when he argues that the developed peoples of the world must "sacrifice mere quantity to restore qualitative choice" (Mumford, 1964, p. 8). In other words, policies designed to reverse the practice of overconsumption is the democratic way to address climate change according to the Egalitarians. But it is really is up to you to balance these two technopolitical regimes. Hopefully you can come together in a constructive way and make an informed decision.

FM: Thank you Carbon Cycle for taking time out of your busy schedule to speak with us. We certainly appreciate it, and we look forward to having you back on the show. This certainly has been an enlightening discussion. Let's hope that it stimulates the larger debate you're looking for. Well, that's all the time we have for this edition of Conversations. Please join us next week when I will interview Ben Bernanke's cat. Good night.

[Audience applause]

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