

Episode 6: Our Plastic Future

Trace Material: Stories from the Plastics Age

Ava:

For the past five episodes, we've explored the social history of plastic from when it was first invented in the late 1800s, through an entire century of innovation and crises. But today, we're not talking about history.

Burgess:

We've reached the present day. And right now, we're drowning in plastic. From Parsons Healthy Materials Lab, this is Trace Material: Stories from the Plastics Age.

[Music: Rainbow Road Crescendo]

Ava:

Way back in episode 1, we talked about Monsanto's House of the Future, built in Disneyland's Tomorrowland in 1957.

[House of the Future Music]

Burgess:

In the 1950s, plastic was at the center of America's imaginings of the future. In the post-war boom, plastic democratized objects that were formerly only accessible to the wealthy. In the world of tomorrow, people wouldn't be buying fine china and silk shirts, everything could be made from plastic.

Ava:

For many Americans living at the time, plastic was *the* material of the future. It represented American ingenuity. It was born from new chemical frontiers. It was going to make everything easier, cleaner, and cheaper.

Burgess:

And, by and large, those predictions were correct. In many ways plastic has made modern life easier. It's much cheaper than other materials, and in some settings like hospitals, it is the most sterile option.

Ava:

And it is certainly, without a doubt, the material that has come to define our time. But as plastic's flaws become more and more apparent, does it still represent the future? And are we thinking about the future as something shiny and bright like the people who lined up to see Tomorrowland in 1957?

Burgess:

Okay so, I've got a thought experiment: If Disney built a Tomorrowland today, what do you think it would look like?

Ava:

I think it would have some sort of race car ride sponsored by Tesla that was 100% electric and self-driving.

Burgess:

Oh my god, totally. And the house of the future might be filled with completely compostable seaweed based bioresins.

Ava:

Is that a thing or did you make that up?

Burgess:

No no, it's a thing! Or it will be...

Ava:

Oh okay. (laughs) I should have known. But, honestly? I don't think anyone would go to Tomorrowland built in 2021.

Burgess:

Yeah, I mean is the entire idea of "the future" now something that's just causing us... anxiety to even think about?

[Music]

Ava:

According to a recent poll, more than 40% of Americans felt "disgusted" or "helpless" about climate change.

Burgess:

Yeah. Not great feelings.

Ava:

Yeah. So today we're going to dig into the current feelings of climate anxiety, especially as it relates to plastic. To do that, we're going to speak to two very different teen activists, and then a material designer working at the forefront of bio synthetics to try to piece together what exactly we think of when we think of the future in 2021.

Burgess:

Grace Cuddihy and Vivian Tan are both high school students coming of age during the absolute tornado of crises we currently find ourselves in. And they're also both very busy trying to do their parts in building a better world. We spoke to them individually about their thoughts on plastic, and their hopes for the future.

Ava:

It should go without saying, but we'll say it anyway, it takes a lot of bravery to be interviewed in any stage of life, but especially when you're a teenager. So Grace and Vivian both deserve some extra credit.

Burgess:

Vivian lives in British Columbia, Canada. She's a three time TedX speaker, and is about to start applying for college. And as we all know, that's a lot.

Vivian Tan:

Once you reach grade 12, you have to think about "what are you going to do in university or post-secondary? Who do you want to be? What do you want to be?" I don't know, once you kind of reach that stage where you turn 18, that's when you feel a lot of responsibility... things hit you because you know, you're not a teenager anymore. You are an adult. With that, there's a lot more expectations placed on you. A lot more stress, I would say, because there is a lot more things around your life that you have to manage and you have to consider.

Burgess:

But applying to college is honestly the least of her worries.

Vivian:

I actually do have eco anxiety as well. Like is there even going to be a future? Because you know, it's piling up in plastic. The ocean is going to be drowning in plastics. Yeah, you can worry about if I'm going to have enough money, if I'm gonna be happy and such. Yes. I know that that's important. But also living a sustainable life and trying to be eco-friendly. If you don't take that as a priority as well, then you might not even have a future at all.

Ava:

For Vivian, and I would also venture to say for us all, contemplating the climate crisis feels daunting. But instead of just being paralyzed by the enormity of it, she started thinking about taking small steps close to home.

Vivian:

When I kind of saw how people threw away a lot of plastic at events, I used to help others, kind of educate them on what goes in which bin like, waste diversion, we say. And that was when I saw a lot of people within my city didn't really know what goes in which bin. I even saw some people put compost items into the garbage.

Burgess:

Those small steps also included something that I think of as a terrifying BIG step: she signed up to give a TED talk. She's found ways to make small changes in her own life and take control over her own contributions to climate change and plastic pollution. Her aim with her TED talks is to inspire and guide others to make those small changes too.

Vivian:

Your life doesn't have to change super completely, you know, all the time. It's a journey. You can't just suddenly do a 180 in your life. You're not going to follow through. Start taking small steps to go on that journey and keep on taking those steps. You don't need to say I'm going to just immediately cut off plastic all of my life. So kind of a small step to take that's more realistic for sure is to say, I'm going to start thinking about how much plastic I'm using and I'm going to see what single use plastics I can kind of cut out in my life. It's a process. But when everyone thinks this way, that's when a lot of real change can happen. So all it starts with you.

Burgess:

When we spoke with Vivian, we could tell she was, in many ways, optimistic about our collective future, but that she believes there's a lot of work to do—and that we all have to do it. For Vivian, the future is not guaranteed. It seems that she feels that on a personal and a collective level. And she spends a lot of time thinking about it.

Ava:

Burgess and I are only about ten years older than Vivian, but, at least for me, I didn't feel like the entire world was about to end when I was in high school. When I thought about the future, I didn't think about in terms of America's or the world's collective future, I just thought about my own. But now that I say that out loud, maybe I was just a selfish teenager.

Burgess:

I think you probably were. [laugh] No, I definitely did not think that way either. I mean I think the same is probably true for teenagers who waited in line to visit the Home of the Future back in 1957. They were probably thinking, like, "Oh, wow, I might be able to have a whole bunch of cool plastic stuff in 1987." Not, "I wonder how plastic will affect human and planetary health."

Ava:

Yeah totally. When we thought about the future we were all talking about hoverboards, and it of course came to pass... hoverboards are a thing, right?

Burgess:

Well, yeah, but not like Marty McFly hoverboards.

Ava:

They just used the name?

Burgess:

Yes. It's a real let down.

Ava:

They don't hover?

Burgess:

No.

Ava:

[laughs] Okay. But the kids these days are apparently not feeling like they have enough security to dream. Well, at least climate activists like Vivian and Grace anyway.

Burgess:

Grace is an NYC local, and they're very active within both local and national climate organizations.

Grace:

My name is Grace Cuddihy. I use she/they pronouns. I am a junior and I'm an activist with TREEage and the Sunrise Movement.

Ava:

And while Grace has many of the same feelings as Vivian, they have some different ideas about how to act on them.

Grace:

So there's like a zero waste movement that's at my school. And there's nothing wrong with that. I just personally don't align with the values of zero waste because I think that zero waste puts a lot of personal responsibility on people. And also tends to have a lot of very classist attitudes in when we're how to go about fighting the climate crisis. And also just, I think that the idea of zero waste and the idea of using a tote bag is what is going to fight the climate crisis is something that was a myth created by corporations through advertising and campaigns. So it was a way for them to put the responsibility on individual people and on consumer's decisions to push off of their own responsibility. My club members have a joke that my favorite saying 100 corporations produce 70% of global emissions, but when we're living in a world where that's the case, the reality of trying to put climate change on the individual consumer is kind of ridiculous in my opinion.

Burgess:

Don't worry, Grace isn't saying we shouldn't use our beloved tote bags, just that using them isn't going to solve the climate crisis. They say the climate crisis is simply too big to be solved by consumers alone and believe we need government intervention.

Grace:

A huge part of the pillars of my club is that individual actions are great. If that's something that you want to pursue, we're never going to discourage you from trying to be more sustainable in your own personal decision making. However, that's not enough when we're facing a nine-year deadline. So we're trying to fight for environmental changes through political change. Because we feel like political advocacy is broad strokes more accessible and also broad strokes more effective. So we are fighting to elect more progressive electeds in New York City locally, and also to fight systemic injustices generally.

Ava:

Grace currently holds leadership positions in both her school club, and within the Sunrise movement. For the Sunrise movement, they're on constant zoom calls, have logged hundreds of hours of phone banking, and are one of the decision makers for Sunrise's valuable political endorsements. Which means they're very busy on top of being like any other high school junior.

Grace:

It's been a little difficult to balance trying to engage in electoral politics and trying to shift New York City towards progressivism and also passing pre-calculus. It's also very hard to stay optimistic where it's like, what's the point of doing math when, if we don't do anything, when I'm 25, we'll be doomed, you know? So it's like, what, what is the point of staying motivated to finish high school?

Burgess:

It totally makes sense to feel that way. I mean, it's like bad news piled on top of worse news lately. Something that is clearly specifically weighing on Grace is the UN's statement in 2019 that we only have 11 years to change consumption patterns before there is irreversible damage to the planet.

Grace:

Older people will often say to me like, "Oh, like your generation is so active." And it's like, well, we have to be. You know, like we don't really have a choice anymore.-We have nine years before we're irreversibly doomed, and in nine years I'll be 25. So I'm not going to be making climate legislation when I'm 25. So it's still going to be your responsibility. Like, sorry. I feel like, I'm going to pull up a meme really quickly that I want to show you just because like, I think it's really funny.

Ava:

Yeah, things got *very* Gen Z on our call with Grace.

Grace:

So it's basically it's the meme template where it's like a person drowning and they're asking for help. And it's like youth climate activists asking politicians to save their lives and futures. But instead of that, the politicians are like, you're so inspiring, but still leave us drowning in the sea without helping us at all. I get a lot of "you're so inspiring. You're so well-spoken. You're so motivated." And then when I'm like, awesome, let's enact progressive legislation, let's pass a Green New Deal. It's like, Oh, you're too young. You don't understand how the world works. You're idealistic. So there's kind of this idea that I'm simultaneously too young to understand how the world works, but yet also old enough to be responsible for saving it.

[Music]

Ava:

It's stress about the future—and the stress of feeling like you're getting a performative high-five instead of a helping hand—that has come to define Grace and Vivian's generation. They're asking themselves, and the rest of us, big questions with their roots in big problems. And they aren't easy to answer.

Burgess:

A lot of big questions, and it seems like especially ones concerning the climate crisis, don't have one answer. Instead, they have to be chipped away at in many different ways.

Ava:

When it comes to our plastic, we have popular solutions like waste reduction, better recycling systems, and choosing plastic alternatives. It's that last option—the alternatives—that we want to spend the rest of the episode thinking about.

Burgess:

Alright, so if we're thinking about materials that might be more sustainable than plastic, there's one that's been getting a lot of buzz lately called bioplastic. But, like petroleum-based plastics, hammering out a clear definition of bioplastic is easier said than done.

Ava:

In a lot of ways, people are thinking about bioplastics like people thought about plastics in the early 20th century: they're new amazing chemical explorations that might save the world and make everything better for everyone!

Burgess:

Often people think putting words like “bio” or “eco” in front of things automatically means that they're healthier. But it's actually more complicated than that. There are a lot of people out there imagining a lot of “eco” and “bio” alternatives to plastic right now. But for the rest of the episode we're going to focus specifically on bioplastics and unpack exactly what they are and how they might help us.

Ava:

We first found Vivian because when you type bioplastics into youtube, her TED Talk from 2019 is the first thing that comes up. And that talk, which has been viewed almost 20,000 times, was born out of a science project at school.

Vivian:

I actually was interested in kind of looking at plastics and seeing if there was an alternative kind of creating a plastic that could decompose. I eventually found out that, Hey, there is a such thing, it's called a bioplastic. And I decided to try and make a bioplastic of my own. Sadly it didn't really go that well, like it, yes, it could decompose, but at the same time it was kind of too weak.

Ava:

Thinking material innovation was maybe not for her, Vivian decided to take a different approach to helping us find our way out of the plastics crisis.

Vivian:

There is a lot that I saw. So then I was like, okay, well maybe what can I do to help? And kind of tell people, like, what is, is there an alternative to plastic? So that was why I also wanted to give that TEDx Talk.

Burgess:

So she did just that. In her TED Talk she spreads the good news of bioplastics. Here's how she defines them:

Vivian:

So in a sense they're kind of in a sense... they're plastics. Yeah. For sure. Of course. There's bioplastic. They should be plastic, right? But they're made out of renewable materials instead of petroleum or like an oil within the earth that is called a fossil fuel, which is not really a renewable source.

Ava:

Okay so essentially bioplastics are just plastics. Remember early plastics like celluloid weren't made of petroleum, they were made of renewable materials like cellulose—or plant matter. In the post-war period, we got used to the idea of plastics only being made from petrochemicals, but it wasn't always that way.

Burgess:

So the term bio-plastics is for the first time separating petrochemical based-plastics and everything that's not petrochemical based into two distinct categories: plastic and bioplastic.

Ava:

But bioplastic is truly an enormous category, and it can mean countless different things. Not all bioplastics are biodegradable or compostable, or even much healthier for people and planet than regular plastics. It's actually a bit of an overwhelming concept.

Burgess:

Luckily, we were able to chat with Amy Congdon, a materials designer who helped us break down what some of these terms mean.

Amy:

My name is Amy Congdon. My background is I'm a designer by training, but specifically textiles. My PhD is in Tissue Engineered Textiles and I'm now full time at Biofabricate and I'm Head of Design Intelligence there. Biofabricate essentially is a consultancy and we work with biomaterial innovators, consumer brands, and investors who are all interested in growing a sustainable future. And our vision is a sustainable material world built with biology, not oil.

Burgess:

We talked a lot about public perception of the future so far in this episode, and Amy is trying to actually help design the future.

Ava:

Amy primarily works within the world of textiles. Currently, materials like polyester, fleece, and almost anything you might find in the athleisure aisle are plastic. And they pretty much dominate the textile market.

Burgess:

You might be more familiar with the term “synthetic” when referring to fabrics like these, but in this context, it means the same thing as plastic.

Ava:

There are a lot of “bio” terms in the space Amy works in. And they can feel pretty complex. For those of you who are interested in what biobased vs biosynthetic means, you can check out the diagram we’ve linked to on our webpage.

Burgess:

But something we do want to make clear here is that these terms are still in flux, and few of them have legal definitions. And even those that do, like “bio-based,” sometimes feel misleading. For instance, to be “bio-based” a carpet only needs to have 7% “Bio” content. The rest can be synthetic.

Amy:

So a poly cotton fabric that's 25% cotton and 75% polyester could be called a bio-based fabric.

Ava:

Okay so if a carpet company added 7% wool—a biobased material—to their poly blend, it would legally now be a biobased material. Even if it was 93% plastic. If I were shopping for carpet and trying to prioritize natural fibers, that would certainly feel misleading.

Burgess:

For sure. And I think it’s worthwhile to think about the WHY behind these materials. Are they being created so that they’ll sell, or so that they’ll reduce plastic waste?

Ava:

Or maybe both? Amy impressed upon us that many companies want to invest in new materials, they are en vogue after all, but they don’t want to stop production to do it. Nor do they want to sell a different product to their customer. Really, they’re just looking to change one little aspect of their enormous production system.

Amy:

You're still talking about making materials like polyester or nylon, but you're looking to get that, sort of the chemicals that are used to make that from a biomass. You're essentially looking to make a drop-in replacement. But you're just looking to make it in a different way.

Ava:

Okay, let's stop and think about that for a second. Biosynthetics are a drop-in replacement for synthetics. So many of the issues we've spent this past season discussing might still happen if we move to bioplastics. Overflowing landfills stuffed with single use bioplastics? That doesn't sound like a future we want.

Burgess:

These drop-in replacements are certainly better than the status quo. Hey, I'll take any reduction to our global carbon footprint as a win. And if they can make plastic forks or basketball shorts out of sugar instead of crude oil, that will make a difference. And while if this was widely implemented oil refineries might give way to sugarcane fields, the rest of the system—the dangerous factories, the toxic groundwater, the incinerators pumping out dioxin, would stay the same.

Ava:

So can new materials give way to new systems? That's really what Amy and her team are most interested in. And they believe that a certain class of materials—those that are bio fabricated—might be able to do just that.

Amy:

Bio-fabricated materials are produced by living cells. So for example, mammalian cells and micro organisms such as bacteria, yeast, and mycelium. So an example of that is, yeah, you could have a bacteria that's making you a dye that you would use to dye a textile. You could have mycelium that's growing you, an acoustic panel to go on the wall of your home or your office. Or you could have a bacteria or yeast making you a protein, like a silk or a collagen. And then you might turn that either into a sheet material or into a yarn or, you know, a bacteria that's making you a concrete block, you know, or a tile. So all kinds of applications.

Burgess:

These materials are different because they're alive. In our first episode, we talked about how before the chemical revolution, materials were born of the earth and returned to the earth. They were a part of the lifecycle we innately understand as humans. What's exciting about biofabricated materials is that they are part of that natural lifecycle once again.

Amy:

When I was studying and I heard about the ability to like grow materials, like as a designer that blows your mind and you go to all of the really exciting things that you can do. And do I believe that, you know, we can learn from and collaborate with nature to make an incredible material? Like a sustainable material world, built with biology, not oil, you know, that's our vision. And I absolutely believe that will be, that is possible, but it takes time. So I think the more you work in any industry, you have a realistic, you get a lot of realism around how long that's going to take and what the complexities are. So you

always have to balance the realism and what you're experiencing with, okay, what your hopes are and what you see is possible.

Ava:

There's a lot happening across these fields. So why are we still using plastics at all? If there are all of these great materials, can't we just stop using fossil fuels and stop the UN's ticking time bomb of ultimate planetary destruction?

Burgess:

Well, not yet. Not seamlessly at least. These new materials just aren't quite ready. If we think back to early plastic innovation from a century ago, plastics were first created in the 1860s, but didn't become mainstream until many decades after that.

Ava:

And as frustrating as that answer feels, it makes complete sense. And it's tempting to say, well what's the healthiest, most sustainable material, let's throw all our time and money behind that one. But that wouldn't really work either.

Amy:

I think it's fair to say that we need as many solutions as possible. And unfortunately there's no silver bullet. We should be looking at all of the different solutions that we, and tools that we have at our disposal to help make a difference in regards to the environment and sort of climate change. You can't, you know, assume that if something is quote-unquote "bio," that it's better. You know, we need to go beyond assumptions and do the work to understand as best as possible what's the impact of the material or product that you're using and not just making assumptions.

Burgess:

But I think right now, we all feel desperate for solutions. We want to be able to imagine a Tomorrowland that is just and equitable, sustainable and healthy, and we're hoping these new biomaterials might literally pave a road there.

Amy:

The only truly sustainable thing to do is to not, not make or buy anything. Everything has an impact. Yeah. Everything has an impact. So it's about understanding what that impact is, what you care about, and what moves the needle forward in a positive way.

Ava:

We all have to make choices as consumers, and if we're lucky enough, as makers. And those choices don't feel easy right now. But there is some power in those choices, and we wield it every time we decide to buy something or not buy something.

Burgess:

And beyond our own consumer habits, how do we spend our time? Should we be phonebanking or organizing boycotts or picking up litter or getting more tote bags?

Ava:

Maybe we should all do just what we can, and help move the needle in the ways that are accessible to us.

[Music]

Burgess:

This season we set out to trace the social history of plastic. We wanted to know what it's represented to everyday Americans, and when and how it entered our lives in such a massive way.

Ava:

In less than a century, plastic went from being a brilliant new material that might save the planet, to the symbol of the waste and excess that's destroying it. Along the way, Americans' understanding of our country and our culture has changed. And plastic has tried to keep up with the times.

Burgess:

We've done our best to capture all the twists and turns in plastic's story in 6 episodes, and we know that's left you with a lot of information. So although this is the last full length episode, you'll get one more plastic update from us.

Ava:

Next time we'll be recapping the story, reacting to it, and sharing some content that we haven't been able to share yet.

Burgess:

Thank you thank you for listening to Trace Material: Stories from the Plastics Age.

Credits

Jonsara Ruth:

Hi, this is Jonsara Ruth from the HML Team, thanks for listening! *Trace Material* is a project of Parsons Healthy Materials Lab at the New School. It is produced by Ava Robinson and Burgess Brown. Our project director is Alison Mears and our research assistant is Olivia Hamilton.

If you've been enjoying this season, please take a moment to rate and review on Apple Podcasts, it really makes a difference.

Thank you to Vivian Tan, to Grace Cuddihy, and to Amy Congdon for lending their voices, experiences and expertise to this episode.

For more information, head to our website at healthymaterialslab.org/podcast, and be sure to give us a follow on instagram @healthymaterialslab.

Trace Material is made possible by funding from the National Endowment for the Humanities and support from Friends of Healthier Materials. Our theme music is "Rainbow Road" by Cardioid. Additional music from Blue Dot Sessions.