Big Finance, Big Tech AI Titans Ride Next Wave of Colonization at COP16

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Jim Thomas portrays the 2024 Global Biodiversity Convention as a struggle between the interests of the world's biggest profit makers and the interests of people struggling to safeguard their planet, their food and their economies. Blandishing promises of technofixes and a meager fund, the profiteers got their way. Produced by GPEnewsdocs.

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LYNN FRIES: I'm Lynn Fries producer of GPEnewsdocs. With guest Jim Thomas, this segment explores the issue of the integration of artificial intelligence with synthetic biology, what's called generative biology.

We will look into the grand scale yet poorly understood implications – for people, nature, and the economy – of this new technology. And how fueled by the world's largest digital tech companies, generative biology hype is undermining agendas of vital public interest.

This in key realms like biosafety for the protection of human, animal, and environmental health from biological risks. And biopiracy, the unethical appropriation of biological resources or traditional knowledge without proper compensation or consent.

We will look at this in the context of the 2024 summit at the world's premiere global platform for governance of biotechnology, the UN Convention on Biological Diversity the CBD. The 2024 summit, COP16 to the CBD was held in Cali, Columbia. The prior summit COP15 to the CBD was held in Montreal in 2022

Our guest, Jim Thomas served as a member of the UN CBD's expert technical group on synthetic biology. It was on the recommendation of its expert group, that in 2022 the CBD established a process of horizon scanning, assessment and monitoring of new developments in synthetic biology.

With this decision the CBD, so the Biodiversity COP continued along a path that differentiated itself from the UNFCCC, so the Climate COP where corporate capture of environmental regulation in the UN system has

become an issue. This apparent in outcomes reported from COP21 in Paris through COP28 in Dubai into the present summit under the auspices of the UN Framework Convention on Climate Change so the UNFCCC.

Subsequent recommendations of the CBD expert group identified the integration of AI and synthetic biology as an urgent key issue for the CBD to address through deep dive technology assessment.

In the lead up to 2024 Biodiversity summit, a big question raised by Jim Thomas and other experts was whether or not the CBD would follow that recommendation at COP 16. In other words, would the CBD separate hype from reality or jump onto the generative biology bandwagon.

In his report, Black Box Biotech as well as in an online briefing with other experts, Jim Thomas has addressed all the above. GPEnewsdocs carried this story on Oct 4th in a video report published under the title of Black Box Biotech. Today's conversation recorded Nov 5th is a sequel to that series.

Jim Thomas is a researcher, writer, and strategist with almost three decades of experience tracking emerging technologies, ecological change, biodiversity on behalf of movements and in UN fora. About two years ago he launched scanthehorizon.org where he posts on his current work. Prior to this, Thomas was Co-Executive director and Research Director of ETC Group.

Welcome Jim. Thank you for joining us today.

JIM THOMAS: Well, thank you. Thank you, very much.

LF: So Jim you were in Cali for the full three weeks of COP16. I see on your home page scanthehorizon.org you already uploaded a COP16 rundown [here & here].

Jim for those of us who are not seasoned watchers of this space, start by giving us a handle on some basics on the agenda pursued by UN CBD throughout its long history and what changed this time around at the 2024 summit.

JT: So what just wrapped up in Cali in Columbia was the 16th Conference of the Parties for the Convention on Biodiversity, sometimes called CBD. And this is a Convention that's been around now about 25 years. It came out of the Earth Summit in 1992.

And it was really the premiere of those three Summits that came out: the Desertification Summit [UN Convention to Prevent Desertification], the Climate COP [United Nations Framework on Climate Change], and this Biodiversity COP [UN Convention on Biological Diversity} and it deals with a wide range of environmental issues.

And really for most of that 25 years, the Biodiversity Convention has been concerned with precaution, particularly over genetically modified food and crops. It's been concerned about trying to deal with putting in place regulation and guidelines to protect biological diversity and to scan new threats.

And so the questions around genetic engineering, what's now called synthetic biology, the questions around sharing the benefits from using biodiversity, whether that's using DNA or other things, that's been at the heart of the convention now for 25 years. But it's changing.

And part of why it's changing is we're seeing a sort of a new agenda at the COP at the CBD which has really come across from the climate COP. But is also where tech companies, finance companies are seeing a new opportunity here.

They want to turn biodiversity into new financial markets. They're thinking that they can set up biodiversity markets and biodiversity credits. Just like we have carbon markets and carbon credits.

In order to achieve that, they're bringing in new technologies, new monitoring technologies, new genetic engineering technologies. And so in some ways the CBD is now becoming a marketplace for quite cutting edge digital and genetic engineering technologies as a way to manage the problems of the environment and biodiversity collapse.

And so what was going on in Cali was really two COPS. On the one hand, you had the long time agenda of trying to protect the environment and protect the rights of smallholders and peasants and indigenous people whose resources have been taken away from them and used by industry.

And at the same time you had industry itself – both the Big Finance industry and the Big Tech companies trying to create new markets in things like artificial intelligence, synthetic biology, new digital monitoring markets. So it was quite an interesting clash of these two agendas.

LF: So comment on who the industry leaders are that are promoting this agenda behind the scenes as well as on the floor at the COP16. So who for example are some of the lead companies in this space?

JT: Yeah. It's quite startling to see which companies are leading in so called generative biology; this new artificial intelligence designed genetic engineering. It's not companies with any history of doing genetic engineering or even any history of biology.

It is large tech companies such as Microsoft, Google, NVIDIA, Alibaba, and Salesforce. They're the ones who are now setting up these platforms which will design proteins, which will design viruses that will design RNA, which will design organisms.

And then partnering with chemical companies, with pharmaceutical companies, with food companies. And they certainly don't have any history on carefully managing bio safety risks.

What they do have a history of is very successfully creating monopolies, very successfully moving ahead of government regulation and and getting their their technologies out there into commercial use before any kind of controls can be put in place.

So, that's worrying to see literally the world's most powerful, well capitalized companies jumping on this bandwagon.

In part, I think they're doing it because their AI platforms, whether that's ChatGPT or Gemini and so forth, aren't delivering much. They've spent billions of dollars, in fact almost trillions of dollars, building out AI platforms that have really just created a few chatbots.

And the financiers are saying what are we getting for our money? So they need to be able to show that ultimately they're going to get drugs. They're going to get foods. They're going to get new materials. They're going to be able to create energy solutions.

So that's why they're moving into this. But they're doing so at a pace and with a lack of accountability, that's really quite scary.

LF: On the topic of leaders in generative biology, I understand DARPA which of course stands for Defense Advanced Research Projects Agency is a significant funder of research in areas related to generative biology and synthetic biology.

As we all know DARPA is part of the U.S. Department of Defense. So my question being is the role of militaries in the push for generative biology being discussed?

JT: The role of militaries in so called generative biology and also synthetic biology is the really large elephant in the room. Because you can use generative biology platforms to create new toxins or to create new viruses every military around the world is concerned about this or excited about it.

And there are ongoing discussions at the Munich Convention meetings or the Bioweapons Convention meetings around how to deal with the new risks, the bioweapons risks, and the toxins risks coming from generative biology. Of course, this like everything, this is a double edged sword. It makes those companies become important for national security.

It also potentially closes down discussions on the wider impacts because the states want to have control over how they build new bioweapons, new toxins.

So, yeah, it's definitely part of the conversation but it's not being discussed in the Convention on Biodiversity openly.

LF: On this point you made at the open that what's has changed at COP16 to the CBD is that Big Tech and Big Finance see an opportunity to turn biodiversity into new financial markets.

So to set up biodiversity markets, biodiversity credits the CBD has now become an important platform for these kinds of players. Having set up carbon markets and carbon credits at the UNFCCC UN Framework Convention on Climate Change these players have now set their sights on the CBD as an opportunity to expand this agenda of a push into the financialization of nature.

So in short historically unlike the Climate COP, negotiations in the Biodiversity COP and so agenda setting at the UN CBD has not been of much interest to these Big Tech Big Finance players up until now.

JT: I think that's right. Because the convention has really been a place for for working from a position of precaution, and the precautionary principle is really important there, it's made decisions that often have been about restraining industrial attacks on biodiversity.

And also, it has built into it a lot of work about trying to regulate genetic engineering and biotechnology. Trying to ensure that genetic resources – that's to say DNA, seeds, germplasm – isn't being stolen from

indigenous peoples and communities.

And all of that is not what Big Tech, Big Biotech, Big Finance is interested in. It's often been a sort of backwater in UN environmental negotiations. But that's changing now.

One of the things that's shifted, for example, and it really came out very clearly in this COP [16th Conference of the Parties to the Convention on Biological Diversity] was that you've got a big push now by the industry to transform the agenda to a sort of industrial promotion agenda.

Where rather than regulating and overseeing the sort of negative impacts of say, synthetic biology (that's the extreme genetic engineering), the push now is to promote it.

To say this is a fix for our biodiversity problems. This is a fix for our climate problems. And that there should be more money flowing into building these kinds of risky, still quite speculative technologies, these techno fixes.

So that came over very strongly as well as an attempt to set up funds. For example, there is a fund that was now set up, it was just agreed, where industries that use genetic resources – that is to say they use the gene sequences from plants and animals and bacteria and the ocean in order to create let's say pharmaceuticals or to make genetically engineered crops – are expected now to pay into a fund.

This fund around what was called digital sequence information that is the digital version of the genetic sequences. The DNA sequences fund is now going to be called the Cali Fund.

There were continual day and night negotiations for two weeks to try and get this Cali Fund established. And it was established. And industry not only has to pay into this, but thinks they're going to get money out of this.

They hope to set it up so that they can use that money to grab more DNA, for example. or to train people in using genetic engineering. So it's a two edged sword.

LF: As background on how we got to where we are in all this and the Cali Fund, talk about ways the changes you are talking about undermine the longstanding agenda of the CBD.

Let's take the issue of biosafety first which as I indicated at the open concerns the protection of human, animal, and environmental health from biological risks. Take a big environmental risk, the crossing of planetary boundaries.

JT: When you talk about planetary boundaries and the planetary boundaries that have been set up around overreaching over nitrogen use and water use and carbon dioxide emissions and so forth, one of those planetary boundaries is about novel entities.

And often that refers to new chemicals which have caused a massive impact on biodiversity but it's also novel living entities.

This is exactly what drove the Convention on Biodiversity to be framed around biosafety. That if you're developing new genetically engineered organisms that can reproduce in the environment, that act in

unpredictable ways, then they can very quickly disrupt the web of life.

One of the brakes on new genetic engineering organisms impacting biodiversity has been that it's slow at the moment. It's been slow to create a new genetically engineered organism to get it out into the environment.

And that's what's changed with synthetic biology and now with artificial intelligence. It's now increasingly quick and easy to generate new genetic codes that somewhat seem to work. To transfer them into living organisms, whether that's bacteria or into viruses or into other organisms such as plants and animals.

And increasingly, there's a focus on putting them into organisms that are going to be in nature, whether that's insects or bacteria and so forth.

So the danger is that with the use of artificial intelligence to design increasingly novel organisms, you're going to see many more synthetic organisms being released. Certainly more than biosafety regulators are able to easily regulate.

And also, we're seeing a big focus on creating new proteins that you can genetically engineer. Novel proteins, whether for food or for materials or for drugs that never previously were possible. Those too, there's a concern coming that those could over overwhelm regulators or just be produced without regulation.

So we're sort of at a tipping point if not already soon, where we're going to see a volume of new entities whether that's proteins, whether that's organisms or viruses being produced – for the marketplace, for environmental release and honestly also for other uses – that the biosafety regulations aren't really capable or have the capacity to deal with.

And one of the really big questions with designing organisms by artificial intelligence is what errors are there going to be? We've seen that when you ask an artificial intelligence, generative artificial intelligence platform to create a picture or write a text, it's riddled with errors.

You get people with six fingers. You get texts in which nonsense is written. That's kind of funny when it's just text and pictures. It's not so funny when it's a living organism that can reproduce and spread in the environment.

So that's why we were arguing and some countries were arguing there needed to be an assessment of what does it mean to be now designing genetic engineered organisms, viruses, proteins through artificial intelligence. Because we may be introducing a whole extra level of complexity here with these AI developed errors.

LF: As further background on all this talk about why you also argue there needs to be technology assessment of the impact of generative biology on the lives and livelihoods of the world's primary providers of biological genetic resources notably in biodiverse developing countries of the South. So smallholders and peasants and indigenous people as stewards of the world's biodiversity. So comment on dynamics at play there.

JT: Sure. So every living thing in the world has DNA. That's to say the sort of chemical code within the nucleus of its cells. Which is thought to be the blueprint for how that organism develops whether it's a flower or an animal or bacteria.

And those different codes, those different DNA codes are what genetic engineers use to try and change how an organism grows by moving the DNA across.

So in many ways, that's the sort of raw resource for doing genetic engineering. You take these pieces of DNA, these, these chemical pieces, and then move them across to other organisms. Or you re-engineer the organisms in their cells in a laboratory with these different codes. That's the theory anyway.

For the biotechnology industry, whether that's the plant biotechnology industry producing GM crops or the pharmaceutical industry trying to produce new drugs, this is sort of the raw resources by which they hope to reprogram living organisms. It's those codes that they've taken from nature.
And originally the way this was done was literally taking seeds, taking bits of culture – little leaves and so forth – and having physical pieces of DNA that were carried around the world and put into repositories. But increasingly you can put them through something called a DNA sequencer and you can record the code of the DNA. There's four chemical letters G,T, C and A.

And so you now have these digital databases in which you have all the codes of the DNA for different animals, for different crops, for different bacteria, for different viruses. And that is what the biotechnology companies, including synthetic biology companies, use to try and build new organisms or to build new proteins or to build new drugs.

These samples, the original samples that they've taken, the living samples, they're samples taken from communities. They're taken from farmers. They're taken from indigenous communities. They're taken from ocean communities. And often, they've been stewarded and looked after by those communities for generations upon generations.

So, it's not like these are freely available or they should be considered freely available. They were taken from the communities that have looked after biodiversity. That have bred seeds and breeds and protected the forests and oceans and so forth.

And so many of us have been saying for years that the use of these genetic codes is a form of piracy, what we call biopiracy by the big pharmaceutical companies, by the big biotech companies, by food companies. That they are literally profiting off of the resources that they've taken from the stewards of biodiversity, often some of the most marginal and poorest people in the world.

And so the Convention on Biological Diversity very early on, tried to agree processes by which if a genetic resource was taken and it was used in industry, there has to be a benefit going back to the original communities.

And these processes, it was called ABS/Access and Benefit Sharing, broke down because there stopped being physical material being passed around. It became digital material because it was possible to digitally build organisms or digitally build DNA and digitally store it all in these large databases.

And so that was part of the negotiations here to say: okay, in the case where it's digital material, which is what most of it is these days, how does some benefit get back to the indigenous communities, the farming communities and others who originally stewarded and looked after these resources?

And the answer that's come up is not to actually pay them, but to pay into this other fund that they call the Cali Fund.

Some of which is supposed to go to indigenous communities. Some of which is supposed to go to supporting conservation efforts. Some of which frankly will just go back to the biotech industry through other routes.

So, it's really an imperfect answer. And it breaks the connection between those who have looked after the genetic resources. And those who are exploiting them and making money out of them.

LF: You said the Cali Fund breaks the connection between those who looked after genetic resources and those who are exploiting those resources. Talk about the role played by what you call black box biotech in undermining the previous CBD agenda to avoid biopiracy, so the appropriation of biological resources or traditional knowledge without proper compensation or consent.
JT: Yeah. So, originally, the way in which the Convention on Biological Diversity set up the question of what they call access and benefit sharing over genetic resources was they asked for a Memorandum of Understanding.

That if you take a seed or a sample from one place, from one community and you're going to carry it across the world and give a biotech company, then you have to have a sort of paper trail. And a Memorandum of Understanding of where that specific DNA sequencing came from and went to such that benefits could go back. It was creating a paper trail.

This has become harder and harder to track as you have large databases where you're not moving digital material. It's all being uploaded digitally into very large databases that are held by the U. S. government or the Japanese government.

And then other companies will come in and scrape off of that. But you still could, absolutely could, track where the data they're taking comes from and where it ends up. This is all possible.

Where it becomes even more complicated, however, is when you start to introduce artificial intelligence platforms. So the artificial intelligence platforms that are now coming out for designing genetic material, so called generative biology, what they do is they scrape all the DNA data from all the databases.

They use it to train an artificial intelligence model. That model has millions, sometimes billions of different variables. And then you ask a question of it and it generates a brand new novel, supposedly, piece of DNA or a brand new novel piece of protein, a sequence for protein.

And what the companies will often say is because this artificial intelligence process is so tremendously complex – the many variables and the weights within the model – it effectively becomes a black box.

You can't just track a line between the data that comes in and the new novel data that comes out, the so-called synthetic data.

And therefore, the idea that you're going to be able to say that this invented piece of DNA comes from these other pieces of DNA that were taken from, you know, the South Pacific or from North Africa, it begins to break down within that model.

Now, that then becomes an argument for this sort of general fund. Which then says: okay, if we can't trace it within the model, then we'll have a general fund. Anyone who uses this will pay into that fund. And that fund will pay to indigenous people and to farmers and so forth.

So that's the way in which this black box nature of artificial intelligence accelerates what's happening here.

Interestingly enough, in Cali I met with some of the artificial intelligence companies who were there and were lobbying. And they said that they think they can trace. They believe that they actually do trace. And so it may be that the black box can be circumvented.

It may be that you could request that an artificial intelligence company building one of these models has to be able to trace. And that's more work for them, but that would somewhat enforce justice.

It would somewhat ensure that if you're designing a new genetic sequence, you have to prove where it comes from. This is what's known as explainable AI.

So, it may not be entirely impossible, but this is exactly the sort of thing that needs to be looked into.
LF: Earlier you commented that you and other critics have been saying for years that the use of genetic codes is a form of biopiracy. Just to clarify, this refers to the CBD's previous so original protocol under which any company using genetic resources was required to pay back benefits to the original 'provider' communities. This under an agreement made under the auspices of the CBD.

JT: Yes. I mean if a company shows that they made an agreement and that they promised that they were going to give some kind of benefit back to a community, that's legal biopiracy. And peasant communities, indigenous communities have said this is an unfair system to begin with.

You know, that if somebody breaks into your house steals your television set and on the way out says: It's alright. I'll give you a benefit. That's not necessarily something you've agreed to. It's something that you kind of have to deal with.

And that's how many communities feel. Often, DNA was taken from them. Samples were taken from them. Often it was taken decades or even centuries ago. Collecting for botanical gardens, for example, without them understanding or agreeing to have the many ways in which it could be used.

And now they're being told: It's alright; we'll give you some benefit. You'll make some money out of it. But they have lost sort of sovereign rights and control over the use of the resources that they've looked after. That they've developed.

So this is why it's such a contentious and highly emotional topic especially for indigenous and peasant communities. This is about the very resources that their lives and cultures depend upon.

LF: As a further point on biopiracy, your Black Box Biotech report argues that the 'generative biology rush' being fueled by the world's largest digital tech companies and that it includes a bold biopiracy grab of all the world's digital sequence information on genomic resources.

As a North South issue at COP16, did the the issue of unequal exchange come up? So unequal exchange between those utilizing genetic resources (primarily in developed nations of the North) versus those who provide genetic resources. So those providers largely in the biodiverse nations of the South).

JT: Many of the groups who are at the Convention meeting in Cali, indigenous groups, civil society groups, women's groups, were saying quite loudly that what's going on is a new wave of colonialism.

That through things like biodiversity markets and new technologies, the same power players, whether that's financial players or tech players or large Northern industrial countries are trying to grab power over territories, over life and even over people's culture.

Colonialism always comes whether it's with gunboats or with debt; with A a narrative that what's on the territory is worthless. Whether that's human lives or foods or now genes and biomass. That all of this stuff isn't really worth anything.

And it should be handed over in exchange for trinkets. In this case, new technologies, little bits of money in a fund.

That in exchange for those that the South should now hand over its biodiversity. Or should put large areas of its biodiversity in sort of fenced off spaces that will be controlled by Northern Conservation NGOs, which is the other thing that's going on.

I think now that the technology is there to sequence to take codes from every living organism and put it into artificial intelligence models and generate new products in the North, they're sort of offering little bits of money (trinkets of money if you like into this fund, the Cali Fund) and promises that the South might get some of this technology through technology transfer in order to grab as much as possible of this genetic resources, of this biodiversity.

And that that becomes the underlying resource for Artificial Intelligence companies like Google or Microsoft or Nvidia or large pharmaceutical companies, whether that's Pfizer or Johnson and Johnson or agribusiness companies like Corteva and Bayer.

The North wants to make sure that they have unfettered access to as much genetic resources and biological diversity as possible to build out this different economy.

So it is, the same story that we see again and again. You come for territory, you come for human bodies, you come for food and commodities, and now you come for genetic commodities, the next phase of colonial exploitation.

LF: Give us more details on how this Cali Fund is going to be set up.

JT: Yeah. Under this new Cali Fund companies that are of a particular size, larger companies that depend on use of genetic resources in certain sectors are expected to pay 0.1% of their sales or 1% of their profits into the Cali Fund.

So these are pharmaceutical companies, biotechnology companies. But most crucially and what was perhaps a good news in Carly was they agreed that large artificial intelligence companies also have to pay into this.

Because we're now seeing that with the use of artificial intelligence platforms to try and invent or create /generate new life forms, what's called generative biology.

These firms are also now basically biopirates. They're also stealing large amounts of genetic data and trying to make money out of it

LF: So you are saying that is good news is that AI and generative biology companies are explicitly included, explicitly named within the scope of the new Cali Fund.

So along with Big Pharma, Big Biotech and so on, AI and generative biology companies have an obligation to pay for their use of genetic data.

So there will be some sort of mechanism to monitor these payment obligations. Will there be a binding enforcement mechanism? How is that going to work?

JT: It's probably a voluntary mechanism. And this is something that lawyers are going to work out, I suspect. The word that was agreed by 196 countries was should.

That large companies who use genetic resources should pay into this fund. And pay into this fund at this level of the indicative rate is 0. 1% of sales or 1% of their profits.

So, should doesn't say must, but it very strongly expects that. And it's now for governments to turn that into reality.

One of the biggest loopholes, of course, is that the one government that is not part of this, the United States of America, is the country that has many of these companies. So those companies, whether they're large artificial intelligence companies or large pharmaceutical companies, may well escape having to pay for this. Some may voluntarily pay something.

And there are probably other ways in which this language will be poured over by lawyers to try and reduce the amount that companies will pay.

But the intent is very clearly there. The world's governments agreed that those who use genetic resources, including artificial intelligence companies, should pay money into a fund that gets benefits back to the original developers or stewards, rather, of these DNA, seeds, plants, and so forth.

LF: As you say that is the intent now lawyers are going to pour over how this will operate including details over what enforcement mechanism will be in place. You say the Cali Fund is probably going have a voluntary mechanism.

So having interviewed a lot of experts in intellectual property rights so international law what strikes me is how negotiators representing the interests of the Global North as large users of genetic resources got an agreement for a voluntary, most likely got an agreement for a voluntary mechanism over their obligations to pay into this

Cali Fund. So the fund set up to return some benefits from the use of genetic resources back to where those resources came from so primarily from providers in the biodiverse developing country communities.

On the other, these same interests enjoy a binding mechanism over obligations for payments due to them as intellectual property rents for use of their propriety technology and/or products including those that have relied on the use of genetic resources for their commercial development.

The binding mechanism is enforced by a legal framework of patent and other intellectual property rights linked to trade. The preeminent agreement being the 1995 WTO TRIPS Agreement signed with the creation of the World Trade Organization.

Development economists and global governance experts among others have been talking about a double standard in the international economic order for decades. So a power asymmetry of binding corporate rights versus voluntary corporate responsibilities at the international level.

I expect pubic interest teams with expert advisers in international law will also be pouring over this aspect of the Cali Fund given the connection between patents and biopiracy.
As put by the ETC Group who originally coined the term.

Biopiracy <quote >: refers to the appropriation of the knowledge and genetic resources of farming and indigenous communities by individuals or institutions that seek exclusive monopoly control (patents or intellectual property) over these resources and knowledge. ETC Group believes that intellectual property is predatory on the rights and knowledge of farming communities and indigenous peoples.

In this clash of two agenda over who benefits and controls biological resources, what are some observations you see at play at COP16 among some big governments of the Global South and communities they represent.

JT: There is often a question about what level of control should rest over biological resources. Whether it's seeds and breeds or the land and territories and governments, national governments often give up control much quicker than communities would.

Or request so called benefits, and I think this was sort of happening in Cali, where monies might go to, for example, the government of Brazil to allow them to create new science and technology institutions. But not to the actual communities in the Amazon or on the ground. Who have actually done the work of stewarding and looking after biodiversity.

So, indigenous peoples and local communities have often said they would like the benefits, if there are benefits, to go directly to the communities and not via the intermediary of governments. Who are often in hock to massive debts. And have to pay off those debts and under sort of development agreements to develop new biotechnologies, for example.

So, I think that question of who ultimately benefits and who retains control over biological resources, over biomass, for example, is not always at the level of communities.

What I would I would say is one of the things that's very clearly on display in Cali at the COP was this hope by governments, big, big South governments such as Argentina, Brazil, Paraguay, that they would be able to create

a new bio-economy. That by using genetic engineering, artificial intelligence, synthetic biology, they would create a new high tech economy that would let them sort of leapfrog ahead.

And the promise is there as well from financiers, from big philanthropists like the Bezos Earth Fund, that the way to get beyond the current carbon economy, the fossil fuel economy, is to create a high tech economy based on new technologies, genetic engineering, and artificial intelligence.

And so this was on view. This attempt to create a sort of high tech, financialized version of nature and the economy around nature was part of what's going on

LF: Give us some historical context on the push for a bioeconomy and how the CBD has responded over the last 25-30 years so from it's founding days into the current clash of two agendas at COP16.

JT: Back in 1992 at the Earth Summit and thereafter when the Convention on Biological Diversity was being negotiated, there were environmental negotiators, policy makers around the world, who were really concerned about how what's now being called the bio-economy, the biotech industry was gaining power over the very stuff of life: over genes, over biomaterial, over biodiversity.

And so wrote that Convention in a way that tried to hold back biopiracy and the grabbing of nature as a new commercial frontier for large biotech companies.

And so what we've seen for the last 25 years coming out of the Convention on Biodiversity are many quite good decisions around trying to assess the risks of genetically engineered organisms.

We have something called The Cartagena Protocol that exists exactly for this reason, trying to make sure that if there is DNA taken that there is some kind of benefit negotiated back to the communities. And that's why we have what's called The Nagoya Protocol on Access and Benefit Sharing. Trying to make sure there's liability, which we have The Nagoya Kuala Lumpur Protocol.

And also various decisions around trying to stop some of the worst developments, such as Terminator Seeds. Which are seeds that are sterile, so that the company has to, is able to keep selling them every year to farmers and farmers can't keep them.

But it's true that the kind of the fundamental bargain that was agreed at the beginning of the Convention, the U. S. and other industrial countries, were saying: Well, we hope we can make a market in this stuff. That by agreeing a benefit sharing arrangement for genetic resources, DNA, and so forth will become part of a market.

And that is now what's on full display. This idea that the South should hoover up as much of its genetic resources as possible. And in Cali we had a number of companies there who were offering to do what's called eDNA scans. They were offering communities that they would just be basically sampling again and again environmental DNA.

And that in turn will be going to a fund where you'll get a little bit of money off the back. And all of that will run these artificial intelligence platforms that will create new drugs, new plastics, new materials, new foods. Which will benefit, frankly, largely the North.

That's now the full game. It's how can nature become a source of commercial opportunity for banks, for tech companies, for Northern investors. And the South will provide the underlying resources, will provide the genes, the DNA and the biodiversity, and get a small bit of money in a fund, such as the Cali Fund, off the back of that.

So, that's sort of the restatement of what was originally struck as a deal 25 years ago, 25 to 30 years ago. Now it's quite naked that this is about trying to create a different economy. Potentially a post fossil fuel economy is how it's presented, an economy that's supposedly about nature based solutions. It's a green economy.

All of these things were being said very loudly by, for example, the Bezos Earth Fund, which is, of course, the largesse of Jeff Bezos who's one of the major investors in this.

And some of the large South governments – Brazil, Argentina, and others – are happy to go along with this vision in the hope that they might build high tech sectors along the way.

LF: Jim, can you take us deeper into the history of CBD governance responses to key developments in biotechnology from its founding into the present?

JT: Yeah, certainly. At the time that the Convention on Biological Diversity was being negotiated policymakers had very clearly in their mind that these new genetically engineered crops were coming, That they'd just started to be trialed, they were coming to the market.

And that they wanted to set up a system that both mitigated against the risks of these crops, the threats to biodiversity and the questions of biosafety. And also dealt with the justice questions. That these were built on genetic resources that had been taken away from communities and who weren't properly compensated or treated. Biopiracy was taking place.

And it's been interesting through the last 25 to 30 years of the Convention, how the Convention has seen new developments in biotechnology and responded to them.

For example, when it became apparent that companies were developing seeds that were sterile that couldn't reproduce in order to force farmers every year to buy new seeds rather than save them, the Convention on Biodiversity put in place a moratorium on those sterile seeds, what are called Terminator Seeds.

When it became apparent that the direction of genetic engineering was moving into a more digital way with synthetic biology the Convention on Biodiversity set up a process to look at this question of synthetic biology.

And restated again the importance of precaution. That Governments need to set up regulations and act in a precautionary way.

And then when it became clear that under synthetic biology there were organisms being developed which would take over entire populations, what are called gene drives and would spread intentionally in the environment, the Convention also dealt with the question of gene drives.

And talked about the importance of precaution and having free prior and informed consent from communities who would be affected by this.

So at every stage, the Parties in the Convention have tried to respond to how the biotechnology industry is moving ahead.

What's interesting is at this meeting in Cali, there has been set up a process of horizon scanning assessment and monitoring to try and see new developments and try and respond to them. And a few countries very close to the biotechnology industry tried to kill that.

There was actually a proposal by one country (I can't say which because these discussions are done behind closed doors) who asked for the dis-establishment of that process. And then tried to delete all of the work that's been done in the last two years looking at new horizon scanning. And in fact, pretty effectively they did delete it.

And one of the things that the Convention was expected to do was to request new, deeper assessment of genetic engineering fusing with artificial intelligence, so called generative biology. And they didn't. That was blocked.

The same countries who really want to financialize biodiversity; who really want to take advantage of this new Cali fund; who want to have these new technologies transferred to them were blocking the opportunity to assess or do horizon scanning or monitor these technologies.

Effectively asking that the Convention stops; sort of covers its eyes with the impacts and just takes the money to develop the technology. And that's what the industry wants.

The industry wants this Convention not to be a critical reflective space to properly oversee and regulate biotechnology but to be a promotional space where monies can be gathered together to build the biotechnology industry and the promise of techno fixes.

And so that was one of the downsides of this meeting. Was was that where there should have been stuff moved ahead to look at artificial intelligence impacts and to look at other risky uses of synthetic biology that was just blocked.

LF: On the topic of technology assessment being blocked within the UN system, it is interested to note that <to quote>:

One year after the [1992] Earth Summit…the two organs of the United Nations system with a mandate to assess technologies were virtually eradicated. The UN Centre on Transnational Corporations (UNCTC) – the only international body capable of monitoring private-sector technologies and practices – was shut down entirely. At the same time, the UN Centre for Science and Technology for Development (UNCSTD) was dismantled. Shortly afterward, the US government closed down its respected Office of Technology Assessment.

So in the case of the UN CBD, where do things stand after COP16. Has the technology assessment capability of the CBD also been entirely shut down?

JT: It wasn't entirely shut down. But it was very much reduced to a trickle, if you like.

The call for technology assessment has been one of the key calls that some of the more precautionary governments have made in the last few years, not just in the Convention on Biodiversity, but also in other spaces too.

And it has been quite a fight over the last eight to nine years to set up what's called a broad and regular process on horizon scanning assessment and monitoring of synthetic biology. But it was established in the Convention on Biodiversity, and it was established by two different decisions. So it's there.

But the countries that are close to the biotechnology industry have continually tried to shut that down and stop that. And the same fight is happening elsewhere.

For example, the, the UN Commission on Science and Technology for Development based in Geneva is now moving ahead with assessment of new and emerging technologies. And other bodies are also trying to put in place the ability to assess new technologies that as you say was removed with the shutting down of the UN Centre on Transnationals and so forth.

It's a sort of very basic common sense request that if you're going to put lots of money and energy and political time into promoting new technologies, you also need to understand how they're going to impact people; how they're going to impact nature; how they're going to impact economies. And industry doesn't want to have those discussions.

LF: Jim the rundown of COP16 that you posted Oct 31st stated there was bloc of countries at COP16 negotiations that take their orders from biotech and agribusiness interests that go under the acronym CANJAB. Standing for Canada, Australia, New Zealand, Japan, Argentina, and Brazil.

In that report you commented that CANJAB plus the UK entirely denigrated and sidelined the work of the UN CBD own expert group and forced a pivot in the negotiations to what you called the CBD 4.0 agenda.

And you wrote <quote>:
By introducing a 'thematic action plan" on capacity building and tech transfer, CANJAB plus the UK crafted an industry promotion package for synthetic biology, positioning biotech as the source of shiny 'innovative solutions' (technofixes) that could be matched to the targets of the KMGBF and thereby made eligible for funding.

There can be no illusion: CANJAB plus the UK will continue to block actual decisions or assessments from here on, every 2 years – all the while expanding the synbio industry promotion package.

Give us the story on CANJAB and the devil in the detail with the pivot to technology transfer as part of this CBD 4.0 agenda.

JT: Well, CANJAB, as you say – Canada, Australia, New Zealand, Japan, Argentina, and Brazil form a block that came into these negotiations saying: We don't want the topic of synthetic biology. We don't want assessment. We don't want horizon scanning. All we want is basically an industry promotion package around the benefits.

And they argued very strongly that the only things that should move ahead on the topic of synthetic biology

were an assessment of the benefits. And not even an assessment, actually a listing of the benefits. And how the benefits could support what's called the Kunming Montreal Global Biodiversity Framework, that is to say, the sort of plan for biodiversity for the next 10-20 years.

And so what they wanted was for a process which would list: Here are the good things, the good techno fixes we could make with synthetic biology. Here's how that could line up with things we want to do under this Convention. And that in turn would set them up for receiving funding under the biodiversity funds that are being set up.

So that was the approach they were going for. And they tried to entirely stop and kill the horizon scanning assessment and monitoring process.

In the end, some regions, parts of Africa, particularly Europe, pushed hard and said: No. We absolutely want the horizon scanning assessment and monitoring.

And so there is a very sort of limited horizon scanning capability. There will be an expert group set up. It will be a technical expert group not a multidisciplinary expert group. And that technical expert group will look at positive and negative implications of synthetic biology.

That's the kind of extent to which CANJAB allowed some sort of assessment.

But the thrust of what was mostly going ahead is around capacity building in new technologies, about transferring technology and about development of new industries. That's the thing that they wanted to move ahead fastest.

So that's unfortunately not a great outcome in terms of precaution, the rights of indigenous and local communities or considering the risks that could come from this technology.

LF: Okay. And what about the technology transfer issue?

JT: Technology transfer has become an increasing demand in the Convention on Biodiversity. And it's supported very much by African and Latin American and Asian countries who hope that if new emerging technologies such as synthetic biology, artificial intelligence are transferred to their economy, then these will help boost their economy.

The problem in technology transfer is which technologies get transferred and how do we make sure they're not technology dumping? That very often when a technology is failing in the North, such as for example, incineration, then it gets transferred to the South. And the South has to deal with its impacts.

Sometimes the transfer of technology is a way of opening up new markets that are then tied to having to use the expertise and technologies of Northern companies. And that would just drive countries deeper into debt.

Or create agricultural systems or other systems that aren't appropriate to their own culture.
That's why technology transfer has to be tied with technology assessment. You have to see whether the technologies are appropriate to the cultures and the environments and economies into which they're being transferred.

And that they don't come with strings. That they don't come with dependencies. That's a very real risk.

Unfortunately, at the Convention on Biodiversity, as elsewhere, Southern countries are dealing with cripplingly high loads of debt. And they're being promised easy ways out.

That if you just jump onto the biotech bandwagon, if you just jump onto the bandwagon of digitalization and artificial intelligence, this will get you out of the economic straits that the countries are in.

Of course, it doesn't. It's potentially a trick. It gets them deeper into those economic straits.
The underlying problem here are the historical debts that they've been forced into and structurally adjusted into. And that's actually the thing that needs to be dealt with.

Not giving them new techno fixes that may not work and may tie them more to all sorts of obligations.

LF: You say technology transfer has to be tied to technology assessment. That you have to see whether technologies are appropriate to the cultures and environments and economies into which they are going to be transferred.

To illustrate the points you are making about the use of technology and in this conversation specifically generative biology, talk more about the the future of food and agriculture into the mix. Talk about that.

JT: Yeah. I suppose in the face of all of the many threats to biodiversity, the climate and so forth, there are different routes you could go for food and agriculture and sustainable development. One is to really support systems such as agroecology where you're supporting communities on the land to use their own knowledge and their own techniques appropriate to their own place.

Where synthetic biology, artificial intelligence, and new technologies fit is a very different route. It's a sort of high tech control vision. That in face of all the threats to the biosphere and to biodiversity, states and companies will create a sort of high tech control and command of food production, of biodiversity, of carbon capture and so forth.

And pushes the power and agency of communities out of the way. Their land becomes a resource for genetic information that feeds the AI systems. It also becomes necessary to control their lands and territories in order to grow enough food in an industrial food chain.

And their knowledge so far as it's relevant has been hoovered up by artificial intelligence and used to generate commercial products that will be sold back to them.

So I honestly think where this heads is that the knowledge of communities of indigenous people, of farmers, of fisher folk gets more and more marginalized if you build your food systems, your health systems, your environmental systems around these high tech fixes.

LF: So we have been talking today about the argument that there is an urgent need for technology assessment of the impact of generative biology on people, on nature, people's livelihoods and so the economy. As a closing thought talk more broadly on the argument that there is a need for technology assessment.

JT: Every society, every culture uses technologies and develops technologies that are appropriate to their needs. And so long as that community is able to exercise control over those technologies and develop them to fit their culture, then those those technologies are helpful and useful.

The danger I think we have now is that we have technologies that are being determined and driven and imposed not at the level of communities, not at the level of specific cultures but by corporate strategies that fit the bottom line.

We need to therefore have processes to determine which are the appropriate technologies. That's why technology assessment has become such a major rallying call for movements and civil society.

Unless we can begin to exercise discrimination over which technologies move forward, which technologies are appropriate to communities and the rights of communities and ensure that there's a choice made on the right technologies to move forward through assessment you're going to have the technologies of the elites of those who can push their technologies onto society then reshape society.

So the bigger call here is about agency and democratic accountability in development of new technologies and assessment is one of the first steps towards that.

LF: Jim Thomas, thank you.

JT: You are most welcome.

LF: And thank you for joining us.