Slow Violence Catalogue

Conversation Between Niamh & Gillian

N: *Shall we start by introducing Honeygar farm?*

G: Honeygar farm is located in the Somerset levels part of the Avalon Marshes which is one of the most important wetland areas in the UK. Somerset Wildlife Trust have recently bought the site and it will become their first major rewilding site. So, the site is a peaty wetland area and encompasses around 81 hectares of intensively grazed farmland. The land would have been drained to increase agricultural yield by creating grazing land for cattle farming. It is no longer a working farm and the intention is to hopefully re-wet the site.
N: *How does re-wetting work?*

G: It's essentially pumping water into the field to try and rehydrate the peat but there are a few issues that go along with that. Some of them is the release of green house gases, particularly methane which is a major contributor to global warming, so obviously there is potential impacts on it getting realised into the atmosphere.

N: *Gases that are stored within the peatland, could be released into the atmosphere when the bog is re-wetted?*

G: Water allows the peat to remain wet and anaerobic, helping it to store carbon effectively. When peatland is damaged, it dries out and is exposed to changing environmental conditions, instead of storing carbon it releases it back into the atmosphere as CO_2. However, dried peatland stores methane (CH_4) as well as nitrates and phosphates from fertilisers and run off from manure etc. So, while the peatland is dry, it is locked into the land but as soon as you try and rewet that, it enables all of these molecules to become mobile and release. This might get released into the atmosphere or into local waterways, such as these drainage ditches that feed into the river Brue. So, the intention at Honeygar is to restore this lowland peatland into a wet peatland through raising the water table, which will protect the storage of carbon and support wildlife habitats. Due to the possible release of methane and the potential of these fertiliser by-products to reach water bodies, where they have a negative environmental impact, the SWT are being very cautious and have not started rewetting yet. The first step is to monitor the site and ensure any action taken will be safe and environmentally viable.

N: *As part of a water research group within HAS (Health and Applied Science) at UWE that participates in some work on Honeygar - How do you monitor or analyse the environment at Honeygar?*

G: There are a few different projects at the moment. Some of them looking at water quality within the drainage ditches, to understand whether there are many nutrients or whether it's nutrient-poor, so that we can build a better understanding of the water quality. Then we've got other people working more with peat. Looking at how much carbon is stored there, how much nitrogen and phosphorus has been locked up in there, so we have a better idea of what will potentially be released, if they do decide to go down the rewetting route.

N: *We have mostly focused on the waterways, where we have seen vast amounts of duckweed.*

G: Yes, we've done a little bit of work, looking at the water quality and looking at how different nutrients, specifically nitrates and phosphates impact on water courses. We know that if you get increased concentrations of certain fertilisers, especially in warm weather, when algae and other primary producers are at their peak this can lead to excessive growth of plants that can affect water quality. It is this increased flux in fertilisers where you have the potential of these sort of eutrophication events. Where you have large concentrations of excess nutrients getting into the water course you get this overproduction of primary producers. so, things like Algae or duckweed.

N: *Yes, and during fieldwork in the winter months we have still seen duckweed collecting on right angles around these drainage ditches. I want to talk a little bit more about the ditches.*
From walking around the site, we have seen drainage ditches that line the fields to help drain the land, and we can also see from aerial images this huge concentration of duckweed in those ditches all across the Somerset levels. From above they look almost like roads in that they form these straight lines, constructed along the border of the land, which is quite different from the natural curves we might see in the river, so how might they impact the local environment?

G: If you think about any river in the world, so long as it hasn't been intervened with, it's curvy and meandering, and that's because it carves out the path of least resistance. So, as soon as you get to straight lines and right angles, you've obviously depending on where your flow is coming from, you're either going to have areas where it's super stagnant, and there's just no movement. You also get these areas, where they're just basically butting heads and it's trying to figure out, who gets right of way, almost. When you have two ditches heading into the same right angle, you're going to get a build-up of nutrients creating this overproduction of your primary producers. So that's where we see these sorts of mats of duckweed and algae because they can't flow out through this small channel and it gets clogged up.

N: *And why is that bad for our rivers? I understand that too much algae will cut off oxygen underneath the water, but how do these drains impact the overall health of the river system?*

G: An increase in excess nutrients will cause your algae and other things to become overstimulated and overgrow. I'm going to grow, I'm going to grow!!!! and so that water body then connects to a river that flows into a lake, or even for instance a slower moving part of a river. It can then cause excessive growth of duckweed or whatever it is, that will block out the sunlight and lots of the plants that live at the bottom of riverbeds need sunlight. And if it gets really bad, it will stop oxygen. In drastic cases you will see fish really struggling for oxygen or dying because there just isn't enough in the water. Also, when these rivers head out towards the ocean still carrying these nutrients, there is potential for algal blooms to be carried out there, sporadic eutrophication events in the ocean are not normal.

N: *So, the natural course of the river can carry and spread the problem?*

G: Yes, it exacerbates the problem. If the nutrients are coming from a natural source that's absolutely fine. But when you've got excess runoff from sewage, agriculture, industry or domestic sources, it's essentially manufactured forms of these naturally occurring nutrients. A bit like when you've got a toddler, and you just give them loads of sugar, they get, super excited for 10 or 15 minutes, but eventually that will dissipate. It will become super productive for a short period but at some point, it will collapse and then it's going to take a lot longer to recover to a natural baseline.

N: *For those of us not working in this area of science it can be difficult to recognise issues within our rivers. On a global environmental scale why do we need to look after rivers and waterways?*

G: When see the rivers or lakes around us, we might assume we have plenty of freshwater. However, the actual amount of freshwater that's locked up in rivers is absolutely miniscule. For example, 70% of all water on Earth is seawater. So, 30% is fresh water, and about 70% of fresh water should be locked in glaciers and ice caps, so you don't really want to mess with those. And then you've got just shy of 30% that should be locked up in groundwater and water vapour. So, of all of the freshwater on earth, it's around 1% that is in our rivers and lakes and that's for all of the countries, so freshwater and rivers are extremely valuable because without rivers there is no human life. Any civilisation popped up because of freshwater and it's generally from rivers. Rivers can give us power, the ability to grow crops, keep livestock, and support all of the things needed for some form of community to emerge.

N: *And they carry carbon.*

G: Yes, they carry carbon and they do carry key nutrients and molecules from source to sea. So there is a natural equilibrium of carrying these key nutrients that been around for thousands and thousands of years. But obviously human impact has skewed that equilibrium, creating areas where the nutrient balance isn't right which means that you could have a reduced amount of carbon but you've got loads of nitrates and phosphates being carried down, so it can be difficult to understand and get this balance right. We use fresh water for lots of different things and a big issue at the moment is things like waste water and drinking water. If you have a fresh water source that is clean, you don't actually have to process it that much. Whereas if you have a really disgusting, dirty, freshwater source, you're having to put more energy into cleaning it. Whether it's for food, water, manufacturing, once it's been used for the that purpose it's then going to have to be treated again before it gets released back. But if it's not treated properly, all of those excess nutrients or for example pharmaceuticals or chemicals will then get released back into the river and creating a vicious cycle. We're basically dumping more crap in and we're having to use more energy to treat it.

N: *You and Darren [Professor Darren Reynolds] always emphasise that the water reflects the land. Whatever is in the land is also in the river. On sites like Honeygar this seems particularly relevant.*

G: Honeygar is in a very agriculturally focused area but there are also other industries around there; sewage treatment works and a peat processing business right next door, where they extract peat for compost. Unfortunately, the thing with river health is, that it is usually a range of sources causing an issue and one intervention won't fix it. Everyone has to try to work together and everyone has to understand what their impacts are.

N: *Rivers then really need to rely on a community to care for them and maybe taking a more collective responsibility rather than one group or individual? The complexity of caring for these water sources seems to require the entire community to somehow build a relationship with the river.*

G: Yes, and that is the same with the whole climate crisis issue, not just blaming one industry, everyone needs to try. I think that is where our project has been really nice. We hear so much info from scientists, climate activists, politicians etc. and they spew out a lot of jargon and reports that nobody reads. So, even though people know that there is a problem, it's actually quite difficult to engage with. We have tried to find a different approach of communicating in this project - to see how we can engage different communities in environmental conversations.

N: *Even beginning a conversation between both departments has been really valuable and has allowed us to actually see all the similarities and ways we can connect and support each other. Trying to make work that responds to these issues has forced me to question why it is so difficult to connect to people or to inspire a sense of care? And how can river health be communicated imaginatively on a small budget and in a short amount of time. There is a possibility to intentionally interpret, intervene or imagine how river, land and bodies connect. It sounds really simple that river and land reflect each other and that our bodies rely on the health of this other body, but I don't know how deeply most of us connect to that idea.*

G: Yes, we are aware of these things, but it doesn't always hit home.

N: *One thing we have discussed before is the presence of phosphorus in UK rivers, it's interesting to imagine how this mined resource, extracted from underground on another side of the world ends up in the UK river systems.*

G: There is a finite amount of phosphorus on earth, and it is mined all over the world. We do need phosphorous but as soon as those mines dry up, we can't get anymore. We use phosphorous in fertilisers and have all of this excess floating around our water systems from run-off, yet we're mining more and more, knowing that at some point, we're going to reach the bottom of the barrel and then what the hell are we going to do? Are we going to try and recover some of that or figure out an alternative? If you've all this excess phosphorus is moving around, the chances of these eutrophication and algal bloom events are going to become much more common, unless there is a way in which we can try and recover and reuse the phosphorus that we've already pumped into the environment.

N: *During our fieldwork, we noted that along these drains where there were more trees, especially willow, there seemed to be a lot less duckweed. We have previously discussed new areas of research into the properties of willow as a potential way of recovering phosphorous. Willow has so much significance in this part of the world, through craft, medicine, cultural meaning and potentially this scientific use as well.*

G: Yes, there are lots of cultural uses behind willow, many landowners use willow at the edge of rivers and ponds because it's actually quite good at remediating the water there and can thrive in wetland.

N: *Noticing the willow and how it impacts the water is fascinating, we can observe so much without needing to have scientific knowledge. Even drawing attention to what we can feel or see through the senses helps us to connect to our environment, it is really empowering to see our own capacity to inherently understand nature.*

G: Even if you have areas along your local river where you don't have much diversity or it's not a biodiverse area. In parts of central Bristol where the river runs through, there can be minimal growth on the riverbank, but an hour's walk further along to Conham, the riverbank is full of life and you will probably find the water quality is better. There will be less erosion because you have got the plants and their roots holding the riverbank together. When you don't have that life on the riverbank especially when it's getting much wetter, erosion is exacerbated because there is nothing there to protect it.

N: *It doesn't have the structure of the roots in the soil holding it together?*

G: The same as desertification. In deforested areas where agricultural crops are grown, they'll soon see that the topsoil becomes bad quality and then starts eroding and degrading and getting really poor quality. And that's because in areas where it gets windy, if you don't have that topsoil, you don't have that biodiversity of the root system to keep everything together so everything else is just going to blow away. Similar to a lot of

the riverbanks that have been built up upon, if you don't have that natural flora to hold it all together, then anything that's on the land is going to much more easily lead into the water.

N: *So maybe a good place to start for people dwelling in cities is to look at their local riverbank and see what could be grown there or how could the river be supported?*

G: Yes, exactly, see what you could plant there, throw some seed bombs. How have you found trying to integrate some of the science with the process of printmaking or making art, how was that challenge?

N: *At the beginning, I was trying to somehow make the art into science. Trying to almost translate the data and then realising that is the wrong approach and I don't need to translate data, I need to make a connection or find a way to build intimacy through the work. There is so much complexity and information we could choose to focus on or communicate, but what is essential? We chose to look at duckweed as it is recognisable but it is also a symptom of slow violence, and it is a kind of lifeform that manifests through the interaction of land, water and light. These huge blankets of duckweed are a form of feedback on the health of the water, they tell us about an imbalance, this material sparks conversation. It is a kind of synecdoche, we see a part of something on the surface that actually has a huge depth and in this case is a connected to a much broader conversation on river health. The challenge here is holding the gaze of the viewer long enough to allow for those depths to be imagined.*

G: How close is the work you have made to what you initially thought you would produce?

N: *Initially I was imagining vials of water samples and data maps and as soon as we played with that a bit, it didn't feel right, so the work has ended up being a bit softer than I imagined. We quickly started to question what aspects of this project are important to share, do we need to communicate the exact composition of peat in Honeygar farm or details around land use or methane, I think we wanted to avoid reproducing environmental data or damning any particular land user, because this more about our use and care of water as a culture.*

G: We didn't want to point fingers.

N: *Exactly. I think we often hear a narrative of science providing the exact answers, or a sense of certainty which can create a divide. From this project, we can see that there is often a lot of uncertainty, but we can also actually draw upon other knowledge systems as valuable and empowering approaches to caring for the environment*

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G: Yes, It's lot more complicated than that.

N: *Moving away from binary narratives and considering a more holistic approach towards these issues acknowledges that sense of entanglement more accurately. The fieldwork really helped with this, when we took some duckweed and water samples, we fished out buckets and buckets of it, and I remember feeling shocked by the weight of it, and the way the stems just weave and lock together and it becomes impossible to remove it from your skin, it felt absolutely smothering. But this was the most important part of the research, having a physical connection to the material allowed a real understanding between this body of water and my own body to emerge. Holding this plant enabled me to imagine the experience of the river, this suffocating weight pressing on its lungs, it seemed so violent*

G: Yes, it would suffocate you. You have just used the term 'violence' there - this whole project came around through a phrase that I'd never heard of before and you brought to us, which is, *slow violence*. We've got our way of saying it, but how would you describe slow violence from your perspective?

N: *It is a concept developed by Rob Nixon[1] to describe environmental degradation that takes place over a long period of time. It's a violence that accumulates gradually, is often avoidable and impacts upon different generations and geographies. It's a bit like being punched in slow motion.*

G: Great phrase, yes.

N: *The impact is incremental, that's why it's problematic, because it doesn't have the immediate urgency of a disaster event. Even when it comes to things like funding bodies who respond to these events. Slow violence doesn't capture media or government attention, because it's doesn't have the same theatrics of a crisis. In a disaster scenario, the house is on fire, so get out or the consequences are immediate, whereas with slow violence the consequences are tomorrow, and the impact is taking place elsewhere. The term slowness can be problematic. Because when we say slow, we mean on a human timescale, compared to geological timescale, this isn't slow, its super-fast. But the problem with acts of slow violence is that they extend on into the future and like most forms of violence one act can proliferate another, it is the porosity of slow violence that makes it difficult to engage with, it has no boundaries and no expiry date.*

G: Yes, it has that domino effect.

N: *Rob Nixon refers to it as 'the environmentalism of the poor', as it often manifests in underprivileged areas. These areas can be really vulnerable to intentional acts of environmental violence when local people are regarded as "dispensable citizens" by large corporations or capitalist systems that are self-serving profit machines. We often see slow violence targeted against indigenous groups, or people living in the global south where neo-colonialism, exploitation and oppression are part of the landscape. Slow violence is often initiated in western countries, by western companies - we see slow violence in a multitude of ways, even in this country, although the scale of oppression and violence is usually less horrific than in many parts of the world.*

G: Slow violence, a majority of the time disproportionately affects lower income people.
We don't really wake up to pay attention until it affects people in wealthier countries or until we have major disasters.

N: *We seem to have a reactive culture. When there is a catastrophe like Covid, we react really quickly, we do have the capacity to take actions that are needed.*

G: Just not in the environment. We have had two UK heatwaves this year. Each year the summer has been the hottest on record, which is insane and this year we saw huge amounts of duckweed due to the weather.

N: *Yes, this change in climate brings up so many questions. If there is less availability of water due to heatwaves, will we struggle to access clean water in a few years? Our water systems will be under more pressure; how will we support our future needs for clean water if they are currently this polluted? We can learn from areas where there have already been natural disasters such as typhoons and flooding. I have*

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[1] Nixon, Rob, 2013, *Slow Violence and the Environmentalism of the Poor*, Cambridge, MA: Harvard University Press

witnessed this within my own family's community, as soon as you have flooding you no longer have access to clean water unless you have the resources to pay and transport it.

G: In disaster events, if your water supply fails, that is the biggest threat to human health. Because if your drinking water infrastructure gets flooded, it means that the potential of you drinking something that's really unsafe, like drinking water that contains sewage, just goes up. So, it means the chance of you becoming ill increases. And then because you're in a disaster area, you don't have access to medical help. So, something where it might just be a little bit of a tummy bug in normal times, if you're in areas where it's flooded, a tummy bug could potentially be life threatening.

N: *We can imagine these events happening here more regularly and severely; something we could be planning for.*

G: Something that we should be planning for.

N: *We started this project thinking about this minuscule plant and now we are talking about our ecosystem and safe drinking water for future generations.*

G: It's not just having clean drinking water - its everything else that goes along with that. We need to grow more food; we have a growing population. A growing population needs more access to water, more housing, more sanitation. It's this absolute ripple effect, it's not just one thing. You can change one thing and it will have an impact on everything else.

N: *We have to adapt everything.*

G: Yes. We have to rethink and reimagine how we want our future to look and that is not necessarily for us to say, that is for the young people to say. I mean, you could go back to two years ago, and we would have imagined a different future. In lockdown, just by the roads being empty, there was some nature recovery, and by taking walks people reconnected to nature. Imagine what it would be like if we just gave nature some time.

N: *Imagine if we just did less.*

G: I wonder what that would look like?