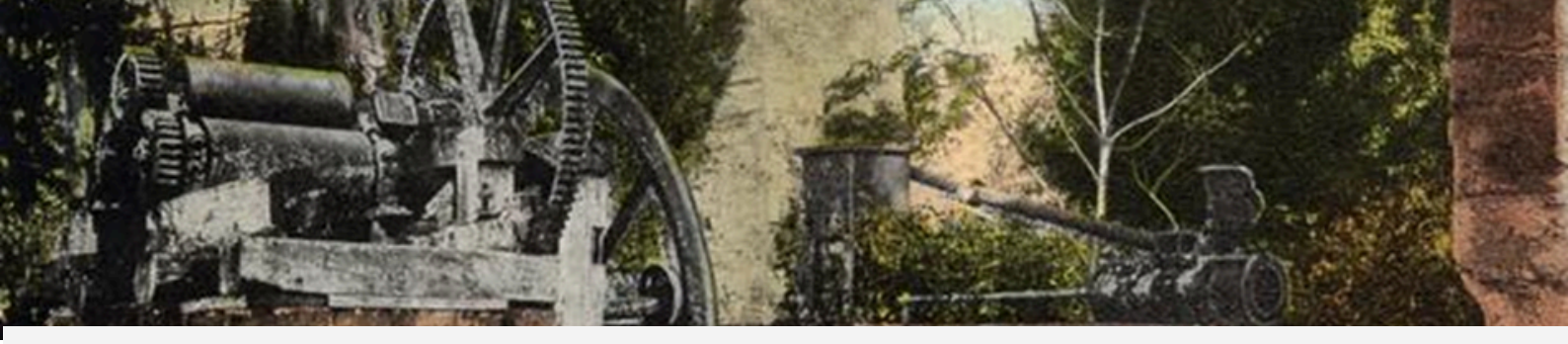

What Does Milling Have to Do with Climate Change?

Milling is one of the oldest industries in human history. Over centuries, mill technologies grew increasingly sophisticated. Harnessing the motive power of wind and water to turn cogs and wheels meant that a wide variety of mechanical tasks (from grain grinding to irrigation) became possible at a larger scale. By the 19th century, windmills had an average output equivalent to the work that could be performed by 100 to 200 people (Musgrove, 2009: 1).

Mills are not, however, relics of a bygone age of clean and local production. Mills sit at the intersection of changing industrial and land-use practices, but the specific role of industrial milling in the broader understanding of the climate crisis remains underexamined. After James Watt made his improvements to Thomas Newcomen's 1712 steam engine in 1776, steam derived from the burning of fossil fuels presented manufacturers and millers with a more efficient and constant energy source. Demand for coal rose sharply when mill owners adopted steam from burning **fossil fuels** in preference to power derived from animals, wind, and water (Thorsheim, 2006: 4). Now unfettered by intermittent winds or how high and fast a river flowed, mills and factories could produce at an unprecedented scale. Traditional mills fell into decline, and the mills that were not retrofitted began to moulder back into the landscapes over which they once presided. Industrialisation changed the world, but at a great and uncalculated cost.

Climate change can be attributed in large part to irresponsible industrial practices and fossil fuel dependency. Amongst other air pollutants and greenhouse gases, the IPCC (2021) identifies carbon dioxide (CO_2) from human actions as the main driver of climate change. While the implementation of carbon neutral renewable energy suggests a technological fix, the damage of climate change cannot be properly addressed without a change in people’s habits and minds. This article argues that engaging with both industrial and natural heritage can encourage greater awareness of climate change. **Industrial heritage** can reveal the origins of the climate crisis, but it also represents a social history of technology. Learning about how people have historically used renewable energy may engender a positive approach to mitigating the effects of climate change.

Ultimately, heritage, archives, and renewable energy initiatives have a shared motive – the **conservation** of our planet's wonders.

What is Climate Change?

Climate change refers to long-term shifts in temperatures and weather patterns. Although natural events like volcanic eruptions can cause fluctuations in temperature and atmospheric composition, human activity over the last two hundred years has caused the planet to heat up at an unprecedented rate. As the **Keeling Curve** demonstrates (figure 1), the concentration of atmospheric CO2 has been rising since 1800. This coincides with the Industrial Revolution and the gradual supersession of renewable energy sources by fossil fuels. The curve then turns sharply upwards during the post-war economic boom in the 1950s when high energy demand was being met almost exclusively by fossil fuels. For instance, demand for free world oil reached a staggering height of 40 million barrels per day by 1970 (Yergin, 1991: 567-8).[1] The sun's heat, trapped by an increasingly dense layer of greenhouse gases, is causing more extreme climatic conditions. In the face of devastating storms, rising sea levels, and searing heatwaves, climate change often seems too abstract or too big to handle. That perception is precisely the problem.

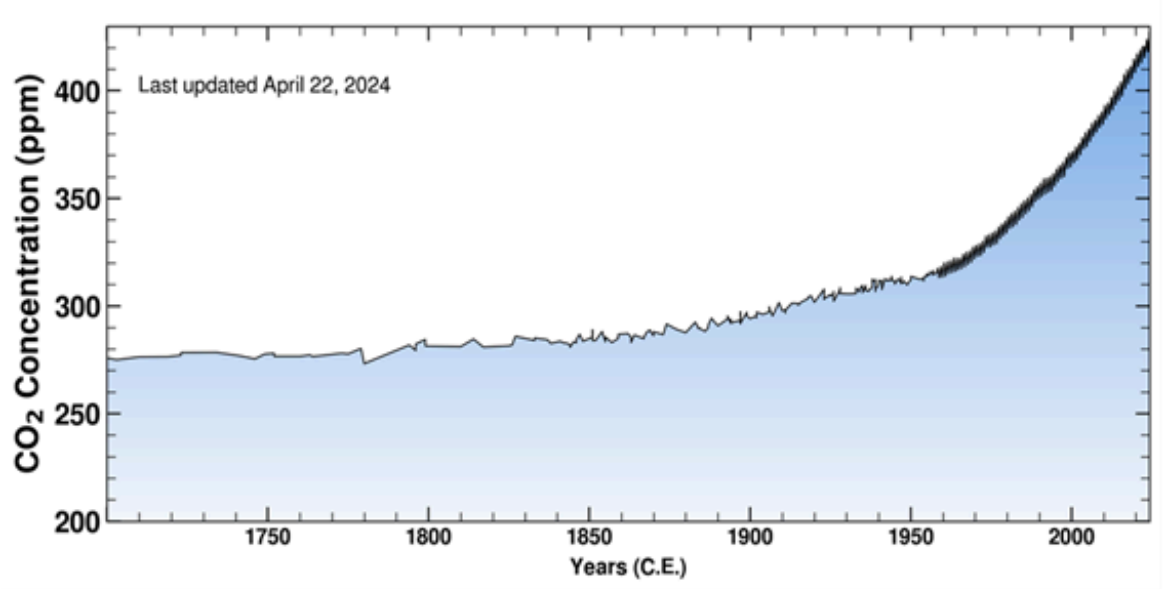

Figure 1. The Keeling Curve 1700 – Present
Source: Scripps Institution of Oceanography at UC San Diego
(A note on units: ppm means parts per million, referring the number of carbon dioxide (CO2) molecules present in one million molecules of dry air).

Global warming can be described as a **hyperobject**. A hyperobject is something too conceptually large for its impacts to be immediately comprehended.[2] An analogy might be the sum of every piece of plastic dumped into the ocean, not just the metonymical straw you see lodged up a turtle's nostril in environmental advertising – there is too much to count, and the ecological consequences of all

> "Climate change is like that; it's hard to keep it in your head for very long. We engage in this odd form of on-again-off-again ecological amnesia for perfectly rational reasons. We deny because we fear that letting in the full reality of this crisis will change everything."
>
> – Naomi Klein, *This Changes Everything* (2014), p.5

that plastic will be enormous. Climate change is happening, manmade pollution is eating away at the **tolerance margins** of nature, and yet... in spite of mounting evidence to the contrary, it can sometimes be easier to imagine that nothing is happening at all.

In her analysis of the linkages between capitalist economies and climate change, Naomi Klein (2014) explores the difficulties involved in thinking about climate change in any sustained fashion. She nuances **climate denialism** into two main facets: outright denial and making a conscious or unconscious choice not to think about climate change too hard. If thinking about climate change is an issue of scale in space and time, then it may help to look at the big picture through a smaller prism.

The Role of Milling Heritage in Climate Action

Hold an image of a wind-powered corn mill in your head. In order to grind grain into flour, a corn mill has to exist in relation to the land around it, which in turn is subject to historical changes in land-use, such as the mechanisation of agriculture, the expansion of monocultures and biodiversity loss. The flour that is produced might then be shipped, baked into bread, and retailed, all of which involve varying degrees of fuel usage.[3] The corn mill is not isolated from wider processes, and any heritage programme built around it ought to reflect that interconnectivity. Those involved or interested in milling heritage cannot afford not to think about climate change. If climate change is treated as a true planetary emergency, Klein argues, it could become a galvanising force for humanity. Broadening the scope of milling heritage to include ideas like the historical treatment of nature and the evolution of turbines creates greater opportunities for socially and environmentally responsive historical education at local levels.

Heritage can be misconstrued as at odds with development. This could not be further from the truth. Built into the Society for the Protection of Ancient Building's (SPAB) foundation is a fair and ecological view of preservation that can make industrial heritage relevant to the fight against fossil fuel dependency and climate change. William Morris, textile designer and co-founder of the SPAB, wrote essays that argued England was 'sacrificing its connection to nature and the past in the pursuit of material gain' (Thorsheim, 2013: 7). In 'Why Not', Morris (1994: 24-7) even considered that reducing reliance on coal and steam might make it easier to address the social inequalities that factories had come to symbolise. The SPAB mills section dates back to campaigns to protect surviving windmills in 1929, long

after Morris's death, but it can be understood as a valuable extension of the SPAB manifesto's aim to hand down buildings as 'instructive and venerable to those that come after us' (Morris and Webb, 1887).

Preserving mills is important not just because they can be picturesque or provide evidence of historic labour patterns, but because mills also demonstrate an ongoing history of how land is used and treated. Mills offer ways of thinking about the troubled relationship between nature and industry that is so central to understanding the climate crisis. Becoming more aware of mills offers a historical approach to renewable energy that is not abstract or distant, but rooted in knowledge of local environments.

Endnotes

1. The term 'free world' was used by Yergin to exclude stockpiles and reserves of oil from the Soviet Union or China.
2. The definition given here for 'hyperobject' is a simplification of the arguments made by philosopher Timothy Morton, who has thoroughly explored the relationship of hyperobjects to ecology and climate change; see Morton, Hyperobjects (2013).
3. This scenario is working on the proviso of this corn mill surviving the larger decline of mills. The corn mill is used here to consider how mills might connect to climate change on an economic level. See Chapman, Fuel's Paradise, p.54-55 for an analysis of how the amount of fuel required for a loaf of bread produced in 1975 would be broken down.

References and Further Reading

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