The Low-Carbon Life: The Pandemic and the Ponzi Scheme

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The global events of 2020 – the Black Lives Matter protests, the climate-change-related catastrophes, and the COVID-19 pandemic – are all part of a collapsing, 500-year-old Ponzi Scheme with the planet that has enriched half a billion people across the globe (probably including everyone reading these words) through the exploitation of people of color, the extraction of finite fossil fuels, and the extinction of species and the increase in zoonotic disease. That Ponzi Scheme has also led to Jevons Paradox, in which well-intentioned efforts to reduce fossil-fuel use have led to an increase in the use of fossil fuels globally. The pandemic, in turn, has accelerated us into the future (as all pandemics do) and enlisted us all in a global experiment of living a low-carbon life, in which the demand for fossil fuels has greatly diminished as a result of our increasingly moving bits rather than bodies around the world. This challenges assumptions in the architectural profession about the value of single-use buildings or districts at a time when 2/3rds of the economy now occurs in people's homes, about the need for new buildings in the face of a vast amount of empty space in existing ones, and about the need for more carbon-based construction given the enormous amount of carbon already embedded in the built environment. The low-carbon, post-Ponzi-Scheme life will require a new architecture ethic around multi-use buildings and mixed-use districts as well as a new architectural aesthetic around the reuse of existing buildings and the reimagining of neighborhoods.

INTRODUCTION

We will never decarbonize our economy and the built environment until we understand how we came to depend upon carbon-based fuels and materials to begin with – which requires that we acknowledge our participation in a nearly 500-year pyramid scheme on the part of the Global North, what I will call our "Ponzi Scheme with the planet."[1] A Ponzi Scheme is a type of swindle in which its perpetrators get others to invest in it with the promise of enrichment, while exploiting them in order to guarantee profits for those at the top of what is essentially financial fraud. While the name derives from the work of the famous 1920 swindler, Charles Ponzi,[2] the most notorious recent example was the 2009 financial Ponzi Scheme of Bernard Madoff,[3] in which he conned 4,800 people by falsely claiming that he had invested their money, when he really used their money to pay handsome returns to his initial clients.

While Ponzi Schemes are illegal, we learned from Madoff's scheme that if it gets large enough, people don't – or don't want to – see it. Madoff had many supporters up to the moment his whole financial house-of-card's collapsed, as Ponzi Schemes always do. Such schemes require exponential growth in order to satisfy those who have invested in it, and eventually the perpetrators of the fraud run out of people to exploit and run out of money to return to investors once the latter understand that they have been conned. Such schemes do not end slowly; Madoff's scheme fell in a matter of days, and he is now in prison for his crimes.

OUR PONZI SCHEME WITH THE PLANET

Our Ponzi Scheme with the planet has had a similar trajectory. Initiated mainly by the nations of the Global North, some five centuries ago, the Age of Exploration sought to enrich the countries who were the biggest investors in it, initially colonial powers like France, England, and Spain. As explorers started to have contact with previously isolated population, they brought diseases that became epidemic, such as the measles and smallpox that extinguished 70% or more of the Native American population after contact with European settlers.[4] Explorers also sought new sources of wealth by extracting valuable resources: initially rare minerals like gold and later fossil fuels like coal, which are "thousands of times cheaper than human labor."[5] The desire for cheap labor also led to the enslavement mainly of people of color as Europeans evolved the idea of race in the 16th century to devalue people based on their skin color as a way to justify their exploitation.[6]

That Ponzi Scheme happened at such an enormous scale, with so many people having bought into it, that most did not want to admit to participating in a way of life based upon human exploitation, resource extraction, and ecological and cultural extinction.[7] Nor is it a thing of the past; our Ponzi Scheme with the planet continues to this day. Human exploitation still thrives around the world, having taken new forms, like sex trafficking. Resource extraction still happens across the planet, now more focused on carbon fuels like oil and natural

gas rather than gold. And biological and cultural extinction continues apace, as record numbers of species and languages are disappearing from the earth. Meanwhile, wealth continues to concentrate at the top, with 1% of the world's population now controlling an extraordinary 44% of the globe's wealth.[8]

The urge to deny this is huge, as Madoff's example shows. The U.S., for example, has one of the highest percentages of climate-change deniers, white nationalists, and COVID-19 skeptics in the world.[9] Those who have benefited the most from Ponzi Schemes usually remain the most committed to them and the greatest enablers of them, perhaps because they have the most to lose when the scheme collapses. Such schemes fall apart not only when they run out of people and resources to exploit, but also when existing investors start call the bluff. Which is what happened in the year 2020, when three global crises erupted almost simultaneously: the COVID-19 pandemic, the Black Lives Matter protests, and climate-fueled catastrophes.[10] That simultaneity was no coincidence. Those events all have a common origin in our Ponzi Scheme and their coming to a head in 2020 marks the moment when many of those who have benefited from the scheme – the relatively well-off of the world – began to say: "enough!" That is the point when, as Madoff learned, the financial pyramid crumbles.

THE PANDEMIC TIPPING POINT

When I first wrote about our Ponzi Scheme with the planet in 2013, I thought that large-scale, weather-related disasters over a number of years would bring it to the point of collapse, but I was wrong.[11] COVID-19 proved to be the tipping point. Just as the age of exploration brought virulent diseases like smallpox and measles from the Global North to people who lacked any immunity to them, COVID-19 has flipped the tables, with a highly contagious novel coronavirus from the Global South sweeping through every country in the world, killing over a million people so far.

Pandemics disrupt our lives by accelerating us rapidly into the future and bringing long-term changes to our lives and to the built environment. The cholera epidemics of the 19th century, for example, prompted the widespread installation of sanitary sewers and indoor plumbing, which accelerated urbanization and the rise of industrial cities. Likewise, the 1918 flu pandemic fueled a desire on the part of many people of socially distanced single-family housing and private automobiles, accelerating suburbanization and auto-centric development in the 20th century.[12]

We can already see some of the acceleration that COVID-19 has set in motion, changing how many people live, work, shop, learn, and move around. One national survey of U.S. white-collar workers showed that 75% want to continue working from home at least one or more days a week after the pandemic ends, with 32% wanting to work fulltime from home even after the pandemic because, among other reasons, they see it as healthier, saner, and a time saver.[13] Meanwhile online doctor's visits – telehealth – has increased 12% in just two months after the start of the pandemic.[14] And a UBS study has shown that U.S. retail sector may lose 11% to 17% of stores by 2025, as 100,000 to 150,000 stores close in next five years in the face of e-commerce growing from 15% to 25% of retail sales in just one year.[15]

THE LOW-CARBON LIFE

This shift in how many people live, work, and shop has affected our carbon footprint as well, with the pandemic enlisting all of us in a global experiment of living a low-carbon life. The technology needed to do this has existed for some time, with mobile digital technology and the Internet enabling many people to live and work almost anywhere. But the pandemic has forced us to break our 20th century habit of expecting in-person interactions and it has created, instead, a world in which distance education, telecommuting, and the on-demand delivery of goods and services to our doorsteps have gone from being emergent trends to becoming the dominant ways in which many people now live.[16]

The pandemic has also revealed the profound inequities in countries like the U.S. Over 45% of the workforce are considered essential workers, who cannot work remotely and who are often paid less – and exposed more to illness – than remote workers.[17] Such inequities require immediate attention so that we do not come out of the pandemic with a new type of Ponzi Scheme, in which the well-off, served by poorly paid delivery people, becomes just as another form of exploitation. We need to treat essential workers as their name suggests–essential–and ensure that they have more protections and better pay.

PRE- AND POST-PANDEMIC LIVING

All of this suggests that we need to frame every conversation in terms of whether we are talking about something in a pre- or post-pandemic context. Consider the conversation about carbon-based pollution in our atmosphere. In a pre-pandemic context, that conversation would have involved a debate over whether or not we have hit "peak oil," which is the point where our consumption of fossil fuels outpaces the readily available supply. And it would have involved a discussion about how to make our production and use of fossil fuels more efficient, including through the design of more energy efficient buildings.[18]

The problem with that pre-pandemic conversation is that it presents us with what economists call the Jevons Paradox. That paradox, first described by the economist William Stanley Jevons, in his 1865 book The Coal Question, states that the more efficient we are in using a finite resource, like fossil fuels, the more of that resource we consume.[19] There are several reasons for that: as technology makes the consumption of a resource more efficient, it lowers its relative cost and increases people's discretionary income, which leads us to buy and consume more.

Figure 1. The low-carbon life includes living in walkable communities, close to work and those you care about. Image credit: Corey Gaffer.

Prior to the pandemic, Jevons Paradox stymied our best efforts at reducing fossil fuel consumption. Although energy consumption in the U.S. decreased by 11% per capita from 1971 to 2015, global consumption increased 45% per capita over that same period, driven in part by energy-efficient technologies that helped grow economies and that enabled people, with more money, to consume more energy.[20] Our focus on efficiency on the supply side, in other words, just increased the demand for the very thing we were trying to conserve.

In the pre-pandemic, Ponzi-Scheme world, the most common solution to Jevons Paradox was a carbon tax, which artificially increases the price of fossil fuels that efficiency efforts make less expensive.[21] Analysis showed, however, that a carbon tax, alone, does not decrease fossil-fuel consumption nearly enough to reach aspirational goals, such as an 80% reduction in greenhouse gas emissions between 2005 and 2050, in part because fossil fuel consumption increases far faster than even the most progressive tax. Also, countries heavily invested in fossil fuel production, like the US, have a lot of political factors working against taxes that can slow down the accumulation of wealth of those at the top of the economic pyramid.

The tipping point in our Ponzi Scheme, triggered by COVID-19, has completely changed that conversation, with fossil fuels serving as one measure of how dramatically our lives have changed. For the first time in history, the demand for fossil fuels plummeted so far that the global price of oil went into negative territory in April 2020.[22] Oil producers, in other words, had to pay people to take up the excess supply, with jet fuel consumption down 54% and gasoline down 36% from a year earlier.[23]

Those who think that that was a temporary aberration and that things will go back to "normal" once the pandemic has ended don't understand the larger transformation that the pandemic represents. Our Ponzi Scheme with the planet has begun to collapse, transforming our lives and livelihoods in ways that have altered the very need for what once seemed essential, like fossil fuels. We have avoided Jevons Paradox, in other words, not taxing the supply of fossil fuels, but by a stunning and completely unprecedented drop in demand for them as we live lower-carbon lives, moving mostly bits rather than bodies around the world. The virtual nature of the low-carbon life has its downsides, but it shows what a post-Ponzi-Scheme future might be like, no longer dependent upon exploiting other people and extracting finite resources, as we live closer to what our ecological footprint should be.[24]

POST-PONZI SCHEME ARCHITECTURE

With the crumbling of our Ponzi Scheme with the planet has come a realization that we have too much of the wrong kind of built space. So much of what we have constructed over the last few centuries, and especially over the last 100 years, assumes that everyone needs to commute to work, drive to meetings, shop in stores and learn in lecture halls, as if communication can only happen in face-to-face interactions. That constant movement of bodies as we live, work, shop, and learn also justified one of bedrock assumptions of the architectural profession: that our primary task is to design specialized buildings to accommodate the singular uses that the different parts of our lives seemed to demand.

As Nikolas Pevsner has shown in his history of building types, many specialized structures–hotels, offices, warehouses–arose in the 19th century in parallel with the industrial revolution and the rapid growth of our Ponzi Scheme. Prior to industrialization, many human activities occurred in multi-use buildings – often in houses and farms, where people worked as well as lived – in flexible spaces whose functions changed with the time of day or season. What makes that history newly significant is that now, employees working from home now account for over 2/3rd of U.S. economic activity.[25] That suggests that we have entered a high-tech, digitally enabled, internet-reliant version of pre-industrial homestead economy, in which goods and services increasingly get delivered to us rather than our going to them.

RESETTING OUR CARBON FOOTPRINT

This shift in the use of space does not mean the end of architecture, of course. But our post-pandemic, post-Ponzi-Scheme reality represents a profound change in how we think about architecture, how we occupy it, and how much of it we need

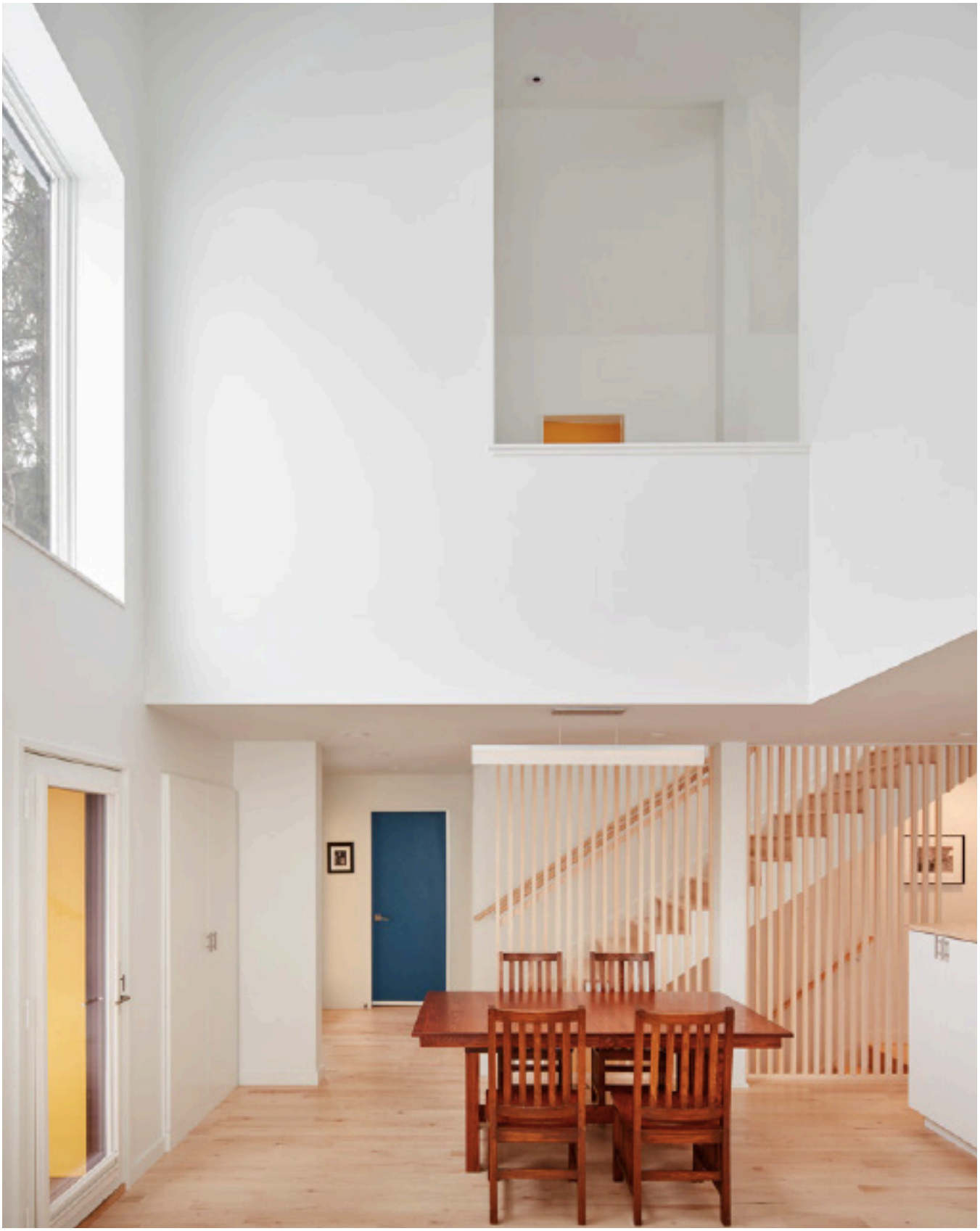

Figure 2. Reducing our physical and environmental footprint also means using vertical space and ample light to create a sense of expansiveness. Image credit: Corey Gaffer.

– all of which will have a major impact on our carbon footprint. The most effective way to reduce that footprint is to preserve the embodied carbon that already exists buildings, or as former AIA President, Carl Elefante, put it: "The greenest building is … one that is already built."[26]

As we increasingly live, work, learn, and shop from home, we have begun to see the tremendous number of empty stores, vacant offices, and under-utilized classrooms that we have inherited from the pre-pandemic world, when we regularly commuted from one special-use building to another over the course of a day, from our homes to offices, stores, schools, and factories and back again. What we do with all of that excess built space will be one of the great architectural challenges – and carbon-reduction opportunities – of our time.

The U.S., for example, has roughly 8.5 billion square feet of retail space, or approximately 24.5 square feet of retail space per capita, which is over five times Europe's average of 4.5 square feet per capita.[27] With online shopping now the dominant way in which many people now receive goods, let's assume that the demand for retail space in the U.S. will decline to the point where it equals the European average. That means that the U.S. would need only about 1.5 billion square feet of retail space or 7 billion square feet less than what we have now.

In terms of addressing unmet needs, that amount of vacant space could be repurposed, for example, as incubator facilities for people wanting to start businesses or as housing for the over half million unsheltered persons in the US.[28] And in terms of carbon capture, If we repurposed that existing retail space, as opposed to demolishing it and building new space, it would equal a reduction of 50 to 100 pounds of carbon per square foot or 350 to 700 billion pounds (175 to 350 million tons of carbon), which is the annual average carbon footprint of 23.3 million Americans at 7.5 tons per person.[29]

At the same time, the number of people who intend to continue working from home will lead to a decreased demand for the roughly 4 billion square feet of office space that currently exists in the U.S. We may also see a decreased demand for the roughly 4.4 million hotel rooms that exist in the U.S, as people increasingly interact through digital platforms rather than fly and stay for in-person meetings.[30] Let's say the post-pandemic demand for that space is half of what it was prior to COVID-19, which would mean 2 billion square feet of office space and 2.2 million hotel rooms would become available for other uses.[31] By repurposing that space rather than tearing it down, we could save another 36.3 to 72.6 billion pounds (18 to 36 million tons) of carbon.[32]

THE LOW-CARBON CITY

The same opportunities exist at the scale of the city. Like most 20th century architecture, many metropolitan areas have a lot of redundant and under-utilized space because of single-use zoning, which has left whole areas of our cities and suburbs nearly empty at different times of the day or week. This represents not just an enormous expenditure of carbon to construct buildings that sit empty part of the time, but also an expensive and carbon-intensive transportation and parking infrastructure to accommodate the moving and storage of vehicles.

With the delivery economy moving goods rather than people, we now face the question: what we will do with all of that infrastructure, with all of the surface parking, expansive highways, and widened streets that we put in place to handle a volume of vehicles we may never see again? The empty parking lots could become green spaces and recreational fields; structured parking could become emergency shelter or low-cost housing; and residential and commercial districts could become diverse places in which to live and work, shop and play, study and worship all within the same buildings or city blocks. Ultimately, the low-carbon life may embody the idea, first expressed in the 1970s, to "think globally, act locally," as we become more digitally connected to the world and more physically and psychologically connected to our communities.

The challenge for the architectural community going forward is twofold. We need to develop an architectural ethic related to living a low-carbon life, in which we challenge out-of-date assumptions about how we use built space and occupy neighborhoods. And we need to develop an architectural aesthetic that uses as many low-carbon materials and methods as possible as well as one that conserves the carbon already embodied in buildings. A low-carbon life will require more functional flexibility to accommodate a diversity of activities, and more formal and material creativity to maximize renewable resources and to recycle and reuse as much as what already exists. There is life after our Ponzi Scheme with the planet, and we have already begun to live it.

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