

## **Electricity Vs Fire**

By Walt Patterson

What's wrong with fossil hydrocarbons? Why are so many people so concerned about coal, oil and natural gas? They're not toxic. They have versatile and valuable molecular structures. That's why we use them to make plastics, chemicals, lubricants, fertilizers and pharmaceuticals. Unfortunately, however, that is not the main reason we dig them up or drill for them. The problem with fossil hydrocarbons is what we do with them. Most of the time, and for most of the coal, oil and natural gas we use, what we do with them is burn them. We set fire to them. Our problem is not the fossil hydrocarbons. Our problem is fire.

We don't think of fire as a problem. We evolved with fire. We think of it as cosy and welcoming. But fire is a violent, extreme process. It produces the heat we want - but at a temperature so high it's dangerous. Fire rapidly turns resources, especially the fossil hydrocarbons, into waste. Much of this waste - smoke, particulates, sulfur and nitrogen oxides, possibly mercury and polycyclic hydrocarbons - is suffocating or toxic, making city air unbreathable and poisoning forests far away. The need to feed fire triggers international tension. Waste from fire, especially carbon dioxide, is relentlessly upsetting the climate of our only planet.

Why, then, do we still use so much fire? Think of what we do. In physical terms, we carry out six activities. We control heat flow. We adjust local temperatures up or down. We make light. We exert force. We move things. We manage information. In all these six activities we use physical artefacts such as lamps, motors, electronics and especially buildings, and two processes - fire and electricity. Throughout prehistory and most of human history we have used fire, for heat and light and - after the invention of the steam engine - for force and movement. For more than a century, however, we have had a different option - electricity.

Fire is a chemical process. Electricity is a physical process. Unlike fire, electricity does not change what it happens in, or produce hazardous waste. Electricity can deliver heat at any temperature, as desired, down almost to absolute zero. Electricity can give us heat, light, force and motive power. Fire has little to offer for managing information; electricity is essential and ubiquitous, from telegraph to computers to smartphones.

Nevertheless, because we evolved with fire, we take its pernicious consequences for granted. Instead we have created a global economy in which feeding fire is a key economic activity, and the crucial source of revenue not only for some of the largest companies but for entire countries. We even make most of our electricity using fire. We don't have to. We can harvest natural energy flows such as moving water, wind and sunlight to create fire-free electricity, and we are doing so more and more. But we still think, for instance, that coal-fired electricity is cheap, even as coal fires strangle our cities and exacerbate ever fiercer weather.

By giving us the ability to smelt and shape metals and manipulate other materials, fire made possible human control of electricity. As a thought experiment, however, suppose we had electricity for all our activities, and then discovered fire. Once we realized how damaging and dangerous fire would be, locally and globally, we would almost certainly ban its use.

That, of course, cannot happen. However, what we can do, and are already doing, is to reduce our dependence on fire, in two ways. First and most importantly, we can improve the physical things we use to do what we do - especially the buildings. We have long used fire to compensate for inadequate buildings. We still do. Improving our buildings will dramatically reduce our use of fire.

At the same time we can accelerate the shift away from fire-based to fire-free electricity. That will not be easy, because the fire-feeders are doing everything in their considerable power to oppose the change. But more and more people now realize the urgent imperative to reduce our reliance on fire. City governments and enlightened companies worldwide are already taking the lead. Major investors including endowments, pension funds and insurance companies can redirect their financial support, to reduce the risks from fire and speed the transition now under way. Electricity versus fire is the fight for our future. If fire wins, we lose. Let's not lose.

(c) Walt Patterson 2015

*[Walt Patterson](#), a founding member of the editorial board of EER, is associate fellow in the Energy, Environment and Resources Programme at Chatham House in London. His latest book, just published, is [Electricity Vs Fire: The Fight For Our Future](#).*