

Energy of the Capitalistic Shock

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We live in times of the greatest civilisation transformation since the birth of capitalism and the greatest technological change since the dawn of industrial production. But do we really catch all circumstances related?

Energy technologies as social constructs

To understand what is a social construct is in Foucault’s meaning we have to assume that our perception shapes social reality surrounding us. So how we call and how we feel any phenomenon – in fact determines it. Thus it should be noted that energy is that particular kind of good that allows people to satisfy their demand for other goods. This positions both the demand for energy and energy technologies in a wider social and awareness context.

We do not consume energy (only) for its own sake, e.g. in the form of heat – but it defines our position in relation to the entire consumption chain.

The way we perceive energy technologies often reflects our attitude to such recognised social constructs as the market, state, economical system, community, but also the perception of humanity and its place in the universe. And in line with the dialectic of social constructionism – these are variational phenomena, undergoing transformations along with changes in the dominant trends of social awareness.

Although modern generations may find it hard to believe – the oil industry has presented itself and has been perceived not only as the avant-garde of modernity, but also as an outpost of egalitarianism. The American Petroleum Institute commercials from the 1950s are easy to find – especially with the emblematic “[Destination Earth](#)” (1956).

Of course, today the story of the liberation of Mars from the tyranny of the **Stalin**-like emperor through the discovery of the blessed impact of oil refining – may be associated with another slogan, from a similar propaganda cuisine, saying that “*DDT is so safe, that you can eat it*” because “*DDT is good for me-e-e!*”.

However, today not only our ecological awareness is different – our consumer experiences also differ.

We are the grandchildren and great-grandchildren of Fordism, mass consumption and universal availability of almost everything is so obvious to us that some of us are worried about that.

For the post-war generations, however, none of this was obvious. Not only in terms of the seasonality of agri-food production (typical even for the 1980s and 1990s), but also because limited availability of industrial goods from the era before the massification of plastics, which was also a consequence of the oil boom. The World has been subjectively shrunk thanks to oil becoming the main energy resource, and global capitalism has gained the catalyst of its presumed endless development thanks to the continual increase in consumption. And here is where the key feedback took place.

Capitalism to exist - needed an energy based on oil (and other fossil fuels), thanks to which it was possible to produce more and more, transport goods around the globe and sell more and more, constantly stimulating demand. Including, in particular, by constantly striving to improve one's status, also expressed in the amount of individually consumed oil and its derivatives.

But such a boom also meant increased human-nature interaction. Global hyperproduction and hyperconsumption, synonymous with the success of mankind in its supposedly "*best period in history*" - had an unprecedented impact on the climate, not only polluting the environment, but also *leading to the threat of annihilation of life on Earth*, as it was announced one day. First, a few believed, then the slogan was picked up by those more and more influential. That triggered a change of consciousness aimed at finding a new paradigm. And the new consciousness needed a new social construct, also, and perhaps above all, in the energy sector.

Image on the right is from Pixabay



The dichotomy of the old and new paradigm was initially particularly visible in the antagonism of nuclear energy and the first proposals for renewable energy (RE) technologies. The nuclear industry was perceived not only as potentially dangerous due to the possible effects of technological disasters, with the most emblematic example of Chernobyl. **Nuclear power plants evoked negative social reactions in the Western world through their association with the nuclear arms race and the entire military-industrial complex**, as well as the organisational formula clearly associated with great capital, top-down attitude, imposing the strenuous path of modernisation through industrialisation. In the realities of the Eastern Bloc, where the effects, including the social ones, of Chernobyl, were felt even more strongly - opposition to nuclear technology was clearly oppositional. Such a strongly counter-cultural character was, for example, the campaign conducted by ecologists and pacifists against the construction of a nuclear power

plant in Żarnowiec, Poland.

Meanwhile, in opposition to the atom, a positive solution was searched for, which could at least aspire to the position of an energy alternative, and at the same time would reflect the social aspirations of the circles that were active in the 1970s and 1980s. Renewable energy (initially mainly onshore, then also solar energy) was at this stage strongly associated with bottom-up attitude, self-sufficiency beyond the reach of large-scale industry and capital, dispersion and organic. **Nuclear vs. renewable energy conflict had then this strongly conscious nature.** Supporters of the former identified it with order, free competition or a strong state (depending on their own preferences), progress and modernisation through industrialisation (depending on geopolitics – capitalist or real socialist). The opponents thus appeared as anarchists, hippies, and even neo-Luddites or potential “*ecological terrorists*”.

What is important – in fact, these early divisions, at least to some extent, influenced the very course of the energy transition in the countries where they occurred particularly clearly, such as in Germany. The technological change was therefore associated with a paradigm shift, thanks to which, in Germany and Denmark, it was possible to maintain a more bottom-up, dispersed and communitarian nature of the renewable energy sector. Interestingly, the contemporary clash between the social model associated with RE and its industrial opposite based on the atom also followed to some extent the path marked out in the 1970s and 1980s, while the role of the fictional Ventana and the real Chernobyl was repeated by Fukushima.

In California directing to the RE path was a response to the trauma of the Vietnam War, and kind of displacement of **Ronald Reagan** neoconservative governance and then his presidency. Former hippies and beatniks, and their children after them, maybe they cut their hair and grabbed credit cards, but to buy Priuses and build smart houses powered by RE. Involvement on this side has become the expression and main manifestation of social participation.

Albeit more detailed studies bring an interesting imposition of the awareness of RE as a certain social concept – based on the classification by gender or education (although not by age). So as we can see – reality confirms the weaving of energy technologies into existing and new social constructs. The dominant social attitude may be a barrier to transformation, but in fact that **is the committed minority that can be the catalyst for universal change.** Changes take place not only and not primarily with the formation of a new dominant paradigm and its universal acceptance, but through the coexistence and conflict of various constructs. That is, as **Moscovici** (1961) pointed formulating and implementing the assumptions of the *Theory of Social Representation*.

Also crises have a significant impact on our perception of energy technology as a socially active factor. They are shock impulses that stimulate change by creating an image of the future.

A shock and opposite, the human ability to “adaptation and vulnerability”, in this case to a progressive climate crisis – both currently determine the social position of energy technologies.

Even despite some of their technical or performance weaknesses, which are no secrets at all. That is why this process must be bilateral, and the social implications must remain no

less important than the technological ones also from the point of view of managers and engineers directly interested in implementing changes.

The oil-based energy technology was representative and itself co-created the reality of the Golden Age of post-war capitalism.

Supplementing with nuclear energy corresponded to the dominant paradigm of the triumph of neoliberalism, the mirage of “*Star Wars*” and “*the end of history*” vision. RE have not (yet?) brought the expected decentralisation, nor increased participation, and they still are not an undisputable tool for transition to post-growth. On the contrary, like their predecessors, they have simply become tools of great capital, only under the cover of new social constructs, doctrines and ideologies, with profits for the same financial and industrial players as always. This does not mean, however, that the process of transformation is over and that the RE as a social construct will not become the beginning of the end of the of capitalism as we know it, or even the end of capitalism itself. After all, it is primarily a matter of our awareness and the ability to imagine the unimaginable.

Lock-in and path dependence

It could seem that we are dealing with a paradox. Especially enthusiasts could doubt how technologies and projects associated with innovation and diversification could enter the path dependence and find themselves in a lock-in situation. Thus similar to lock-in on carbon, the breaking of which is still a key element of the entire transition process.

This doubt, however, comes from a basic misunderstanding **that technological, financial and social systems naturally tend to stasis**, irrespective of the benefits of transient, possibly controlled gaps and shocks. The risk of lock-in increases with the increase in the market position of a given technology. Including the recognition by the market of the prospects of its further development, of course in the sense of accelerating and increasing returns on investment. Also states, as those entities which, in the case of energy policy, create a legal momentum for technological change – want to operate in a predictable and possibly planned environment that can be used in the rhythm of election campaigns. Therefore the lock-in mechanism can by no means be considered a thing of the past as the carbon footprint is reduced. But with all the negative connotations attached to it – lock-in is also a periodic stabilization within a path dependence and that how it should be analysed without prejudice. Lock-in is sometimes chosen on purpose or is treated as inevitability, mainly due to the investment policy, the payback period, depreciation of assets etc. This is i.a. why it was so difficult to break the coal lock-in – since the lifetime of coal-fired power plants was calculated on 40 years, and *climate change* announcement created social pressure for transition before the end of that period. RE technologies, as still relatively young and developed in a distributed manner, should theoretically have a natural defence mechanism against lock-in. However, because often they are introduced in a kind of shortcuts, due to the extraordinary situations, including external shocks – it leaves gaps for **inertial tendencies**.

Following the list of main lock-in mechanisms by Klitkou et al. (2015) – we must note that there is nothing to prevent them from occurring also with the development of the RE. When it comes to the economy of scale, for example, there is a sudden increase in the number of **BEV cars**. Alternative technology based on **hydrogen** as less popular – is also less available. And it is less available because it is less popular when BEV production is now closer to mass scale – so its consumers faced a typical lock-in risk of resources shortage,

with lithium, nickel and cobalt instead of oil. This, in turn, leads us to the economics of scope, in which the consumer himself is ready to reject diversity in the market, considering it excessive and burdensome. And since it is produced and sold in a specific technology – learning effects are growing, also being an element introducing path dependence. It is strengthened by the infrastructure created for the locked-in technology, the development of complementary technologies and, as a result increasing interest in informational returns. An informal social norm takes shape, then a custom, then a tradition, all with a propensity for further reproduction. Especially when institutional actors, crucial in the case of energy technologies become more engaged, introducing an element of differentiation of power and institutions.

A very interesting case of lock-in stimulated by the German government policy of financial incentives was described by Haelg, Waelchi and Schmidt (2018) with the example of solar technologies: **thin film** vs. **crystalline silicon**. The former dominates among larger installations, above 100 kW, especially open ones, while the latter have an advantage among roof installations. So diversity has been preserved – one could question. The problem is that it depends on the adopted research perspective, and simultaneously confirms the susceptibility of RE technology to lock-in mechanisms, even sectorally. We have already dealt with similar situations, e.g. when wind energy was temporarily stopped at the onshore stage and the transition to offshore was clearly delayed by already implemented investments in the first technology. Apart from car problems mentioned above – the lock-in mechanism is also noticed in the field of battery storage and the heating use of electricity from RE. Path dependence is a continuous process, even if the path is still relatively short.

Meanwhile, **lock-in is considered to be an objectively undesirable, reducing innovation, threatening future performance and potentially cost-intensive in the case of lock-in using non-optimal technology**. In the case of the RE, the key argument for using them was not only their compliance with the climate target, but also the potential to reduce dependence on fossil fuels, and thus their supply shocks. While in practice, we are witnessing a lock-in indirectly related to the transition to RE – concerning gas technology, considered complementary to RE. And there were warnings about such a threat (Haelg, Waelchi and Schmidt 2018). Since it was rightly pointed out that **a lock-in on nuclear energy as an allegedly bridge technology can only ultimately change an oil shortage into a uranium shortage** – the more such a hazard should have been seen in the case of gas.

The lock-in mechanism is therefore not a past or could be closed at any time. In research on the subject, there is a tendency to consider this process, and especially its effects, to be negative, or at least potentially dangerous for technological development (Scrase and MacKerron 2009). However, there are also voices in favour of a more neutral approach, seeing the path dependence and lock-in scheme as a more natural process and, at certain stages, perhaps even inevitable. Therefore, it is rather an evolution to which technologies in the economic environment are subjected, at the time of gaining even a subjective advantage over competitive solutions.

It also touches upon another important issue, i.e. considerations whether a transition, especially such a far-reaching is and should be made in a manner adopted for *deliberative democracy* (evidently declining) or by gaining a *discursive hegemony*, what is happening before our eyes, especially during a pandemic. Theoretically, the first mechanism would seem to favour the gradual generation of path dependency in the process of reconciling and

averaging positions. However, it is not obvious whether a sudden change, due to the rapid use of the “*window of opportunity*”, opened especially in the reality of a shock – could constitute a protection against further lock-in, especially if the previous conditions are restored. We can investigate it directly by observing the situation related to the COVID-19 pandemic and the recovery path that is just being adopted. It may be a momentum that facilitates, even partially, shaking off the already existing dependencies to **achieve the assumed climate and energy goals faster and more effectively**. However, reverse feedback may also occur. But as well, all negative socio-economic effects of a pandemic and the frequently raised postulates of “*stabilization and normality*”, understood as the *past that must be restored* – can be used as arguments also for maintaining previous path dependence. For the study of the lock-in mechanism in the RE sector – it is therefore a breakthrough moment.

Golden Path

The main trends of modern economy work since decades around “**Zero-Growth**” idea.

Whether reaching it as a necessity forced by climate circumstance or considering as an objective result of exhausting the possibilities of capital accumulation. However it is also known that **permanent growth is an inherent feature of capital**. So, in fact it does not matter much whether the World economy stops by itself or should be forced to it. **The shock is indispensable**. A shock supposed to manage disruptions in the supply chain (which in fact has not necessarily wanted to occur), as well as deal with weakening of demand, which also has not appeared on a satisfactory degree, so had to be caused intentionally. But anyway – is the World of financial markets really false economy today, and production and services remain real ones? Or is it already opposite?

Maintaining the appearances of Not-Completely-Globalised Capitalism in the North-Western hemisphere seems to have lost its sense. Sooner or later, we will be confronted with the problem of **delabourisation** anyway. The problem what to do with people whose work is redundant in practice, at least in the present dimension. Until now, however, their consumption was needed. We checked that people can be paid to refrain from working. And where to get for it?

By allocating a small percentage of capitalist rent obtained from the turnover of assets, considered optimal, to keep it all going somehow without nominal development and growth. Characteristic changes known from the last two years: greater virtualisation of the remaining work, the almost complete digitisation of money, the mere increase in power of states, but only acting as actors of capital – are just details to complete a picture.

This is why **COVID is the most important transformation of our times**, a change at the level of the essence of Capitalism and civilization as such. And it is a transition made jointly and inextricably with the use of energy instruments, to maximize profits from the energy market and to obtain a specific civilisation effect, in order to maximize profits from the energy market and to achieve a specific civilization effect, measurable using energy indicators. And as it happens with transformations – we cannot even imagine their final effect, but we already know that we are led to it. Almost certainly – inevitably.

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