

The Fictitious Dualism of Climate Change Mitigation and Adaptation

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Abstract

The present debate regarding climate action is twofold and includes mitigation of, and adaptation to climate change. However, most of the times in discussions, policy, and in the actual action as implementation of those policies, reducing emissions takes priority against adaptation. Even though from a theoretical point of view this dualism is possible only as a distinction/separation, it seems that in practice the question of the primordial unity of adaptation and mitigation is completely forgotten. This practical approach to the question of dualism between mitigation and adaptation is intimately linked to the predefined interpretation of the concept of adaptation. It is possible to orient our understanding of the concept of adaptation in a way that conforms to the origins of the mitigation/adaptation dualism as uniqueness, towards composition and collaboration instead of competition and antagonism, by widening our perspective in order to include the world not only as a standing reserve to be exploited, but within its natural boundaries. This creative behavior can liberate science from its present dominant position vis a vis the earth, mankind, and guide our societies closer to the human essence as a symbiosis with nature.

Preliminary Introductory Observations on the Concept of Adaptation

We have to act to address the challenges of climate change. This is what science tells us, and what we are striving to do at the moment. We make predictions about the future, and set specific legally binding objectives that aim to bring together economy and ecology, under the umbrella of climate emergency. Because there is no time to waste, we have made this a global effort, which is the right scale if we can have an effect on the climate. At the same time, we continue to destroy the environment and affect negatively the earth's atmosphere and climate, thus questioning the very same progress that improved our welfare from the beginning of the industrial revolution.

When we think of climate action, we mean both mitigation of and adaptation to climate change, but when we design climate change policies and measures, we admittedly act, almost exclusively, on reducing emissions, that is to mitigate climate change. Adaptation is present most of the times, if not always, as an incentive for increasing mitigation efforts at present, in order to avoid much higher costs in the future. Mitigation is what counts, and what is accounted for in targets. Numbers also matter because of economic losses caused by extreme weather events, and animal species that are threatened or go extinct as we speak. It is strange, to say the least, that while human survival is also menaced by increasingly frequent and intense extreme weather events, we still cannot argue, but for mitigation. Why is this predominance of mitigation over adaptation? This is an initial effort to shed some light in the way this phenomenon is presented in our world, and activities.

Throughout human history we have been adapting and changing. We know how our prehistoric ancestors looked like, and science helps us go back and forth thousands of years and track our DNA from Neanderthals and Cro-Magnons. However, there is a clear lack of

interest for adaptation, not only when it comes to climate change policy, but also in the public debate. How do we experience the idea of adaptation in our lives? Darwin formulated the scientific basis of adaptation, but his observation was possible because adaptation was something that was going on for thousands, millions of years, according to evolutionary biology. However, we do know that Romans were also thinking of adaptation because they were using that word. The term adaptation is made of two parts, ad, which means "to" and aptare, which means "to adjust, fit to, to join", but also "fitted". The French took those concepts a step closer to our modern era by pointing to the purpose of adaptation. In English, in the same period around 14th century, the adverb purposely, gave an even stronger taste of the intentionality, which makes sense, because we always adapt "to" something, we adapt to survive.

But do we hear the same thing that the Romans heard when we use the word adaptation, and if we do, are we open enough for adaptation to happen naturally, or we are adapting in a specific manner that reflects a specific understanding of what adaptation means? By asking these questions we do not wish to establish a new, artificial meaning for the word adaptation, but to walk side by side the path of the concept of adaptation through time. The reason is that at present we go through a deep evolution as a planet, because of the consequences of industrialization and our awareness, but also because of the possibilities that open before our eyes with technological advancement. We must not forget that until now adaptation seemed to be the one word that stood in the middle between our survival and extinction.

Adapted to Survive

It is very important to adapt to new conditions in order to survive. Adaptability is linked to the survival of entire species, including us humans, and to early humans' species who have gone extinct.

Notwithstanding this dire scientific warning of the importance of survival, we continue to undervalue famines that kill millions of people, and the fact that other animal species go extinct.

Adaptability is portrayed as a skill that one can learn, and that is also linked to competitiveness, but do we really need to learn how to survive, and if we do, does this mean that this skill is similar to computer coding, or it is a different kind of skill, innate and natural? Biology, social science and economics have all touched upon adaptation, but is there a difference between the social Darwinists, that claimed that the economically fittest should survive, and Darwin, who thought of natural selection? Both have a take on competition, and economics like every other modern science strives for accuracy, hence efficiency. Also, Einstein pointed to the ability to change, which is also relevant in our investigation for adaptation. Can we really change without competition, and if yes who chooses the winner, and how is this linked to our ability to survive? Those questions are all important and need clarification if we are to have a glimpse in the essence of adaptation.

Adaptation requires change, and we can distinguish also an element of force that drives this process. If we consider human adaptation in order to survive, then the violence of nature emerges, together with our vulnerability and mortality. While our mortality is natural, we have always tried to control the natural elements and rightly praised our power to withstand the harshness of nature when it comes to procuring food, and finding shelter.

It is also known that since our ancestors started abandoning the nomadic life and settled in small villages, they have started adapting their surroundings to accommodate their life, to make it easier, and survive. We domesticated animals, plants, and used trees for fire, shelter, and to make weapons and wage wars. This is why from the early references of the word adapt in Latin, we can recover the element of accommodation. To make something fit into something else, according to a certain measure, way. This is where the French element of intentionality, and purpose in adaptation came from. A specific concept of adaptation emerged, one that expressed the need to accommodate humans' lives and activities, by fitting their surroundings, and nature as a whole, into their way of life. Through the ages, the element of survival, while still important, ceded its primacy to our will to dominate nature, and our intention to make life increasingly easier. Survival passed silently in second place, after comfort and easiness, and it is clear that today we care predominantly about the maximum pleasure that we can draw from the most personalized experience. But in that way do we care for the essence of our survival?

At present it is trendy to be a survivalist, and share knowledge on how to survive in cities and in the wild alike. It is a kind of knowledge that we apparently do not need for our immediate survival, but a skill for a future sinister eventuality. We forgot that adaptation is linked to survival. But does this mean that the idea of adaptation disappeared or that it transformed into something else? Are we hiding maybe in plain view, our will to dominate and transform our surroundings, or are we just too numb to feel the epochal change that is happening as we experience adaptation?

Adaptability is not Imitation. It Means Power of Resistance and Assimilation

Adaptability is certainly ability that, even though it appears to be obsolete, because of the comfort of modern life, but it is still deeply rooted in our human nature. It would be difficult to argue that we would rather die than live, especially on the face of those who perish because of lack of essential things like food and water. However, it is clear that we have suppressed somehow the naturalness of the survival instinct. Asking someone about his or her ability to make fire, a shelter, or find food, is somehow not the best thing to start a discussion, but it can raise some eyebrows.

Nowadays, we do not even have to leave our houses to find food, that is already cooked, almost pre-digested to suit our personal needs. However, instead of our needs, much more attention is given to our wants, in the sense that the accent is more on pleasure than on the mere need to survive. The primacy of pleasure over real needs is reflected also in the immense variety of products that are readily available, made by competing producers and promoted by salespersons. Fashion, social aspiration or simple imitation drives our lives, while our privacy is assailed by stealth advertisements that look into our deepest and most immediate desires. Obviously, all that, is insignificant to our survival, because if it was crucial, there would be no need to go to such great extent to advertise all those products.

We are also naturally inclined to imitate, and this helps us a lot to learn, but it seems that in the case of our natural need for survival, imitation is also responsible for unlearning. By imitating others' ways of living, we are absorbed by nonsense, while downgrading the importance of our survival as a species. In that way, we suppress that natural, and very personal instinct that orients us towards the essential, even though mortality remains our most personal experience. More personal than the suggestion of our smartphone, to have our favorite dish at a restaurant nearby on lunch time. The easiness and comfort of affluence, weaken our capacity to distinguish the essential for our survival from the non-essential, personally and as a species. Slowly, but steadily we unwind millions of years of evolution that forged our capacity to adapt.

We continue to imitate our ancestors that stopped wandering on the earth, and started adapting their surroundings to accommodate their way of life and increase their comfort. In the modern era we are still imitating the early Homo Sapiens when we burn trees for energy, it is just that we do in a much more sophisticated way. The power of imitation is so strong that, in regards to industrial revolution, we have enframed human ingenuity within the fossil-based mindset and continue ever since to imitate that same approach towards nature. That mindset that uses fossils in all possible ways to make use of their energy, from the cooking pot, to the steam engine and nuclear reactors, we still imitate the early Homo Sapiens.

There is an element of resistance in every change, because things that come to exist, tend to insist in their existence before they are substituted or assimilated. When something is assimilated, it is in a way adapted to fit into something else, and change into something new. This is also a meaning of adaptation, that the French underlined by making the case for purpose, and intentionality in the concept of

John Kenneth Galbraith "The Affluent Society"
Martin Heidegger "Being and Time"

adaptation. Humans have assimilated their surroundings into their modern way of life. The essence of the surrounding environment, and nature in the wider sense, is approached, and interpreted from a perspective that requires it to be adapted, to fit, and accommodate efficiently, the fossil-based modern way of life, and its requirements for control, and comfort.

Choice and Natural Selection

It has become clear that the way we approach adaptation is not in the way we would if our immediate survival was at stake, and that imitation plays an important role in our choice. We continue to imitate our prehistoric ancestors, when it comes to our quest for comfort, and fossil-based energy and materials have enframed our modern way of life. In the past when our survival was at stake, the choices were clear enough, whereas presently in the modern era, comfort and variety have overtaken our instinct for survival, and subjected it to secondary, and artificial needs, that we are urged to satisfy.

Even if comfort, and ingenuous advertisement create new needs, and drive our choices, those last still remain personal. Actually, current salesmanship competes in personalizing those choices as much as possible. It seems that the artificial creation of needs, that are fueling our economies and our welfare systems, contribute to our alienation from our natural instinct for survival. Of course, this whole enterprise of micro management would not have developed to that extend, without technology in its many applications, such as surveillance.

The natural selection that once drove the development of species, including humans, to adapt to their surroundings, is substituted by personal choice. Medicine is also another example where adaptation is decoupled from the process of natural selection, because now we can resist illness and even prevent it, with increasingly personalized treatments. Actually, we can go as far as to say that the merge of medicine with technology gives adaptation another meaning, which is the exact opposite from the one that adaptation had, when natural selection and our need for survival were the guiding forces. Natural selection stands diametrically opposed to our superficial empowerment to choose, and to the artificial intelligence that is guiding this ability. Even though technology in medical science makes a difference to our survival, from different illnesses and to the quality of our life, its role to our human capacity to adapt is not clear.

Our adaptation capacity is possible because of natural selection. The forceful change, which is essential in natural selection, precedes and forms the development of our adaptation capacity. The relation between natural selection and adaptation, and the forceful characteristic that underlies this interaction, is the sign of an essential link between those two. So important, mandatory, and primordial, that it cannot be questioned. Adaptation is not a choice, or a possibility, for natural selection to occur, and this is why we can talk about instinct, and an innate characteristic of human nature. Survival is not a matter of choice, but a question between life and death, a question that we have already answered by existing. Instincts are not based on a rational, logic approach, to a given problem, but they are rather rooted to a different, deeper level of consciousness.

The Mitigation Framework

Humanity has seen great progress during the industrial era. Unimaginable improvement has occurred in our living standards, compared to just less than a century ago. Fossil-based energy has enabled all that progress, while at the same time it became a problem so serious that it threatens the very same progress it helped bringing about. Finite fossils are not only an existential threat to us humans, and to the earth itself with all other species, but they are also the biggest drive of wars and misery. In addition to their finitude, fossil-based energy and materials are the all-encompassing starting point for our survival.

In the industrial apparatus we have grown accustomed to interdependence and interaction, through the industrial plan. that plan catalogizes, stores, and unites every resource, striving for efficiency, with one scope, which is the final product. In this sense, the product is not the end of this chain, but the starting point, that drives the conception of the whole chain. This complicated conveyer of economic growth has both as a starting point, and a scope, the end-product. This ambivalence, that is enabled by the fossil-based economy and entrenched in modern enterprise, extends beyond the mere physical premises of a production facility, and into the spiritual world of ideas, because it controls the creation of value itself. In that way we can talk about value chains, that can link together in the productive process, different components of this process, including us. For example, farmers are operators within the value chain of the agro-industrial conglomerate. From primary producers, now farmers are proud to be components of the agri-food value chain, because in that way they can secure an outlet for their produce. As parts of the bigger plan, the value chain, farmers can be manipulated, or become redundant, as long as the final product and its purpose, is not affected. The question of food has many merits in the discussion about adaptation and mitigation, and like other economic activities, underlies this essay.

The progress that we have seen in the industrial era has elevated affluence to the level of human rights. Now we have the right to information, supported by electronic appliances specifically engineered for the consumption of internet-content. Those smartphones and tablets are not like the fast-moving consumer goods, but they still move huge amounts of earth, in the form of rare earths, use for the production of electronic appliances, batteries, etc. Rare earths are considered critical for their use in the modern economy, and for the biosphere, because of pollution and environmental destruction during their extraction and after their disposal. In contrast to their huge storage capacity of information in virtual clouds, those electronic devices, are programmed to become very physically stranded on earth, and obsolete. However, there is no need to demonize technology, but there is an urgency to become more critical towards the direction of the human ingenuity that is supposedly at the driving seat. Especially now that driverless cars are on the road.

The time we employ to procure and prepare our food is counted in minutes, and the more we get the full personalized experience, the more we get alienated from nature. Like rare earths, and everything else, food, meat, vegetables, are all considered raw material to be processed in a global value chain. Cows are accounted for their energy and greenhouse gases from methane production, and pigs

Martin Heidegger "The Question on Technology"

are praised for their usefulness in the manufacturing of many edible and non-edible products. More than manufactured, those processes are automated in the industrial complex that reaffirms welfare and our relation as humans to nature.

Trees are considered for their carbon sequestration capacity, so that we can harvest the maximum of their biomass to produce energy, and many other products to substitute fossil-based energy and materials. We harvest data, like we harvest forests, and the seas, and strive for maximum efficiency to maximize productivity in order to come as close as possible to resource efficiency. However, even though we start to calculate the mass of the insects that have disappeared, we are still uncertain of the value of that discovery in terms of energy units. Likewise, we are well knowledgeable about the calorific value of the fruits and vegetables, but we are not there yet with the protection of bees as unique elements in preserving those production activities. Mass and energy are not coupled enough to reveal their substance and importance in the natural world, and even though both are explored in cutting-edge research, paradoxes persist, such as the fact that we still continue to burn ancient and present-time trees, to produce energy.

The encompassing global character of the climate change emergency, is reflected in the way we have organized human activity, and admittedly in the economic activity, that claims as its supreme goal the increase of productivity. A strict and precise mathematical approach is applied in almost every aspect of human activity. As soon as an enterprise takes off, independently if it is for profit or not, the question of efficiency emerges immediately, and so does the human resources department. The very important discussion about the global population and the UN projections, that boil down to individual countries around the world, are the equivalent of our collective global modern enterprise on earth, that strives for efficiency.

Of course, the scientific method, which is based on solid data, and makes, as safe as possible, the predictions for the future, is very much linked to the technological progress, and the underlying premise, that big data equals big progress. However, bigger is not a synonym for true, or better. Quality and quantity are based on what we are looking for. For example, there is no qualitative basis to make the case that the principle of the universe is better reflected according to size. The European Organization for Nuclear Research, also known as CERN, pointy asks “what is the universe made of”, and not what is the smallest particle that we can detect. Universality is by definition encompassing, all inclusive, and not necessarily delimitating on the basis of size, but rather versatility. This is why it makes sense to search for the smallest known particles in our quest for knowledge regarding the creation of the whole universe.

This is why there is a difference in essence, and funding, between basic and applied research, with the latter being overwhelmingly pursued, and very much linked to the idea that we have come to develop about innovation. Innovation has to be applied in order to be evaluated, and most importantly valued for. Thus, frontier research that is not linked directly to application is not considered innovative enough to be funded. There are some bright exemptions to that rule, such as the announced mission on cancer treatment, as part of the next research period of the Europe Horizon 6. As we will see later on, the thin line between innovation and mere support of existing technological advancement, undercuts the climate debate in numerous ways. For example, it predicates the debate about carbon capture and storage or

nuclear energy, within the climate change mitigation debate.

The difference between truly innovative, basic research, and applied innovation, could be seen also within the concept of disruption in the fossil-based chain. Disruption as a concept, is present in many discussions. We discuss a lot about extreme weather events and their potential disruption to economic growth, trade, etc., and we praise it, when it comes to research and its potential to disrupt practices, that harm humans and the environment. However, it seems that the aversion towards disruption and risk of what is new, and unknown, is valid for both extreme weather events and scientific breakthroughs. In practice, there is a strong will to control disruptive technologies, as much as it is needed, to avoid harming existing technologies, and practices that would affect the fossil-based economy. The investment cycles are trapped in that dynamic, with technology reducing the time needed for wealth creation for the richest, while at the same time augmenting the milliseconds needed for High Frequency Trading, ad infinitum for the rest. Within a political process, which is bound by vested interests, the results hinder any possible scientific breakthroughs.

The whole system that technology and applied research are called to contribute is based on fossils. Our society and our way of living are directly linked to the use of fossil-based fuels or derivative materials. How we dress, what we eat, and how we move, and heat and cool our places, is based on fossil fuels. Technology is meant to increase efficiency in the whole system on the one side, but most recently resource efficiency gained traction, specifically for policy makers and scientists alike. The premise for that preoccupation is, that the fossil-based system is linear, thus extracting and using nonrenewable raw material is not sustainable, because in the long run we will run out of those finite resources. But what is the relation between resource and system efficiency? Would such a question bring anything new to the question about climate change mitigation and adaptation?

The versatile character of universality makes us think of the multitude of applications, tools, where we use material in our daily life. Within that versatility of universality, the idea of materiality emerges, supported by the admittedly practical approach of science that aims to order and control those universal principles, and provide solutions to everyday life. However, materiality is not more natural than non-materiality, and the unifying character of universality calls for synthesis rather than division. A synthesis precedes the possibility to be versatile in different ways, because we can only envisage a group of things, in relation to the abstraction from that group of objects. If we recognize efficiency as the unifying objective in our path towards a non-fossil-based future, then we accept it as a fundamental element towards our interaction with the world in its entirety, and everything that is included in that concept, flora, fauna, and us humans.

The Artificial Variety of Choices – and the Cover up of the Natural and the Essential

Some patterns have emerged until now that is worth recalling. Adaptation is a very primordial human instinct, responsible for our survival, and instrumental in our capacity as humans to discern between the immediate and essential, from the secondary, non-urgent, facultative and superfluous. We have also seen how the modern way of life, the underlying basis for science, and industrialisation, have helped us progress, while striving for efficiency. Our way of life,

and our vision of the whole world, is enframed by the fossil-based energy and materials system. Within that frame, which provides for artificial variety of products and choice, the technology-driven industrial chain, is both the starting point and end-result of the fossil-based energy and derived materials.

Even though we have not responded directly about the primacy of adaptation over mitigation in climate change we have all the elements needed to shed some light in that question. While climate change is primarily a survival question, because of extreme weather events, and the collapse of ecosystems upon which we as humans depend on, we are still trapped in the so-called inertia of the system. This inertia is characterized by the fossil-based mindset, the fossil-based system that underlies all aspects of our lives and activities, and puts adaptation at second place, together with our capacity to answer to the immediate and essential. This dynamic does not affect only the climate change policy debate, but also other policies, since everything is linked with technology and innovation, and since science is based on the same principle of efficiency.

Most notably climate action policy, that is by definition the policy that aims to drive the exit from fossil-fuels and their derivatives, ignores climate change adaptation. In that way climate action policy gives in completely to the industrial framework that chained human intelligence for more than a century into a specific way to nature and ourselves, and, as we come to appreciate with scientific progress, also the generations to come, because of climate change and environmental destruction. This is already more evident in agriculture that is more exposed to adverse weather events, and acknowledged, but still this is not enough to change the course of policy making.

The industrial framework, precise and efficient, provides for variety of choices that are non-essential to our survival, and in that way it continuous to hinder our adaptation capacity. Our faculty to discern the important from the trivial and meaningless is impaired, to the point that we treat adaptation at an ad hoc basis, while calling for more emissions reductions. This is what happens when we hear about infrastructure or agriculture damages from extreme weather events that amount to billions of Euros. The whole economic machinery that was build, on, and around the fossil-based economy, adapts to the new green growth concept, in the same way that we adapted to our environment. That is by changing our practices in order to continue doing the same thing, but more efficiently. This is what doing more with less means in essence. This is exemplified by the climate change adaptation action that is pursued in a number of sectors, and among those, most notably agriculture, which promotes as a solution risk management through insurance policies.

The rich biodiversity that we often mention for animal species, is not different from the variety of our ancestors' species who went extinct. However, the variety does not mean choice, when it comes to natural selection. We have created the illusion that we do not need to adapt to the natural conditions, because of the technological progress, but this is not the case, as we experience with extreme weather events. It is clear that we do not have a choice, when it comes to continuing using finite fossil fuels and their derivative materials. Darwin intended exactly that, when he was writing about natural selection. It is nature's choice not ours and it is up to us to adapt and evolve or not.

If we listen to words, and understand what they are saying we can also unveil the truth of things. Adapt in Latin includes also aptare, which means "disposed, suited, fitted, adapted, possessing the necessary qualities for the purpose". Within adapt we can see the Latin aptus, which means "fitted suited, proper, appropriate." When aptus is used in past participle "apere" it means "to attach, join, tie to". From that meaning of aptus we can unveil the relation between the Latin "aptus, aptare" and the Greek word "ἄρμος" armos, with the more known derivative "ἁρμονία" harmonia, harmony, which also means "to fit together, agreement", and as we know the concord of sounds.

The key in understanding the correct meaning of adaptation does not lie in the subjugation of nature to human activity and will, but rather in the harmonious relation between human and nature, under the condition that human nature has, and will always be in essence, survival, hence evolution. We cannot stop evolution and progress, and this is the reason why we should not try to stop technology. However, technology has nothing neutral when it comes to our survival, as it has been proven by the industrial revolution and the fossil-based economy. The widely accepted idea that human ingenuity has a future only within a fossil-based framework, is flawed and cannot be supported, neither in terms of evolution, nor regarding adaptation in general, and even less, specifically in relation to climate change. The policies that move in that vicious cycle do a disservice to nature, humans, planetary flora and fauna.

Instead of adapting our practices to continue business-as-usual, we should direct human ingenuity into basic research in a way that accommodates earth's limitations. Instead of going straight ahead, and chain the entire earth into the new data driven industrial frame, we should adapt to nature's conditions. We should not account earth's resources, in order to exploit them with the maximum efficiency. Instead we should unleash, unchain, our imagination, from the limits of modern value chains, and technology. In that way a true quest would provide the basis for the flourishing of a harmonious human nature.

Our survival, and our future, can be seen as a question of efficiency, and transformation, from a society that resembles to Orwell's "1984", into Huxley's "Brave New World"⁸, or it can be seen as a genuine evolution of humanity into adapting to the limits of our planetary boundaries. There is nothing limiting in pursuing the latter, and nothing liberating in the choice of the formers, because human ingenuity is not limited by choices, but by the horizon of questions it poses [1-8].

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