Fukushima and the world's devastation

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***Abstract**: This paper reflects on our current ecological situation, from the Fukushima Nuclear Disaster. With the help of Felix Guattari's ecosophy, I explore the milieu of the disaster, and what it means to consider that we are already living in a devastated world. The Fukushima disaster and the events that followed appear as revealing how capitalism considers humans, the earth and social agency. I reflect on how various activist networks engage the question of the modes of valorization, and how situated knowledge and practices can help us reconsider the problem of attachments.*

I was not in Japan on March 11th 2011. I was at home, in the safety of Brussels. It was through my mother that I heard about the disaster that was taking place, as her cousin, who lived in the suburbs of Tokyo, had warned her of an unprecedented earthquake. I started following the news, first with curiosity, then with shock and fear. I must admit that I thought my mother was exaggerating, and that Japan was prepared for earthquakes better than we would ever be in Europe. I was not prepared, nor were we prepared for what followed, and the unfolding of this disaster became multiple, by all the dimensions it entangled. The nuclear disaster now called Fukushima showed once again to what extent the beings of our world, the living, the technical, but also the psychological and the social, are inextricably mixed.

This text not the result of a close experience with the disaster, nor of intense fieldwork. Although I have returned to Japan several times since then, I did not conduct fieldwork in the Fukushima prefecture. Nevertheless, I continued to read, watch and follow everything I could find related to the situation of the March 11th disaster and the post-Fukushima situation. I exchanged with Japanese friends from here and from Japan, I have written and worked on disasters with philosophers who try to think 'ecologically' about the world we live in. This work is therefore derived from this somewhat distant point of view, and will not claim to be exhaustive, an impossible task regarding this question anyway.

In this text, I will work on the Fukushima nuclear disaster as a disruptive event in the way our world makes coherence. It is an ecological event in the strongest sense of the word, in that the disaster not only exposes the ties that bind our world, but also

allows us to criticize and rethink the way in which these ties are produced. Indeed, Fukushima was first of all this realization of the non-permeability of our categories of thinking: the disaster affects all our registers or domains: technical, natural, social, scientific and citizens, politics and knowledge, etc. As we will show, the disaster, by trespassing the borders between all these categories, shows us how they are usually put in relation, or kept separate.

The cesium-loaded winds do not care about geographical boundaries, but they have also crossed and upset the boundaries between science and politics, sociology and nature, as well as between economics and climate science. But Fukushima not only shows that everything is connected. We all know that very well. What the event shows is the strange and highly questionable way in which all these fields and objects are connected[1]. Fukushima shows us how our lives are shaped by the coherence of a nuclear-powered capitalist industry. Whatever starting point we take, we are forced to connect to others, one by one. The disaster exposes the way in which the nearest connects with the farthest.

This text will explore these connections with the help of a double heritage. The first one is the heritage of William James' pragmatism,[2] who proposes to think a situation through the effects it produces. For James, the truth of an idea lies in its consequences, both intellectual and practical. I will explore the situation of Fukushima through its consequences. My second heritage will be Deleuzo-Guattarian or Guattaro-Deleuzian,[3] since I will be thinking the situation of Fukushima as an assemblage, where the articulations of our ecological situation need to be explored anew. I will work on the situation in terms of what it reveals about the machinic character of our world, i.e., the way in which the coherence of that world is produced.

I will therefore address the question of what the disaster, but also its management, teaches us about our ecological situation. How is this disaster possible? And how is it possible that, after this disaster, nuclear power continues its technological trajectory with only a few more or less cosmetic technical adaptations? What does it mean that everything continues?

For me, thinking along the lines of Guattari's late work, Fukushima is primarily an expression of a world that is already devastated, even before the disaster adds its share

[1] Thom van Dooren, *Flight Ways: Life and Loss at the Edge of Extinction* (Columbia University Press, 2014), P. 60.
[2] William James, *Pragmatism*, Dover thrift editions (New York: Dover Publications, 1995).
[3] Gilles Deleuze et Felix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia*, translated by Brian Massumi, 2nd edition (Minneapolis: University of Minnesota Press, 1987).

of destruction. The expression "living in a damaged world" is often used,[4] and I would like to extend this observation. For me, it is not simply a question of denouncing or coming to terms with this world, but also of thinking that even our ways of thinking, feeling or being together are themselves "devastated".[5] I would like to unfold here what this situation of a damaged world can demand in terms of thinking and ways of problematising our ecological situation.

Evacuate

Amidst the rubble of the tsunami that devastated the coast of Tohoku and killed nearly twenty thousand people, evacuation orders arrive following the radioactive releases from the Fukushima power plant. For a radius of 20, then 30 km, you have to leave, empty the land. You have to leave the land of your ancestors, and no one knows how long this will last. Zones are designated, from which you have to flee in a hurry, and to which you can only return for a few hours, only with autorizations. In the areas doubly affected by the tsunami and the nuclear accident, the search for the missing (not to mention saying goodbye to the dead) has not yet been completed, and people already have to escape. Tens of thousands of displaced people are being sheltered in emergency accommodation, which will become housing in the medium term and will last for several years.

This evacuation, this temporary life of exile that extended into the long term, has been extensively documented: photographers, videographers, journalists and writers have dramatised its scope. For example, the film Memories of a Lost Landscape[6] takes us through the fate of a family of evacuees, the way of life in this region of Tohoku, the temples that are lost, the gods that are forgotten, the practices that are relegated to oblivion (such as salt production), but also the difficulty, as an independent journalist, of reporting on what was happening in the evacuation zone at the time. Others have documented those who refused to leave, acting as quasi-mythical figures of sacrifice, for the land and its animals.[7]

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[4] Anna Lowenhaupt Tsing et al., Eds., *Arts of Living on a Damaged Planet: Ghosts and Monsters of the Anthropocene*, 3rd ed. edition (Minneapolis: Univ Of Minnesota Press, 2017).
[5] Nicolas Prignot, « Félix Guattari et l'écologie de la dévastation », *Rue Descartes* 88, nº 1 (2016): 138–46, https://doi.org/10.3917/rdes.088.0138.
[6] Yoju Matsubayashi, « Fukushima: Memories of the Lost Landscape (Soma Kanka Daiichibu: Ubawareta Tochi No Kioku) » (Japan: Tofoo Films, 2011).
[7] Antonio Pagnotta, « The last man in Fukushima », 2013.

Others, like the documentary series "Uncanny terrain",[8] show us the daily work of those living in the border areas of the evacuation. We follow the work of farmers, trying to make their land suitable for cultivation again, exploring with the help of Geiger counters how they can cultivate land that is otherwise doomed to abandonment after being tended for generations. We follow them, weighing their rice production, trying to reach the lowest possible level of becquerels per kilo, always keeping in mind the thresholds beyond which their production will be destined to become radioactive waste. These farmers bear witness to concrete practices and thoughts, in touch with a problematic situation, without naivety.

What I would like to emphasize here is the terrible tension created between uprootedness and the fear of living under the risk of permanent nuclear pollution. What this disaster shows through the exodus from contaminated areas is first of all how difficult it can be to understand and justify attachment to a place. In other words, what Fukushima does, and what made it possible, is to transform the inhabitants into people without attachments. The evacuation creates people who no longer have a right to a densely populated environment, to a world that they value. It should not be said that those who advocated the exodus think that anyone can live anywhere, but that the disaster and its management presuppose that one can think like that.

The effect of Fukushima is to suggest that people all over the world, who live near a nuclear power plant, must know that one day they may be "anyones",[9] people with no ties, who can be moved around at will in the event of an accident. Nuclear management produces spaces empty of any particular lifestyles, empty of the lives that make them so rich. All of our lives must be interchangeable, so that we can simply be moved elsewhere, replaced, without being able to say that there has been any real destruction in that very displacement.

It is also part of the disaster that we do not have many words to say to what extent this uprooting is also a very strong structural violence.[10] The nuclear risk requires that we can think of individuals, concrete people, in this way. This is of course compatible with what mass capitalism proposes: individuals defined by their desires for consumption, and who are also standardized through this same consumption. Uniformity of desires and uniformity of consumption in the same gesture, in order to

[8] Nicolas Prignot, « Malgré Fukushima. Récits de cultures improbables », *Gestes spéculatifs. Paris: Les Presses du réel*, 2015, 73–86.
[9] Tobie Nathan and Isabelle Stengers, *Médecins et sorciers*, Nouvelle éd (Paris: Empêcheurs de Penser en Rond, 2004).
[10] Cécile Asanuma-Brice, *Fukushima, dix ans après: sociologie d'un désastre* (Éditions de la Maison des sciences de l'homme, 2021).

produce individual consumers who are ready to consume, i.e., to live, everywhere, in all cities, in much the same way. This capitalism of mass consumption helps to make possible what nuclear power requires: to make individuals interchangeable, to make spaces not empty, but 'empty' in case of catastrophe. Places without history, without people, without gods, without land.

In the months that followed, many people wondered as to whether leave the powerplant's surroundings zone or to stay. In each case, the choices were made for specific, personal and different reasons, although there were certainly social factors that constrained these choices. It is certainly easier to start a new life in a different city as a young person trained in a job that is easily relocated than for an older person used to a life that depends on local conditions. But what is important here is not to know who was right, I will not do that, but to underline the difficulty of answering this question in the abstract. To be more precise, ignoring situations in order to answer in the abstract is a trap that those who want to simplify the situation are bound to use.

For example, focusing only on the level of ambient radioactivity can be problematic. We know the struggles that were necessary to know the precise contamination levels of the areas around the power plant. It was the inhabitants who took direct control of the measuring instruments and set up groups to monitor and map radioactivity, who did not trust the government's measures, which were too isolated.[11] Measurement was and remains an important issue.

But focusing on this single measure can also become a trap, as some will then hold this single measure as the sole issue of legitimacy of the choices regarding departure or even return. The mere measurement of radioactivity taken as an abstract datum can have devastating legitimizing effects. For example, it will be said that below a certain number of milliSivert/year there is simply no reason to leave, or to refuse to return. This single measure then becomes the single scale to which the whole catastrophic situation is reduced. It is a technocratic and bureaucratic reduction that ignores all the concrete situations, all the difficulties that living in these areas can cause. Starting with the fact that these measures show above all the great local disparities, the famous "hot spots", but also the forest areas, and that the fact of living near a power station always in an accident situation is not reassuring. This single measure can also play into the hands of those who think that since the level is harmless, all the difficulties encountered on site are "only" psychological.

[11] Azby Brown et al., « Safecast: Successful Citizen-Science for Radiation Measurement and Communication after Fukushima », *Journal of Radiological Protection* 36, nº 2 (juin 2016): S82-101, https://doi.org/10.1088/0952-4746/36/2/S82.

Psychologisation

In the years following the evacuation, many denounced the situation of the displaced population. This situation was indeed catastrophic and some still suffer from it today. Many deaths occurred, including a large number of suicides. It should be noted that these deaths were indeed counted as a secondary outcome of the March 11th disaster. There was no question of dismissing these deaths as not directly related to the disaster.

But in the press and even in international academic research, some claimed that the deaths could be attributed to a "fear"[12] of radiation, a fear that was delegitimized as there would be no reason to fear small radiation exposure. The displaced people were dying from the fear of radiation more than from the radiation itself, in doses too small to actually kill.

Where does this idea that it is the fear of radiation that kills come from? How can we understand the isolation of this single cause? Why not talk about the whole disastrous situation in which these populations find themselves, a situation that could be blamed without saying that it is simply a question of some internal psychological factor. Here again, it is a radical simplification of the situation. Indeed, it is possible to unfold the environment in which this excess mortality occurs, to speak, for example, of the isolation that these people undergo, the uprooting from their land, the loss of social ties and sometimes of loved ones, the social opprobrium, the impression of being a burden for a society that is doing everything it can to forget the Fukushima event, and so on.

Why then speak simply of fear of radiation? This is both an error of psychology as a scientific discipline and an oversimplification. "Fear" is here a scapegoat, entirely internal to the people, and removes the responsibility for these deaths from the entire environment (and therefore from all post-disaster management).

Of course, the difficulties of having experienced such a disaster are real,[13] but reducing the multiplicity of causes to simple "fear" is a useful simplification for those who want to deny the reality of the nuclear risk. It also allows one to never question the management of the evacuation and the complexity of what it entailed, and places the responsibility on the subjects themselves—they died because of their own fear.

[12] Shizuyo Sutou, « A message to Fukushima: nothing to fear but fear itself », *Genes and Environment* 38, nº 1 (2016): 1–9. https://doi.org/10.1186/s41021-016-0039-7

[13] Yoann Moreau, *Vivre avec les catastrophes* (Presses Universitaires de France, 2017).

This adds up a multiplicity of things experienced in a single, very arbitrarily decreed variable: fear. This makes it possible to continue to reduce all the consequences of a nuclear accident to a single variable, which is exposure to radiation, and to continue to assert that there is therefore nothing serious, since exposure is low.

Thus, the gesture of drinking some water from Fukushima to show that one is not afraid is exemplary: drinking a glass of water,[14] even if it is cesium-polluted, has nothing to do with the situation created by displacement and living in makeshift housing for years. Yet Fukushima has produced people capable of making this equivalence, capable of claiming that simple fear is responsible and can be fought in this way. This prevents "thinking through the milieu" in the sense of Deleuze and Guattari,[15] since it empties the milieu of any capacity for action, and thus of any responsibility. It is therefore a very serious mistake to psychologize things in this way, as well as being an insult to all those who had to experience this evacuation.

There is a strange difference between the difficulty of counting the effects of radiation and the simplicity of identifying a psychological cause. Of course, it is difficult, without a long cohort, to detect precisely a long-term effect of relatively small doses of radiation. But why not have the same methodological requirements when it comes to talking about "stress" or "fear"? Why the very precise and legitimate requirements on the one hand and the lack of precaution on the other hand? This too is an important question that refers to our situation of a devastated world. Psychology is not used to its full potential here, it only serves as an easy excuse for those who want to exonerate ionizing radiation. "Fear" is used as a catch-all here, it is an instinctive attribution that is based on almost nothing. Beyond the error, the effects of this attribution are terrible, since it not only exonerates radiation, but also accuses those who maintain legitimate questions around nuclear pollution of spreading fear - and thus sustaining a factor that is killing people. It reinforces the idea that the main thing to do is to reassure people, who are always seen as vulnerable, impressionable, and a part of the problem.

Thinking through the milieu

[14] Yoree Koh, « Lawmaker Takes Acid Test on Fukushima Water », *Wall Street Journal*, 1 novembre 2011, sect. Japan Real Time, https://www.wsj.com/articles/BL-JRTB-10963.
[15] Deleuze et Guattari, *A Thousand Plateaus*.

"Thinking through the milieu"[16] is a complicated matter. The French "milieu" here has the advantage of mixing two meanings, both the middle (which would be opposed to the beginning and to the end) but also the environment, what allows something to exist. To think through the milieu is both to think in situation, without a logical unfolding that would attribute a beginning or an end to thought, but also to think the situation as it relates to its environment.

One of the testimonies we received of this situational thinking is precisely that of the farmers who tried to continue working in the regions around the nuclear power plant, the areas that were not evacuated but which had nevertheless been polluted by the radiation. It was not a matter of them blithely accepting the situation, but of trying to think how to continue to live with their land despite it being polluted. Of course, they denounced the pollution, and their attempts to find a way to deal with it did not mean a tacit acceptance of their situation. It was a matter of being able to take note, and to experiment with how to continue to have a relationship with the land.

Here too, the importance of this relationship to place or land may seem derisory, or even unjustifiable in the light of the situation. Yet it is an important lesson to be learned in these times of ecological disaster. The farmers of Minamisoma were the ones who had to learn to live in a damaged world, despite themselves. Again, this questions the environment in which the disaster occurs: why is it so difficult to express attachment? Why is it so easy for TEPCO to offer compensation to the farmers, as if compensation would cover all the loss of not being able to farm?

There are of course reasons to look for in the idea of generalized equivalence, as Jean-Luc Nancy has well noted.[17] The idea that compensation requires is that one can make almost anything equivalent to anything else, via the mediation of money. One thing is worth another, and money serves as a general equivalence. So land (which has become agricultural income) can be replaced by financial compensation, and the actors are free to do what they want with this money. Compensation is of course the least that can be done, but it makes as if, with financial replacement, the disaster and its effects could disappear. To speak of compensation on the part of those responsible for the disaster is to make a lifetime of work, knowledge, practices, love of place and production of the land equivalent to a mere market value.

Fukushima did not create this equivalence, which is an old story. But the nuclear energy production insists on this equivalence, it lives on it. Nuclear disasters

[16] Deleuze et Guattari, *A Thousand Plateaus.*
[17] Jean-Luc Nancy, *After Fukushima: The equivalence of catastrophes* (Fordham University Press, 2014).

must be able to pretend that all their consequences can be financially compensated. One can then argue about the amounts, but not about the idea that what is lost is incommensurable with a financial or market value.

Guattari thought this generalized equivalence, which makes everything transformable into anything and thus makes it possible to compensate for any loss, as part of a process of valorization, of creation of values. He claimed that there are no value without a machinic creation of value. Guattari's answer to this generalized equivalence was the pluralization of modes of significance: ethical, aesthetic, social, pathic, etc. It is important above all to be able to ensure that these modes of valorization are in a relationship of heterogenesis: to function together while retaining their heterogeneity, that is, in this case, without being translatable (and therefore equivalent) to one another. It is not a question of establishing absolute values, but of multiplying the scales by making each of them consistent. *"What makes that system reprehensible is its crushing of all other modes of valorization, which thus find themselves alienated from capitalist hegemony. That hegemony, however, can be challenged, or at least made to incorporate methods of valorization based on existential productions, and determined neither in terms of abstract labour time, nor of expected capitalist profit. Computerization in particular has unleashed the potential for new forms of 'exchange' of value, new collective negotiations, whose ultimate product will be more individual, more singular, more dissensual forms of social action. Our task—one which encompasses the whole future of research and artistic production—is not only to bring these exchanges into existence; it is to extend notions of collective interest to encompass practices which, in the short term, 'profit' no one, but which are, in the long run, vehicles of processual enrichment".* [18] Not an intrinsic value of nature, but plural processes of valorization, which must be able to coexist.

Time to return

The reconstruction of the Tohoku coast is a very long, titanic process. After clearing the areas destroyed by the tsunami, from which millions of tons of debris had to be removed, it was decided to rebuild, while raising the dikes, transforming a long stretch

[18] Felix Guattari, « The Three Ecologies », trans. Chris Turner, *New Formations*, no. 8, 1989, p. 146. There is another more complete version in English of the text: *The Three Ecologies*, trans. Ian Pindar and Paul Sutton, London and New Brunswick, The Athlone Press, 2000.

of coastline (400km) of the region into a long wall reaching 14m high. The area now lives behind a wall, with no view of the ocean. Again, many asked whether building this wall was really the best solution, proposing, for example, that housing should no longer be built on the seafront, but on the hillsides. The technical solution was favoured by the Japanese government, even if its effectiveness is considered very relative.[19] According to the analyses of the areas where such walls existed, rather than really protecting the inhabitants of the coast, the wall mainly allows to slow down the advance of the tsunami and to gain time to escape the deadly waves. This gained time certainly saved many lives.

The vision of this long wall separating the sea from the coast is impressive, and cannot fail to raise questions about what is at stake. It is reminiscent of the walls in those futuristic novels, where coastal cities protect themselves as best they can from rising sea levels due to global warming. There have been calls for what is seen as a technical solution to a housing problem: some have suggested that we should no longer build at heights that are likely to be threatened by future tsunamis. Of course, this sometimes represents large areas, but why continue to build in these areas, which are bound to be invaded by future disasters? It is above all a question of continuing to do the same thing after the tsunami, as if nothing were to contradict the urban choices made up to then.

Urbanization choices are crucial to ecological and lifestyle issues. Urban sprawl requiring the use of cars forces a technological and development trajectory that engages an entire way of life. The choice to build a protective wall is like the testimony of the difficulty to question the choices of urbanization in contemporary Japan.

It seems to me that a lot of things in the management of the post-March 11th period reflects the same logic of not questioning the strategies adopted until then. It is as if urbanization was also a reflection of the strategy adopted in relation to nuclear power: raising the level of safety in the face of a risk (or raising the level of risk that will be considered), but without fundamentally changing the way in which the question of energy and its uses will be raised. Indeed, after the Fukushima disaster, the restart of Japanese nuclear power plants was conditional on an improvement in safety conditions, or on a reassessment of the risk. The reconstruction of the coastline is a mirror image of this restart, since it is a question of reinforcing the protections but

[19] Rémi Scoccimarro, « Tsunami de béton: de l'empreinte à l'emprise sur les paysages littoraux après les catastrophes du 11 mars 2011 », *Projets de paysage. Revue scientifique sur la conception et l'aménagement de l'espace*, nº 23 (2020).

without fundamentally changing the way of living and using the space that is linked to it.

The other major titanic work related to the disaster was the nuclear clean-up. The area to decontaminate is huge, as the clean-up requires to remove a few centimeters of earth in all the inhabited areas. Not all of the area is cleaned, since the harder-to-reach areas such as the forests that cover a large part of the territory are not. Following the clean-up, the areas around the plant were gradually opened to the return of evacuees. As the level of radioactivity dropped and the soil was removed, the Japanese authorities considered that evacuees could return home. Financial support for evacuees was withdrawn, but only few percentage of them returned.

The narrative may seem simple: the area was polluted, it was cleaned up, everything is back to normal. Everything is done to give the impression that the situation is under control, and that the nuclear accident can be reabsorbed, cleaned up, just like the Tohoku coast was rebuild.

Nevertheless, a little self-control will be required of those who return. They will have to avoid picking mushrooms, they will have to avoid growing rice or eat it only after its radioactivity level has been measured, they will have to get meters, etc. In short, the situation is under control, but there is nevertheless a self-control to be implemented, in order to live in a contaminated zone. By using the knowledge developed after the Chernobyl accident, one will teach the inhabitants how to behave properly, and thereby transfer to them the responsibility for their health. After these measures, the inhabitants will now be responsible for their health.

Here too, one senses the trap situation, the infernal alternative. What to choose between staying away, but without evacuee status and without financial assistance, or returning to depopulated, emptied areas, under sanitary restrictions and becoming solely responsible for one's health? This return is the result of deliberate omissions, as summing up the situation as « an area that has been cleared » is far from the truth.

The small number of returnees tends to show that this life of return is not simple. First of all, there are all those who have rebuilt their lives elsewhere, after nearly ten years of exile. But for those who remained as evacuees, the return areas are empty, depopulated, without any of the basic services of community life. Everything has disappeared, shops, local services, everything is deserted. Community life has been reduced, as neighboring inhabitants have been dispersed. Moreover, life is under permanent control, and under daily fear, in the form of latent stress, not to mention the proximity of the power station, which is still under very partial control. Those who

only talk about the level of ambient radioactivity forget that these areas have been deeply transformed, devastated by the disaster.

For those who decided to stay in the area, who fought against TEPCO, and who tried to find new ways of living with radioactivity, seeing their practices used by the Japanese authorities must not be easy. There is a real capture here, a transformation of the will of some to stay into an injunction to return, taking those who have stayed as an example or model. However, the will to stay and to experiment—despite TEPCO, despite the disaster, despite the pollution - has nothing to do with the organization of a return under the illusion that everything is normal, or an injunction to resilience.[20] The two have nothing in common, or can only be transformed into each other by a cynical system that wants nothing to have happened at all. Those who stayed have been used to bring back the evacuees, in the most disempowering way possible—by making those who return responsible.

For example, there is a profound difference between the concrete experiments of those who try to cultivate their soil in the cleanest possible way, and the injunction of a government calling for the food produced in Fukushima to be eaten to support the reconstruction of the region. On the farmers' side, it is a matter of building confidence in their work, of doing everything possible to be able to cope with what is happening to them, in their practice. On the other hand, we are treated to a communication campaign that serves above all to make people forget the situation, to pretend that the disaster no longer has any consequences, and to pretend that there is no price to pay for Fukushima. On the one hand it is about living with the consequences, on the other hand it is about denying them.

Continuing with nuclear power

To continue with nuclear power after Fukushima is to somehow accept that other disasters will occur. When the Chernobyl plant exploded, it was associated with the communist regime, which was coming to an end, a model of government that was then the "enemy", of which this disaster was a symbol.

The fact that an accident occurs in Japan, one of the most technologically advanced countries, shows above all that nuclear power is dangerous in itself. It may well be said that there is no tsunami in France, as the French president at the time said

[20] Thierry Ribault, *Contre la résilience. À Fukushima et ailleurs* (L'Echappée, 2021).

to brush aside the idea that such a disaster could happen in his country, but that says nothing about all the other potential sources of disaster.

To continue with nuclear power is to accept the idea that entire areas could be emptied, sacrificed in the name of producing the energy needed to maintain the economy. It means accepting the idea that huge areas could become, at worst, empty zones or ones where life will be conditioned to live in disaster. In theses strategies of decontamination and voluntary return lies the idea that these areas must be made into 'normal' living areas. The unacceptable is made normal in order to make it de facto acceptable. It becomes normal to ask people to live in an area where life is lived with a Geiger counter, with invisible pollution, of which we are told that the only thing to fear is fear. There is an attempt to produce the normal, or to change what 'normal' means.

Continuing with nuclear power is also a profound change in our understanding of temporality. The Fukushima disaster is still happening, as is the Chernobyl disaster. As we saw, for example, when the Russian army invaded Ukraine, one of the objectives at the beginning of this war was to take over the site of the old nuclear power station. Chernobyl then became a strategic objective, which made the whole of Europe anxious. What did Russia want to do with this sleeping monster under control? Without permanent control, the disaster could happen again, and the pollutants could be dumped on the continent. In Fukushima too, the disaster will continue. More than ten years later, TEPCO is struggling to know exactly what is going on with the corium at the bottom of the containment buildings. Bringing the plant under control requires the permanent extraction of sea water, which no one knows what to do with. We are a long way from the beginning of dismantling or finding a solution. This situation will have to be dealt with over several generations, and it is not clear how this will be done. In fact, on our time scales, this disaster is literally "endless". No one knows if, how or when it will end. We are fated to deal with these disasters beyond any conceivable time.

Beyond the disasters, this is already the case for nuclear technology, simply because of the waste it produces. The waste produced by the nuclear industry is dangerous for periods far beyond written human history. No one today knows what to do with it, except to hide it as deeply as possible underground. But even then, they will have to be managed endlessly, if only for access. How do we get the message across to future generations about whom we know nothing? What does it mean to try to get such messages across? John d'Agata[21] has clearly shown the derisory attempts

[21] John D'Agata, *About a mountain* (WW Norton & Company, 2011).

of linguists or semiologists to think about this question, whose conclusion is tirelessly that it is impossible to answer.

Even the dismantling of a power plant requires very long timeframe. We simply cannot get out of nuclear power with a snap of the fingers, because even getting out of nuclear power requires us to manage it for decades, and manage its waste for millennia.

What this technology, its waste and its disasters teach us is that in order to accept them we have to think of our way of life as eternal. Nuclear power requires us to think that all this, all this infinite management, will continue without problem, forever. Nuclear power supposes the infinity of the world, the continuity of our history in the same way. It presupposes and manufactures it: we are forced to continue the history of nuclear power, which we inherit. There is truly a production of historicity inscribed at the heart of today's nuclear power.

The Fukushima disaster occurred in a world that could not be said to be intact. The catastrophe adds disaster to a situation that was problematic, and also reveals it. This is what I proposed to call, with Félix Guattari, devastation. There is indeed a catastrophe, a major new event, but it takes place in a world that is already partly devastated, and that makes this catastrophe possible. Guattari, in the three ecologies, proposed to think of all ecological problems as always coming under three "domains" that he called mental, socius and natural. These three domains are not independent, but are jointly produced, coproduced, and are linked together. To think that we live in a devastated world is to think from the point of view that our ways of being together and our collective forms of intelligence (socius), our material situation (nature) and our ways of thinking and feeling (mental) are already impoverished, destroyed by our individualistic, capitalist, productivist, etc. world. This devastation is integrated in the depths of our thoughts (what Guattari called IWC, Integrated World Capitalism).

To think of Fukushima from the point of view of this triple devastation is to think that nothing in this situation is normal, and that Fukushima adds insoluble problems, poses questions that we are not obliged to answer. These are "infernal alternatives",[22] which force us to choose between evils that we do not want.

For example, nuclear energy will be described as "green" because it does not emit CO2 and therefore does not contribute to global warming. We will be presented with a fabricated alternative between the risk of a nuclear disaster and its waste or global warming. But this alternative is only valid if we consider that the need to

[22] Isabelle Stengers et Philippe Pignarre, *Capitalist sorcery: breaking the spell.* (Palgrave, 2011).

consume so much energy is "normal", when there is nothing obvious about it. To rethink the energy question properly, we would have to question all the post-war choices, land use planning, modes of transport, delocalized production methods, individual consumption, etc. To really think that we should do without nuclear power and also without fossil fuels requires a real change in our way of living and thinking. Replacing petrol or diesel cars with electric cars fueled by nuclear power, coal or shale gas will not change this disastrous situation, and will push us further into a world of catastrophes. If we do not start from this need to radically change what makes up our world, our ways of living and being together, our habits of life and our conception of what is normal, then nothing will change and the disasters to come will be the heirs of Fukushima.

The disasters of 11 March and Fukushima are also disasters of "consistency", because they shake up the relationships in our world. All the relationships between food, the order of our fears, our way of life, the soil and our ideas are transformed. This shows that there are no more natural disasters,[23] because technology, nature and society are intimately linked and that without the construction of power stations, but also of cities, by the sea, the tsunami would have nothing to devastate. But Fukushima, if we take note of this interconnection, also requires us to think of these interconnections as what makes disasters possible, and even more terrible.

Beyond these lifestyle elements, I think that Guattari's proposal is that our conceptual tools are themselves the product of a situation of devastation. Guattari's proposition about the 'mental' is to think that our ways of framing problems, of conceiving or conceptualising them, are also problematic. To think of a world of general equivalence, where individuals are "anyones", freely movable, where places are uneventful, unmediated, and expendable, where financial compensation becomes normal, where the very notion of nuclear catastrophe becomes a probability like any other, and where talk of attachments to a milieu is so difficult, so quickly brushed aside, is already to live in a situation where thinking is devastated. The world that requires all this is a toxic machine.

Reinventing

[23] Nancy, *After Fukushima*.

For me, it is certainly the post-Fukushima rebels[24] and their attempts to reinvent new possibilities who gave me hope. Numerous groups were created, sharing a common revolt against nuclear energy and its world. It is pointless to try to give an exhaustive account of these struggles. Not all the groups fought with the same intensity, to do the same things, or to denounce the same problems. But these groups have been forced to face the very intricacy of the world, forced to share knowledge, know-how and expertise, but also to connect very diverse problems. Much has been said about the "amateur revolt" movement (Shirōto no Ran), an activist network that started out in a second-hand sales district and immediately placed the issue of mass consumerism and the infinite production of objects at the heart of the nuclear issue. Similarly, the network of Freeters, young people without permanent jobs, have taken over the front line of social struggles and disposable work, a type of precarious employment that is now found in the dismantling of the plant (nearly 5,000 people work there every day), or the groups of Fukushima mothers,[25] who have put the question of survival and the lives that nuclear power offers to children at the forefront of their struggles. The citizens' groups that have taken up Geiger counters, mapping polluted living areas, have reinvented what the term 'citizen science' means, while connecting with researchers around the world and producing accurate and useful knowledge. And let's not forget all those who invented new forms of protest, protesting against the state machine for almost ten consecutive years. All these groups and activists network did not accept the role assigned to citizens, still considered by our managers as part of the problem. They invented an active way of being part of the solution to the ecological problem called Fukushima.

So, certainly, the nuclear situation in Japan and in the world continues to be problematic, and our ecological situation remains a global catastrophe. But it seems to me that we should consider these citizen movements as new modes or new ways of giving importance to things, to others, to objects. They have succeeded in doing what Guattari called for: pluralizing the modes of valorization, which today are all reduced to a single mode. It is a question of creating importance, of zones of what can count for a group or an individual, of knowing how to recognize and state: "Here, this is important". It is not a question of waving around ready-made and already established values, nor of getting out of any idea of valorization as such, but of producing new modes of existence, in order to recognize that plural values can be created, can be

[24] Sabu Kohso, *Radiation and revolution* (Duke University Press, 2020).
[25] Aya Hirata Kimura, *Radiation brain moms and citizen scientists: The gender politics of food contamination after Fukushima* (Duke University Press, 2016).

claimed and can also matter for others. Guattari called these plural "Universes of values", each functioning with their own logic. These Universes are therefore also "*sensitive, cognitive, affective, aesthetic, etc.*",[26] because in any sensitivity, in any affect, some components matter, others less. Any Universe is therefore a virtual process of valorization, which is potentially capable of making things count, of importing other than generalized equivalence. To think about ecology after Fukushima is also to think about the articulations of these modes of importance with social, mental and ecological struggles.[27]

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[26] Felix Guattari et Dr Andrew Goffey, *Schizoanalytic Cartographies* (London ; New York: Bloomsbury Academic USA, 2012).

[27] Sophie Houdart showed the extent to which this new situation required other sensibilities, even for researchers in the humanities working on this situation. See Sophie Houdart, « Les répertoires subtils d'un terrain contaminé », *Techniques & Culture. Revue semestrielle d'anthropologie des techniques*, nº 68 (18 décembre 2017): 88–103, https://doi.org/10.4000/tc.8567.

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