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From knowledge to skills: training for transition jobs.

Interview with Alain Grandjean.

Interviewers: Cécile Renouard¹, Rémi Beau, Elàine Vetsel

Interviewee: Alain Grandjean

Online interview realized on February 11, 2020

Alain Grandjean is an economist and author specializing on green finance. He is also co-founder and partner of Carbone 4, a consultancy firm focusing on energy transition and adaptation to climate change. The interview first revolves around the academic content Alain Grandjean considers as the bare necessities to be taught in higher education, no matter the curriculum. This should take the form of a basic synthetic training which takes into account the major environmental issues without too much technicality as well as lessons in accounting and economics, which he considers essential. The interview also looks more specifically at engineering and business schools. Then Alain Grandjean shares his views on the effectiveness of different ways to engage for the transition – like radical individual lifestyle transformations and civil disobedience. He also evokes the roles that trade unions as well as NGOs can play and he talks about collapsology.

Campus de la Transition: In 2007, you co-founded Carbone 4, a climate strategy and energy transition consulting firm. In your opinion, what are the challenges to be met and the shortcomings observed in the educational path towards professionalization in order to make the transition a success?

Alain Grandjean: It's not easy to answer this question, because we can't always distinguish between what a student has learned during his or her training and what is a matter of personal commitment. At Carbone 4, we have many engineers who are certainly specialized, but above all very committed. However, I see huge deficits in the people who hold management positions with our clients, particularly among young people from literary and business schools. They start out in their jobs without any real scientific background, so we should be able to offer them basic synthetic training, which is not necessarily biology or physics, but which takes into account the major environmental issues, namely climate, biodiversity, resources, pollution and water. Students need to have factual information about the state of the planet, how things have changed over the last fifty years. This requires a minimum of explanation without necessarily going into all the complexity of the processes. On the climate, for example, the subject is not that they understand in detail the physics of the greenhouse effect, but that they know that there is a scientific consensus on the fact that the climate is changing rapidly at the moment, that this change is partly the result of human activities and that it is supported by figures. With this in mind, we have created a 2x4 hour module at ESSEC to outline a course on climate. This is indeed too short, we would have needed at least 15-20 hours. In 10 hours, the students made the Climate Fresk, a playful tool to ease them into the subject. We also shared information on actions taken by companies or financial markets, or in the context of public policies. We did not address the issue of personal appropriation of these topics

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at all, and this is one of the reasons why I think we should add 3 to 4 hours of workshops on sharing best practices. Coming out of this initial module, we want students to feel confident that these are core issues, even if some of them are open to discussion. I put a lot of emphasis on business schools, because the main challenge they face is lack of time. Students have little time to devote to these topics, because they have too many concepts to master on the side – hence why I am not in favor of them having physics courses. There is not necessarily much point in being too scientific.

Campus de la Transition: At the Campus de la Transition, we are working on the construction of a common base of knowledge that could be used by all students in higher education, regardless of their field or discipline. This question of the level of technicality to be reached for each disciplinary field is at the heart of this reflection. For the time being, we want to include some basic knowledge of physics and energy, particularly in relation to the functioning of the climate. The question is to know how far we can go once we start to enter the field of physical sciences. We also want to find a balance between, on the one hand, the acquisition of scientific knowledge and the main orders of magnitude that allow us to take the measure of the changes underway and, on the other hand, the formation of a critical mind based on an introduction to epistemology that allows us to understand how scientific facts are constructed.

Alain Grandjean: On this point, I find that the Climate Fresk, which I mentioned earlier, is at the right level of analysis as regards the question of causes and consequences. The causal chains are well described, and that is why its implementation works well with different audiences. However, as soon as we go further upstream – with more sophisticated notions, such as heat exchange – it quickly becomes too long, or even inaccessible. Depending on the different courses of study, the ability to understand these scientific concepts varies, and that's perfectly normal.

Campus de la Transition: Have you observed any changes in the engineering schools that you know well?

Alain Grandjean: We are in a different situation with engineering schools, because they already have more capacity and a better basis for understanding the phenomena in question. For these schools, it seems to me that it is important to have a core curriculum on transition, which can then be supplemented by specialties that allow us to go further upstream in the analysis (using modeling or paleology to study the climate, for example). Unfortunately, we are less well equipped to deal with biodiversity because we lack shared tools. IPBES is working on this, but we have not yet reached the same level of synthesis as for climate issues.

Campus de la Transition: From our various teaching experiences in these schools, particularly at the prestigious engineering school, Ecole des Mines de Paris, where 80 students enrolled this year in the course given by Cécile Renouard, we note the need to put things into perspective and to develop a critical perspective on ethical and political issues. Do you also feel the importance of this need?

Alain Grandjean: Of course. But I insist again on the fact that students cannot develop this critical and philosophical capacity if they have not understood the scientific issues beforehand, otherwise they are a bit out of touch. When I was talking about 15-20 hours

to get the basics, I wasn't including many subjects like accounting, economics, ethics, philosophy or many of the other impacted disciplines.

Campus de la Transition: If you had to mention absolutely key issues to address, what would they be? You mentioned accounting standards. We're also thinking about what you've been working on for the past few years, such as finance and financing the transition, or the price of carbon. What do you think is essential to include in a common base?

Alain Grandjean: I think it is essential to integrate accounting, which is the real lens and the ideal system for representing companies and the State. It is a mode of representation and apprehension of reality that has considerable effects and an enormous potential for transition. We will not change the accounting frameworks in three days, of course, but we can already lead students to conceive other systems of representation, through another way of doing the accounts, using the carbon balance sheet for example. The same problem arises with economics. Young people need to understand that the economy is part of the biosphere and that the environment is not external to it. I am convinced that there will be a very big transition and that economics and accounting will be taught in a completely different way in 20 years.

Campus de la Transition: In the chapter on economics, what should be included in this core curriculum?

Alain Grandjean: The first chapter should be a summary of resources by defining the economy as a system that transforms raw materials into energy in order to produce goods and services to satisfy needs and demands. But a system that also generates waste. The question of machines must also be addressed, because once we understand that resources are transformed into goods and services, we must also understand the mechanics of transformation, which involves the use of machines. It is therefore necessary to deal with the issues of pollution and competition between machines. I am convinced that there is a specificity of economics in the so-called "social sciences" compared to all the others, and this is why it must be taught very early. We can approach the history of economics and make students aware of the fact that its power is amazing compared to other disciplines. In the second chapter, we need to bring students to understand that there is a plurality of modes of reasoning and different chapels associated with different teachings. Some are dominant, others are in the minority, in disarray, false or at least questionable...

Campus de la Transition: Regarding the priority areas of action, for example digital sobriety, mobility, building renovation..., what mix should be recommended between collective and individual efforts?

Alain Grandjean: I think that this subject should be integrated into the core curriculum in general, because it doesn't take a lot of complicated economics to understand that the issue is systemic and that everyone has an action to take as a citizen, consumer or stakeholder in a community. It is not complicated to understand that there is a polar opposition between putting everything on the individual and accusing the public authority in parallel. Many works try to illustrate the establishment of a zero waste France within 50 years or to imagine global scenarios. The conclusion is often the same: we must reduce our energy consumption and decarbonize the economy. It is also interesting to

teach the difference between direct and indirect impacts, for example by using tools such as the water footprint, the energy footprint, the carbon footprint... I would integrate all these notions into the common core, because it is very interesting to observe the problem from these different angles.

Campus de la Transition: We are thinking about the proposal of Gildas Véret, an engineer who graduated from Ecole des Mines (already mentioned above) and who is very involved in a movement advocating climate resistance. On a personal level, he has chosen to build a positive energy house and proposes that people who can do so commit to never take a plane, to buy only second-hand manufactured products, to consume organic and local products, and to drive their car less than 2,000 kilometers per year. He realizes that not everyone can do this, but he wants to help people understand the orders of magnitude and what it means to live with a carbon footprint of less than 2 tons per capita. What do you think about the impact at the individual level of these lifestyle transformations?

Alain Grandjean: At ESSEC, we did a session on the Climate Fresk, and then a session on what companies, financiers and public authorities are doing in order to give students the feeling that things are happening, even if it is not enough. In this second module, I talk about what France will be like in 2050, what it means to move to a carbon footprint of less than 2 tons. It is good that there are emblematic people who have made ambitious commitments, but we must not forget that there are over 67 million French people. The danger would be to limit ourselves to highlight individual commitments of this kind, to make other actors believe that these commitments are sufficient. I encourage students to look for even stronger actions, especially when they are committed.

Campus de la Transition: What are the greatest levers available today to implement collective and political actions?

Alain Grandjean: First of all, I would spend some time "getting economics out of its ivory tower". The community of economists is divided into three main groups: there are those who think that technology will save us, those who believe in the market, and those who think that reality is much more complex and that other instruments must be mobilized. In any case, this remains in the economic sphere. One of the most significant levers of change is in the area of social norms, because they really do change the world. If we are gradually becoming vegetarian and paying more and more attention to animal welfare, it is not at all because of an economist's reasoning. It is simply a change in society. Public policies can influence these changes: the State or local authorities can commit and invest in public transport policies, for example, to try to reduce greenhouse gas emissions from the car fleet; but, ultimately, it is social norms that drive the transition.

Campus de la Transition: Alongside the State and local authorities, a diversity of actors must take part in the transition: companies, unions, NGOs. What roles can they play? How should they transform themselves?

Alain Grandjean: At present, trade unions continue to see mainly the destructive effects of the ecological transition in terms of jobs. The absolute priority is therefore to train them to make them understand that the scenario of climate inaction is a scenario of social destruction. For the moment, they do not realize this and think that the transition only implies negative social impacts. So we need to put the climate issues back on their own

ground, namely employment, and show them that such a scenario leads to a deterioration of employment. The second way to get them on board would be to talk to them about the company of tomorrow, the emergence of new rules of governance and their integration into new decision-making systems in order to get out of financial capitalism. As far as NGOs are concerned, we expect them to play the role of whistleblowers, which they do quite well. The priority for the Nicolas Hulot Foundation, for example, is to build the world of tomorrow by creating the possibility for debates to be held on the major directions to take. We must be able to debate, for example, the questions raised by what is called collapsology. If we cannot deny the fact that all systems will collapse one day, we must ask ourselves the question of the effectiveness of such a discourse and its appropriation by civil society.

Campus de la Transition: How do you position yourself in these debates on collapse? Collapsology has a strong power of attraction, but it is also very divisive. Today it has many followers, but also detractors.

Alain Grandjean: The debate on collapse raises questions about the effectiveness of mobilization to bring people together to avoid the announced catastrophe. A discourse that consists of saying that our inaction will lead to our downfall has no mobilizing capacity in my opinion – at least not on politicians, who must have concrete proposals if they hope to play a role vis-à-vis the public authorities.

Campus de la Transition: In the field of mobilization, how far-reaching could the action of movements like Extinction Rebellion be, which can appear as critical spurs for public authorities, or more broadly the radical choices made by citizens in terms of consumption, choices that sometimes cover deeper issues?

Alain Grandjean: I am rather skeptical. In situations as complicated as today's, we must keep in mind that we are in an ecosystem where each of us has a role to play. Radical positions can lead the masses, which is encouraging. On the other hand, it is not because we avoid 5 tons of CO₂ that we will have solved the problem. To put it another way, it is not the individual who emits greenhouse gasses, but our equipment and the objects we transform and use. Plastic is not produced without machines. We are not going to succeed in changing things by radical consumer movements. I don't believe in the realistic nature of this project at all.

Campus de la Transition: However, they question the link between public policies that can influence the way a car is made, the way it is used, the way public transport is valued... This could lead to cultural changes that are necessary today in the evolution of our representations. Aren't there questions of collective change to be promoted?

Alain Grandjean: It's a fact, there's no debate about it. I agree with you. We need to encourage changes in behavior – this is happening more among young people – and we need to replace "consuming more" with limited and intelligent consumption. What I am saying is that I do not believe that a radical discourse on consumption patterns is sufficient.

Campus de la Transition: Movements like Extinction Rebellion also provoke reflection on the modes of political action, questions about the effectiveness of non-violence or civil

disobedience. Beyond changing consumption patterns, don't they also raise the question of whether active minorities can play a decisive role in the transition?

Alain Grandjean: The problem remains that I don't see how these movements will have an effect on public policies and on production methods. We are not going to transform the world by getting 20% of consumers to move and leaving the fossil fuel industry alone. It seems to me to be essential to accompany the middle classes on the way to massive changes in their behavior. Radicality must be expressed in political actions, such as closing coal-fired power plants.

