How our means are undermining our goals

What a Hollywood movie can teach us about agriculture

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Content

1. The Bus

It was first screened in the cinema twenty years ago: Speed, the movie. A successful action movie about a bus tearing across the freeway, with Sandra Bullock and Keanu Reeves behind the wheel. There is a bomb underneath the bus, placed there by a frustrated ex-cop. It is set to explode the moment the speed of the bus drops below 50 mph. Keanu Reeves, Jack Traven in the movie, and a very young Sandra Bullock as Annie Porter, are trying their best to maintain speed, zigzagging past obstacles, oncoming traffic and prams. They fail to defuse the bomb, but manage to reach an airport where they can endlessly drive in circles.

There is one problem though: the petrol tank is going empty. Jack and Annie must keep their foot on the gas to prevent the bus from exploding. But if they just keep driving, the bus will explode too. The only solution is to get out. Voila, the problem of our economy in a nutshell, and that of agriculture too.

The economy as the bus

The global economy is that bus. The financial markets are the bomb. In 1999, journalist Thomas Friedman already coined these markets the *electronic herd*[1], made up of millions of anonymous traders (i.e. their computer programs) investing their money across the planet, wherever they expect to make a profit. When they lose confidence, they withdraw their money and all hell breaks loose. The credit rating agencies that adjust their ratings for Spain, Russia and Argentina at will, are the herd's bloodhounds who can ruin a country.

Small buses, the ones that you can take to a pit stop for repairs, no longer exist. We are all passengers on the same uncontrollable monster truck. There is no one company or country that can decide to do things differently. Everything is interlinked. That's why the rhetoric of world leaders only serves to create trust. As long as market demands are satisfied, there is no limit to our spending spree. In Europe, all eyes are on Angela Merkel. She is at the wheel of the bus, navigating her way through oncoming traffic and around road works like a true Sandra Bullock. She has no choice. But one day the tank will run dry, our capital gone.

The growth of Western economies tapered off long ago, and the speedometer threatened to drop into the danger zone. With additional mortgages and complicated financial constructs we have been able to keep up the speed. But these tricks have only created trust, not real value. And debt, which has to be paid off at some stage.

Economists are hoping that the world will keep spinning as long as the money keeps flowing. **However, the economic crisis is at heart a growth crisis, not a liquidity crisis.** We have created too little value. Part of the growth has been virtual. And part has been at the expense of people and the environment - just consider the raw materials we need to enable growth. That too creates debt that we will have to pay off some day, and by then it may be too late. We can't spend our way out of the crisis, because the costs of growth have outgrown the benefits. Our growth is uneconomic, as environmental economist Herman Daly calls it.[2]

1 Thomas Friedman, *The Lexus and the Olive Tree* (1999)

2 See e.g. *Ecological Economics and Sustainable Development: Selected Essays of Herman Daly* (2007)

Agriculture as the bus

Many farmers (men and women) across the world are subsistence farmers, who are not directly linked to the workings of the global bus. Indirectly, these farmers too are increasingly part of the system, as they are becoming more and more dependent on external inputs like seeds, pesticides and fertilizer. Moreover, the share of agriculture that operates on the global market is growing. And they have to join the race for more, bigger and faster. For a deeply indebted farmer, investing in environmentally friendly techniques doesn't come first on the agenda. Increasing productivity is his or her main goal. A country that has to improve its trade balance might not be concerned with the plight of small-scale farmers, since stimulating competitive exports is their main target. And a wheat business cultivating land in Sudan with speculators' money needs to provide double digit financial returns before it takes time to think about standards for minimum wages.

In other words, the global agricultural sector is becoming "financialized", and is increasingly linked to the bus that is forced to drive ever faster. And that's for the better, some say. By 2050 we will have to feed 9 billion people, so we will have to go all out to crank up production.

At the same time, it's more and more obvious that the *tank* is running dry. What is required to generate that growth is becoming scarcer. Be it oil for transportation, or phosphate, without which we have no artificial fertilizers, or the diversity of species, varieties and breeds that fosters resilience in nature and agriculture, or the fishing grounds that feed us. These are but a few examples that reveal how our monomaniacal focus on productivity growth feeds off our capital. It is ironic that the means we have chosen – growth - is in fact undermining our intended objective of prosperity and production into the future.

A schematic overview, to clarify the metaphor:

	input ▸	method / means ▸	output / goal
the bus	fuel ▸	acceleration ▸	mobility / transportation
the economy	capital ▸	economic growth ▸	value / prosperity
agriculture	capital ▸	productivity growth ▸	production / prosperity

Notice that "growth" is expressed in money. The bomb underneath the bus symbolizes every mechanism that forces people to give the means precedence over the goal. Financial markets are an example of such a mechanism, but it can also be a certain ideology.

How did means become goals in agriculture? What are the risks of treating agriculture as a machine that has to increase production? How did we end up on the bus, and how do we get off again? That's what this essay is about - starting with the relation between means and goals, as the foundation for the rest of the story.

2. About means and goals

Mahatma Gandhi expressed it concisely: "means and goals must be interchangeable". If a peaceful society is your goal, then violence cannot be your means. If contentment is your goal, consumerism cannot be your means. The road you choose must be a goal in itself. Gandhi didn't invent this, he borrowed it from Jesus Christ among others. Aristotle too wrote that happiness is rooted in a virtuous life. You cannot attain the good life through bad means.

The sociologist Max Weber noticed a hundred years ago that people had begun to separate means and goals more and more. With the current technical outlook on life, people increasingly identify things merely as tools, as means to an end. To attain our goals, we need to accumulate and improve those tools. In other words: focus on making as much money as possible, develop technologies, build systems or design weapons, and then let's look at how to put this to good use. But we forget that the means we choose catalyze their own dynamics, and these dynamics could undermine our goals.

Dutch economist Bob Goudzwaard has written about this phenomenon extensively.[3] Individuals and societies pursue legitimate goals, like prosperity or peace. But when those goals are threatened, we tend to justify the use of any tool or means that could bring us closer to our goal, whatever the cost.

An example is economic growth. The 1957 Treaty of Rome identifies "economic expansion" as the fundamental pathway to prosperity and peace. The notion of "economic expansion" has been further translated into concrete means, such as the deregulation of the financial market, or the Lisbon requirement of three percent economic growth per year. Everybody, from minister to banker, says: "Growth is of course not a goal in its own right. It is about prosperity, peace and wellbeing. But it is a necessary means."

According to Goudzwaard this makes us dependent on those means. When we consider a means as indispensible, we get a tunnel vision. This used to happen in primitive societies too, in the way people worshipped higher powers. A tribal chief could decide that, in order to please the gods, it was necessary to dance naked in a kind of pre-historical rumba before beheading your daughter. All in the name of prosperity and wellbeing of society, of course.

Today, ends and means have become ever more separated. In modern ideologies, people uncritically and unconditionally embrace certain means. The goal, after all, is sacred! The means (money, technology, strategies, weapons, propaganda) are deployed much more rationally and systematically, risking to lose all sight of the goals. The horrors of the twentieth century are a tragic testimony.

This is the basis for understanding how we can lose our freedom to do the right thing. Back to the metaphor: how we are forced to view speed or acceleration as our goal, instead of mobility of the passengers.

The next chapter demonstrates what this decoupling of means and goals entails in agriculture.

3 Bob Goudzwaard et al., Hope in Troubled Times: *A New Vision for Confronting Global* Crises (2007)

3. What is prosperity?

A few years ago I met a farmer, Motiram Belsare, in a small village in Maharashtra, India. He belonged to the indigenous tribe of the Kurku and cultivated cotton. He used to grow food for his own use. His government, however, wanted farmers to raise production for export. If farmers were to specialize in a single crop, it would boost total production and improve livelihoods. So Motiram started to grow cotton. But because everybody has started doing just that, the price of cotton has plummeted. As a result, Motiram can no longer pay for his food. He earns half of what he needs, and for several months a year he works as a migrant labourer in the city, away from his family. It is unlikely that he will still be a farmer in a few years time.

Creative destruction, economists call this. The misfortune of some leads to growth for the collective. Better technology, such as the genetically modified Bt Cotton, may increase production. That that's too expensive for Motiram (1.5 times as expensive as regular cotton) is tough luck. Besides, many farmers who did make the switch, have become deeply indebted because Bt Cotton turned out to be unsuited to the local conditions. It couldn't cope with the arid climate for instance. Or the pest mutated and huge amounts of pesticides had to be bought. In the district of Vidarbha, where there are Kurku too, debts are driving hundreds of farmers to commit suicide every year. Belsare shakes his head when I ask about this. No, Kurku do not commit suicide, says he. "We're used to dealing with adversity."

So what are the hidden costs of this push for more efficient production? A diversity of food crops has been replaced by just one crop, cotton, and mainly even just one variety. This has made the system vulnerable. It requires a higher application of pesticides and leaves little opportunity for the poorest farmers. Farmers need to buy their seeds and pesticides from the multinationals that own the patents. This leads to deskilling and dependency, say researchers. Farmer knowledge based on experience is fast disappearing and farmers are increasingly left to base their choices on whatever information or product is offered to them. Has hunger been reduced overall? That too is questionable. Since the economic liberalization of India in the early 1990s, the average per person caloric consumption in India has *dropped* by 5 to 10 percent. Today, many billions of dollars worth of food are exported, while food has become unaffordable for the poor in the country itself. India has boarded the global bus and is showing incredible growth rates. But is there greater prosperity?

Broad-based prosperity

In itself there is nothing wrong with growth. As long as that growth is organic, the way a tree grows, involving all its cells. No tree would grow straight up into heaven. Growth as expansion, that has something limitless about it. If you only count money changing hands, you have a pretty narrow view of prosperity.

The goal of an economy is to create value with limited resources. That is prosperity. But prosperity and value is more than you can calculate with numbers. The value of agriculture, of course, includes the production of food and other crops. But meaningful employment for farmers can also be seen as a goal in itself, including the ability to provide a livelihood for their family. And the safeguarding and development of culture, tradition and knowledge, built up and transferred over generations.

In order to attain these goals, a farmer uses his or her capital stocks. Economists subdivide these into natural, physical, social, human and financial capital. On the input side in the table below are the different kinds of capital that farmers use to create output. It is therefore important to ensure that capital stocks do not diminish, but remain equal or increase. That makes taking care of all forms of capital a goal of agriculture too.

input ▸	method / means ▸	output / goal
• natural capital • social capital • human capital • physical capital • financial capital	economic activity ◂	• production of food and other crops • income for farmers • immaterial output such as meaningful employment, culture and knowledge *plus:* • taking care of capital stocks

In our economy we have the tendency to make two mistakes. Firstly, we often reduce output to its material component: production. And not in the sense of vitamins, calories or even cows, but of money, in the short term. Secondly, we want to maximize this. Productivity growth in the short term, expressed as money, then becomes the means on which we bet everything. As a result, we make our capital stocks on the left side of the equation subordinate. The environmental economist Herman Daly calls this throughput.[4] When we predetermine that we need to increase the material output, we start squandering capital.

Natural capital: raw materials are being depleted, water sources are drying up, fish populations crash, the concentration of CO2 in the atmosphere is increasing, forests are cut down, the soil is eroding. Diseases are becoming more dangerous because germs are developing resistance to antibiotics. Bees are going extinct because of excessive pesticide use. The diversity of crops and livestock decreases, as well as genetic variation within species (varieties and breeds), because a growing share of agriculture is dominated by a just a few species, varieties and breeds (genetic erosion).

Social capital: many farmers are finding it ever harder to make a living from agriculture. People are moving en masse to the cities, undermining traditional communities and cultures, and disrupting families. Most economists don't have the guts to call it as such, but in reality a huge class of people is emerging that cannot keep up with the dynamics. Surplus people, as they are officially called in South Africa.

Human capital: traditional forms of knowledge, practice and experience are disappearing. People are alienated from tradition, but in a broad sense too: people in cities are becoming completely disconnected from nature. This subject falls outside the realm of economics, but the enormous consequences this has for the health of individuals and communities, and for a sense of purpose... that's something people are only now beginning to think about.

Physical and financial capital: in order to be able to make the necessary investments in pesticides, artificial fertilizers, machines or seeds, farmers have to borrow more and more money. Furthermore, they become dependent on the privileged few that provide access to capital and on the wiles of a global market that is completely disconnected from reality on the farm.

4 See e.g. *Ecological Economics and Sustainable Development: Selected Essays of Herman Daly* (2007)

To sum up, prosperity seems to increase, but in reality we are eating into our capital and therefore decreasing prosperity. In doing so, we undermine the potential of attaining our goals into future. In response, we up the speed even further. And hope that we will be able to solve the problems we create on the left-hand side of the equation (such as ecological, human and social problems) by the end of the ride, with the money or the technology we have accumulated by then. The economist Keynes called this a tunnel vision. We are driving as fast as possible through the tunnel, hoping to emerge unscathed at the other end. But there is no light at the end of the tunnel; the tunnel is taking us ever deeper into the ground. Back to the metaphor of the bus: the tank is running dry.

This is how in the language of economics the means undermine our goals.

4. The agenda of "Technique"

The example of Bt Cotton reveals what we base our hopes upon. The only way of generating yet more yields using diminishing capital stocks, is with technology. That was the reasoning behind the Green Revolution. It is also the reasoning behind genetic engineering. Technology is just a means, says everyone. But, as we know, means have their own agenda.

The agenda of technological resources has been extensively described by a sociologist with a reputation in France and the United States: Jacques Ellul, a twentieth century Frenchman.[5] In his view the world is not directed by the profit motives of capitalists, but by something broader than that: the drive towards efficiency, which he calls "Technique".

Technique has become autonomous

Human beings have always used techniques. Concrete technologies, like the hammer, for instance. But also military strategies – that's also a technique – or a particular scientific methodology. New to our time is that individual techniques have grown well beyond the local level. They interact more and more, reinforce each other, and thus make up a system.

An example: scientists are researching how to make engines more efficient. This makes it possible to build faster cars, which leads to more traffic victims. That requires a strong government to develop and enforce efficient traffic rules and regulations. To implement this, a police force is needed, paid from tax revenues, which comes with a bureaucracy to tackle the issue efficiently, complete with advertorials using the best available psychological insights to convince people to drive responsibly. This system has the inherent trait of ever expanding. It is autonomous.

This is what Ellul calls Technique, with a capital T. It is an abstract force you could describe as: multiplying the resources for action. It is achieved by a scientific search for the most efficient method, in any field. Technique is the search for efficient control.

This, however, raises problems. Technique always has unforeseen consequences. People and their cultures are not adapted to a rational, technological society, separate from nature, with artificial entertainment and artificial food. They are not predictable, and they appear to be developing all kinds of new ailments as life is becoming more rational. Just like nature itself, which for example, turns out to react when CO_2 levels change in the atmosphere. That's why a rational system in the real world always leads to unforeseen outcomes. The technological system, however, always responds with more technology, never with less. In short: our means have become so strong a force, that they produce ever more means. They justify themselves, and take over an ever greater part of the world.

For the machine (read: the bus) everything is a means. It doesn't call for the meaningful or the good, only the useful. But useful for what, and for whom… that disappears to the background in a world increasingly driven by usefulness.

5 Sociologist and professor in History of Law (1912-1994). See www.ellul.org for bibliography.

High-frequency trading

Ellul's description may sound a bit dense. A concrete example could clarify this: the financial markets. After all, stocks and bonds are technological innovations too, as are other financial products such as options. Options offer farmers the opportunity to ensure themselves against the risk of a failed harvest, by selling the risk to an investor. That investor can then trade these options freely on the stock exchange, where a price is set for each product. That makes the products available to other traders, who have no connection to the farmers concerned. They buy financial products anonymously, just to make a profit.

This has many advantages, such as a greater availability of credit, but in reality the means has become a goal in itself. It is inextricably linked to a system that cannot be adjusted. Friedman's electronic herd has already been mentioned, but developments don't stop there. That herd too could be more efficient. That's why the trade has been automated. Seventy percent of all transactions on the stock exchange are carried out by computer programs, which calculate exactly when to buy and when to sell. A large part of these transactions (about half in the US) concerns the ultra short term, to make a profit out of small fluctuations.

This high-frequency trading happens at the speed of nanoseconds. Right now a network is being built that can transfer an order from London to Frankfurt in 4.6 milliseconds. Trading houses that still use the old network, which takes 8.35 milliseconds, will be spending millions to keep up with the competition. They either follow suit, or fold. For the economy as a whole it makes absolutely no difference if trading happens at a faster or slower pace. Except that the system is now so complicated that it could crash on its own accord, without people being able to trace the cause. This is exactly what happened during the 2011 flash crash, when computers went haywire and 900 million dollars of exchange value evaporated in twenty minutes. The stock exchange recovered immediately, but billions of dollars had changed hands. The same has happened later that year on the sugar exchange and the cocoa exchange. Supervisory authorities still don't understand exactly what happened in this complex system. The machine has taken control, the markets hostage to its every whim.

Automation has consequences for food prices too. The trade in food indices has likely raised prices, and in any case made them more volatile. That is bad news for food importing countries, and good news for financial traders.

Monoculture

This is also a good example of another characteristic of Technique, according to Ellul: **the technological system always moves towards a monoculture, because that is most efficient.** It is worth reflecting on the relationship between the efficiency and health of a system. Belgian economist Bernard Lietaer has written about this.[6]

Consider a complex ecosystem, like a tropical rainforest. In this system, plants, animals, organic matter and energy each have their own part to play. The health of the ecosystem cannot be measured by the girth of the trees, the number of green iguanas, or the quantity of CO2 stored. It is about the viability of the whole, which depends on two characteristics: efficiency and resilience.

Without efficiency – the capacity to generate sufficient organic matter and energy – a rainforest could not function. But without resilience – the capacity to recover after a dry period, for instance, or a pest infestation – it would break down quickly. A rainforest's resilience is enhanced with greater diversity of plant and animal species (and genetic diversity within species), as well as with more inter linkages. But this comes at the expense of efficiency and needs to be balanced.

6 See www.lietaer.com

Monocultures are not a balanced system. In terms of production, a monoculture is much more efficient than a rainforest. But it is also more vulnerable. Cropland cultivated with a single variety of genetically modified cotton for hundreds of kilometres, can be hugely profitable. But it only takes a single fungus or one season with high rainfall, for the entire system to collapse– and countless farmers to go bankrupt. A rainforest on the other hand, can persist for millions of years, because its diversity makes it possible to adapt to changing circumstances. Lietaer's take away message: in due course, nature always establishes a balance between resilience and efficiency. This applies to any stable system, be they nature reserves, financial markets or agricultural systems. But in our economy, efficiency is praised and diversity ignored.

Concentration of power

Technique is not neutral. Technique is power, and therefore interferes with existing power relations. One example is the internet, which has been embraced by many as a pathway towards greater democracy. In reality, those digital channels used by dissidents, can be used by spy services alike to track those same dissidents. Or by multinationals to expand their monopoly over social networks. This is why Ellul says: the technological system ultimately leads to a concentration of power. To stay in the game, you need to be a big player with the money and resources for continuous innovation.

What's more, the divide between markets and government is an illusion. Big players are too big to fail. Banks, but food giants too, will never be allowed to topple. But with increasing risks, the bureaucratic apparatus (both at the national and supranational level) is growing too, to allow for ever more monitoring and registration. Be it the curvature of the cucumber, the background of people working with children, the development of technical cognition in toddlers, or the type of garbage bins at chicken farms (all existing examples). That's aside from governments tapping all telephone and internet traffic, all for our own security of course.

In short, technology changes an organic world, with cultures and attitudes that have evolved over centuries, into a rational, manageable world. That is extremely risky, according to both Lietaer and Ellul.

This perspective may seem fatalistic. Technology can also empower individuals, against the force of other powers, right? That is possible. Ellul was not against technology, in the sense of tools or machines. He feared the machine as the ideal for the world to emulate. This is an important insight, as the same is happening in agriculture, with its transformation into one giant food machine.

5. Towards a food machine

I recently visited one of the largest chicken hatcheries in the Netherlands. It has a permanent set of 22 incubators, containing 57 600 eggs each, which produce almost 57 600 chicks in exactly 21 days. A conveyer belt then takes the chicks to a machine that counts them and ejects them into crates with exactly one hundred chicks each. Every week 1.6 million chicks are transported from the hatchery to the fattening plants. At the plants they grow at a rate of 60 grams a day, until 42 days later they have the perfect weight for processing into chicken fillets.

In this business, everything revolves around efficiency. This is why the chicken breed was selected that was proven to grow the most efficiently: the Ross 308. All hatcheries have selected this same breed. According to the trade journals, a chicken is "little more than an efficient conversion machine", converting soy into chicken fillets. Ross 308 leads the ranks by a mile, that's why 95 percent of all Dutch chickens are of this breed. Other ones have almost disappeared.

Farmers are disappearing too. The country has barely ten main hatcheries. The competition is lethal, says the hatchery manager. He has a turnover of 240 million euro, but the margins are so small that there is no profit. That increases the risk tremendously. Should the market dip, the prices will too, and that could cost him his business. A disease epidemic, such as avian flu, could occur in the region too. In that scenario, economic logic dictates that preventive disposal of a few million birds is the most sensible. Chances are that could lead to bankruptcy for the farmer.

NGOs and consumers are increasingly critical of the "broiler", unable to support its own weight and requiring bucket loads of antibiotics to prevent a disease outbreak on the farm. But who is in a position to change anything? Not the hatchery manager. And neither are the breeder, fattener or butcher. Their frustration with the campaigns of animal welfare activists and other "do-gooders" isn't surprising. Anyone who does not produce super efficiently, is outcompeted by the international market.

The chicken hatchery only has forty employees. Machines do most of the work. It is no longer a real farm, and the only living plant on site is the Ficus in the director's office. Everything is sterile. The biggest winners are the machine manufacturers. The hatchery supplies a fattening plant in the Ukraine, one of the largest in the world. In a few years time, this plant will fatten 45 million chickens year round, using robots instead of workers. Even cheaper, even more efficient, and with even less manpower.

This same story holds true for other agricultural sectors. I recently spoke with a dairy farmer in the Netherlands, who owns 190 cows. The cows are permanently indoors, where the climate is fully regulated and three automatic milking systems are working around the clock. The "milking robots" scan and weigh the cows, check for udder infections, clean and disinfect the teat, position the cup in exactly the right spot using laser technology and attach the tubes. The cows supply an average of 8500 litres of milk, they are super efficient. But the margins are very, very small. The cost of energy and feed is rising. Shortly, he will have to lay off one of his two employees. And what if the milk prices drop below the minimum price? The dairy farmer doesn't have the answer. You only survive if you can expand.

What is the future of agriculture?

Using efficiency as a lens, there is only the next step. Experts don't base their decisions on an end result. It's an interesting thought experiment to project a scenario based on current trends and developments. What would this future scenario of agriculture look like? I think it would consist of a food factory that converts all the necessary ingredients as efficiently as possible into perfect products. Mega factories where crops are cultivated in 20-story buildings, where 35 million chickens are converted into fillets in 42 days on a couple of hectares – not by people, but by machines.

What consequences would this have for flavour? And what would it mean for people's relationship with nature and for their physical health? Technicians are betting their money on developing technical fixes to these problems. That's not such a stretch. Already, there is a company in the US, Cyvex, that sells broccoli in powder form, called BroccoPlus. Broccoli contains glucosinolates, said to be a powerful anti-carcinogen. As we become more detached from nature and the world becomes increasingly artificial, people prefer to eat broccoli powder over real broccoli. The company has also discovered that people's aversion to broccoli is genetic and developed a "super-broccoli" that tricks genetically predisposed people into not experiencing the bitter taste.

The global agricultural machine will be extremely efficient, when it comes to the costs that can be internalized by "the bus". CO2 management will be optimal, as will be the composition of the feed. But these systems are extremely vulnerable. Any little glitch in the system, falling market prices, a disease outbreak, rising oil prices or interest rates, and all goes awry. The power of command over the value chain will be in the hands of a lucky few, if anyone has the power that is.

Many costs cannot be internalized and must therefore be passed on. Not only species, varieties and breeds will disappear. Farmers too will be on their way out. What would that mean for developing countries with large rural populations? They will have to prepare for mass migration to the city slums.

In truth this utopian project will never be realized, because we will be stopped in our tracks by massive crises. But for the moment, this does seem to be the road that agriculture is taking.

6. Embracing friction

So what should we do? The movie Speed comes to a clear conclusion: we have to get off the bus, because it is going to explode one way or another. We must move towards an agricultural system where entrepreneurs and consumers are free to choose between alternatives. We must move towards an economy that allows for different types of buses simultaneously, that can continue on their way if one of them fails, all at their own speed. But this is not intended as a new ideology or a blueprint. On the contrary. That only leads to tunnel vision, as we noted before. Ellul's motto was: think global, act local – long before this was claimed by the global environmental movement.

What use is this as long as we're onboard the bus? According to Ellul, **we should always have an outside perspective on our systems.** In his view as practicing Christian, there is more to reality than meets the eye, and that provides a basis for an uncompromised and critical view on systems. We must fight for that freedom of perspective, since it doesn't exist anywhere in its full glory. For the moment, we will have to content with staying on board the bus with one leg, and the other outside. In our daily lives, we will have to be playful and light-hearted in our search for ways to shape our freedom. And to find the technologies that do not chain us to a system, but that we can control ourselves. Because this cannot be fully captured in theory, I would like to conclude with an inspiring real-world example.

Multifunctional agriculture

I have already introduced the dairy farmer who has fully automated the milking process by using robots, on the largest farm in the region. As it happens, he lives right next to an organic farmer, who dubbed himself "the broadest farmer" in the region. His name is Jan Huijgen. On his farm, the Eemlandhoeve, he has integrated a range of different functionalities. In addition to fifty meat-cows, he also runs an educational "landscape house", a conference centre, farm shop, vegetable garden, beehives, a farmers' cinema, a care farm and a natural garden, and has a plethora of new plans. He has set up a regional "landscape society", where 125 farmers are now collaborating on landscape scale agricultural and environmental management. He has received the European Mansholt Award for his pioneering role in fuelling the debate on "multifunctional" agriculture.

Huijgen is not just a farmer, he is a philosopher too. He does not really believe in a head-on confrontation between his ideals and the conventional farmers around him. "I don't want the paradigms of large-scale versus small-scale to clash. That would kill off any debate. I'd rather embrace the friction. Nurturing the tension opens up creative space, where new ideas can blossom." This approach is also also much better suited to the reality of farmers who, especially in developing countries, don't usually employ such a strict delineation between traditional or modern, small or large, high-input or organic.

Huijgen prefers a playful approach. He does not write gloomy opinion pieces about monocultures, but rather organizes a festival to put neglected and underutilized vegetables in the spotlight. That sounds like it's all fun and games, but he has a serious mission: "Flavours have become so impoverished, all beetroots taste the same these days. Out of five hundred different kinds of tomatoes only a handful are used to produce all ketchup. Eighty percent of the entire food chain is controlled by just a few main players. They decide what we eat. We have lost the art of savouring." This is part of the wider problem in agriculture according to Huijgen, and the reason he's dreamt up a new project: a regional"tasting farm", including a sustainable restaurant, bar, educational vegetable garden and a farmers' market. In collaboration with the farmers, bakers and fisher folk from the nearby village.

The idea is part of a larger scheme, tells Huijgen: “We must move towards regional food chains that operate alongside the existing chains. Co-operatives where farmers, consumers and investors, all have an equal voice. It is a sideways chain integration: you take a step to the side and develop a new, regional chain.” That fits the situation that prevails in many developing countries, where agriculture is not sustained by a few large companies, but by networks of men and women combining different tasks and roles, such as farming, fishing and hunting, trading, running a shop and community care.

Large or small?

Huijgen maintains good relations with his neighbour. He organizes excursions to “the largest and broadest farmer” to teach people something about agriculture. He has about the same turnover as his neighbour, but generated through a wide range of income streams from environmental management subsidies, company outings, care and education to the sale of meat. His risks are much more spread. “The conventional system is unstable”, says Huijgen. “All it takes is for something to happen to the price of oil, the euro or even the technical software, and the whole food supply collapses. People think that we won’t experience hunger ever again. But what will we do in our own region when the supermarkets can’t supply anymore?” Huijgen would be keen to join up with his neighbour to set up a regional milk processing and distribution system.

What’s more important: creating an ideological niche, or changing the system? “I’m on a different track altogether, already probing for the reality that will emerge after the crisis. The seeds of this new reality can already be found in the present. I seriously doubt this system can last - everything can fall apart in an instant. But neither do I believe in dreamy community thinking. I want a pragmatic, grounded, realism. I could learn a lot from my neighbour in that sense. He has a keen eye for commercial opportunities. He’s also ahead of me in the use of sustainable energy, something I’d like to cooperate with him on. When it rains, he uses his machine to harvest my silage for me. We organize excursions together. But it wouldn’t surprise me if one day my neigbbour needs my regional channels to sell his milk.”

That is what Huijgen means by embracing the friction between paradigms: nurture the tension to help move you forward. “That does require mental space. Many people are still locked in the technical efficiency paradigm and look with a sense of pity to what they call a romantic yearning for the past. But you also need the moral space. Do you have the guts to let things affect you and to get angry at injustice? And thirdly, as I’m increasingly aware of, you need something I call liturgical space. The ability to remain silent and listen. We have surrounded ourselves with immunities, as described by the philosopher Peter Sloterdijk in his trilogy “Spheres”. We don’t dare to think of life after death, or of life after the crash. But we all have to go through that.” It sounds spiritual, and it is, says Huijgen. It touches on the core of Christian belief: “To let go of your certainties and fears, and become attuned to life beyond the horizon. To become porous, or permeable, as Charles Taylor called it.”

Huijgen is developing new ideas, to take his plans even further. But the counter-forces are also increasing, he knows. “I believe that evil exists. I see the impact of powers and institutions. Food companies and the bureaucracy are now starting to tackle the legal system. When that happens, when they start applying all their rules to regional products, it is all going to hell. You could get fined fifteen thousands euro for saying that broccoli and beetroots are healthier than processed food. You can’t prove that, they say. They could destroy me, if they wanted.”

Huijgen does not want to dwell on it. “It would be give them too much credit, and it is intimidating. I prefer a more playful approach, more stimulating. We are creating the nooks and crannies for the beginnings of the new reality to sprout. And what’s happening? The farm now has three hundred different plant species that had disappeared before. They are natural signs of hope.”

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