To Transition!

Governance Panarchy
in the New Transformation

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Inaugural Address

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Prologue

In December 2013 a group of angry citizens in the north-eastern part of the Netherlands started a protest after another relatively small earthquake had hit the area. As a result of the transition from coal to natural gas in the 1960s (Correlje, Verbong 2004), the ground had been destabilizing for decades leading to a frequency of small but increasingly heavy earthquakes. The area had for a long time been experiencing socio-economic difficulties with an ageing population and high levels of unemployment. The fact that almost all of the income from the natural gas extraction did not go to the region but was added to the national budget had been an issue for decades. The combination of these factors led up to a growing dissatisfaction and distrust in national politics, providing the breeding ground for the protests.

As a result of the public outrage, politicians rushed to the scene promising financial compensation and counter measures. The citizens demanded a fair compensation, independent research into causes and damages and in general more serious attention for their position. The political response was to establish compensation funds amounting to a billion Euros, a reduction in the extraction rates and a round table policy process to find a middle-way between the ongoing extraction and the interest of the local communities. The round table included many of the vested interests as well as representatives from the local communities, and focused on compensation measures so that the extraction could be continued.

In this case regime actors and the national financial interests led to a seemingly swift recovery of previous status quo. This is not surprising as there are not only huge financial stakes, but also a strong (policy) commitment to finding a sustaining strategy. As early as the 1990s, national policy started to invest in the so called

'gas roundabout'; the idea to develop the Netherlands as a hub for the European gas market, using empty gas-fields for temporary storage. This led to billion euros of investments in infrastructure, but also to very strong formalized relationships and agreements with mainly Russia as (future) provider of natural gas. Clearly an example of a strategy to build upon an existing system rather than a transformative strategy, and in this case also clearly vulnerable to external societal shocks. It is increasingly clear that underlying causes have not changed, the societal context is adding to the tensions and the impact the protests had will in the future empower others to do the same. In the end, there will be a more structural change one way or the other as the more fundamental socio-economic drivers will continue to create a context for disruptive social change, but the incumbent regime will seek to prolong its existence as long as possible. This is an illustration of the growing tensions between the old and the new and our inability to move forward. I will return to this scene in the epilogue.

Introduction: change or transition?

The world is undergoing immense changes. Never before have the conditions of life changed so swiftly and enormously as they have changed for mankind in the last fifty years. We have been carried along - with no means of measuring the increasing swiftness in the succession of events. We are only now beginning to realize the force and strength of the storm of change that has come upon us. Wells 1930

How to understand social change? It seems that every generation again seems to experience changes greater than ever before. But my argument, much in line with how Wells phrased it 80 years ago, is that the combination of societal forces is now producing a typical kind of large scale *transformative societal change*. We again live in an era of change: major crises are perceived to threaten our welfare and perhaps even our existence and new possibilities seem to develop faster and faster. The world is becoming increasingly connected, complex and unpredictable. Old institutions, beliefs and values seem to collapse creating uncertainties, conservatism and surprises. The authority of science, government and reason is fundamentally questioned and the for long stable social fabric of the welfare-state is slowly but steadily dissolving. In a time where we are increasingly aware of the persistent problems our world faces such as the sustainability of our social systems, the ecological boundaries we are transgressing and the economic and financial crisis, it seems that clear solutions are absent.

I have been privileged to have been part of the emergence of the field of transition studies and especially the development of transition management as a new governance concept from the start. To me, it presents a new research paradigm that offers a way forward in times of complexity, uncertainty and ambiguity. Transition research, as practiced at Dutch Research Institute for Transitions (DRIFT), seeks a middle ground between interdisciplinary knowledge development and experimental application in practice. We explore transitions together with practitioners and make sense of our complex world by generating new transdisciplinary knowledge. As I will explain our current societal challenges by necessity ask for more hybrid, transdisciplinary and co-creative forms of knowledge development as well as new forms of governance that will help us to move away from our current unsustainability and help to navigate emerging desired transitions.

The field of transition studies emerged by the end of the 1990s as a hybrid, inter- and transdisciplinary field dedicated to develop such a new understanding along with experimentally developing new strategies (Rotmans, Kemp et al. 2001, Rotmans, Grin et al. 2004). By looking back historically, transition studies has uncovered the patterns and mechanisms driving large-scale, long-term and non-linear social change. Since 2000, a vast body of empirical case studies has shown how the now dominant con-figurations that enabled progress have emerged and taken root replacing previously dominant regimes. But also how these regimes over time become locked-in and in the end inevitably become the subject of systemic change themselves. Such changes typically are disruptive: longer periods of incremental and gradual change alternate with relatively short periods of non-linear and shock-wise change.

Transition studies (Grin et al 2010) focus on the question how *seemingly* coincidental and unpredictable shocks and changes take place, what their fundamental origins and drivers are, and to what extent they can be anticipated and dealt with in a more strategic and systemic way. The main characteristics of such disruptive processes of systemic change are that they are to a large extent unpredictable, chaotic and contested. The transition perspective suggests that periodically societal subsystems (like energy, food, mobility, housing, health care) go through such large-scale sys-temic changes after longer periods of incremental or gradual change. 'Governance' in this context is an ambiguous concept: transitions are the aggregated outcome of interacting choices, steering, action and agency, but (so far) not of collective *system-governance*. This means that transitions are indeed influenced in the sense that their direction and speed is influenced by agency but not managed as a whole.

Perhaps the most provocative insight coming from the field of transition stud-ies is that the multitude of crises we are experiencing are the symptoms of an

unsustainable social fabric: the way that we have successfully organized society over the last century is fundamentally unsustainable in its design. The rise of the globalizing network society focused on growth, risk management and a withdrawing state are fundamental forces eroding our collective sense of control, direction and truth. In a world where every actor seems to be able to make decisions and influence change in general, but no-one is in control anymore, we collectively seem to fail in implementing readily available solutions to our problems. It is increasingly evident that our current development path is a dead end in many ways, but so far the dom-inant strategies followed are not able to lead us on another development pathway. As we cannot indefinitely sustain the now dominant way in which our societies are providing democracy, stability, solidarity, equity and justice, the central question now becomes: *'how we can better understand processes of structural social change to help realize a sustainable future'*. A future in which a high quality of life within ecological limits for all is secured in such a way that it can in principle be sustained for the foreseeable future.

In my opinion we are now only starting to see the fundamental challenges in achieving such a transformation. Clearly all efforts over the last few decades to deal with persistent societal challenges (social, economic and ecological) have not yet delivered satisfactory solutions. The idea of Sustainable Development, while penetrating every boardroom and cabinet office, has done little more than dampening the worst negative side-effects of modernization. In words borrowed from Michael Braungart: it has helped to some extent to make things 'less bad' but not to 'do the right things' (Braungart, McDonough et al. 2007). The perspective I would like to offer is that the period of sustainable development is merely the last phase of modernization. At the same time a next great transformation is already on its way, which will fundamentally alter the dominant design of our developed societies. This New Transformation will also bring along conflict, resistance and tensions, much like the historical transitions that were part of the era of modernization and industrial revolution.

I argue that we need to develop proactive strategies to facilitate transitions so as to reduce the tensions and conflict they bring along. Accepting the inevitability as well as the desirability of the New Transformation, a New Government and New Governance are required: a government that not only explicitly supports and facilitates the emerging alternative structures, cultures and practices part of the new Transformation, but also actively works on dismantling existing unsustainable regimes. In this inaugural I try to shed light on our current lock-in based on our matured understanding of (historical) transitions, before moving to my ideas on how to move forward.

The Great Transformation revisited

Since the mid-19th century, a combination of forces led to the welfare society we are still benefitting from. This process has been described as the industrial revolution, modernization or ´the great transformation´(Polanyi 1944). Undoubtedly critical to the Great Transformation was the development of new technologies enabled by the exploration of fossil fuels in the context of democratic nation states. After decades of innovation and experimentation, social changes seemed to accelerate after the first World War, only to be interrupted by the second World War, leading to an explosion of the population, consumption, welfare and economic growth. It also led to a broad democratization of decision-making, emancipation of women, human rights and the welfare state.

The process of transformation itself was driven by all sorts of underlying shocks and breakthroughs I would like to call here 'families of transitions'. Rather than to talk about one big process of transformation, transition studies helps us to better understand the underlying dynamics, the mechanisms and agency in these transitions. Scholars like Geels and Schot for example describe how shifts from one socio-technical system to another only came about through struggles or in other words were a process of 'contested modernisation' (Geels 2005, Geels 2006, Geels, Schot 2007); in each transition incumbent interests, technologies, values and beliefs were fundamentally challenged, resisted and ultimately had to adapt to a changed reality. So the emergence of our now common systems of energy supply (Verbong, Loorbach 2012), automobility (Geels, Kemp et al. 2011), industrial agriculture and food consumption (Spaargaren, Oosterveer et al. 2013), building, health-care, education and science, all resulted from processes of creative destruction. A creative destruction in which resistance to dominant social norms and practices seems to have been as important as the power and promise of new possibilities.

Undoubtedly the underlying promise of a better life for all combined with the possibilities of new emerging technologies provided an overall orientation worth fighting for. The access to decision making, the right to work and be educated, the desire for better living conditions and a better future for next generations empowered the masses to challenge then dominant elites and demand changes. Historical transition
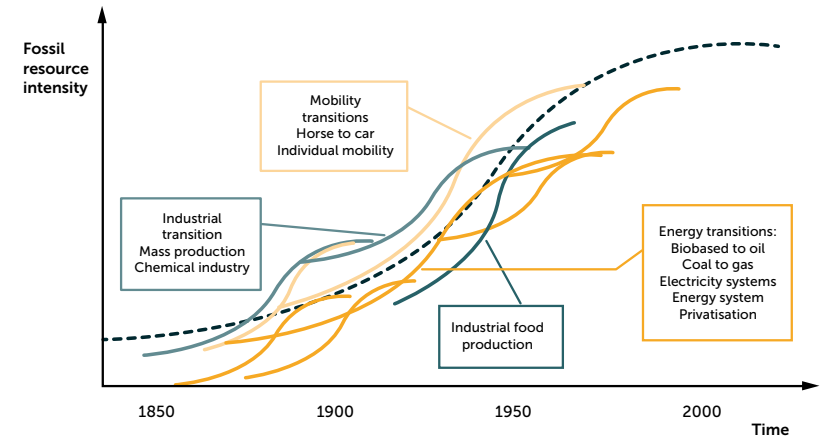
Electric car, 1906

studies describe this process of development as one in which the combination of slow and deeper fundamental changes co-evolved with a diversity of innovations to increase pressure on incumbent socio-technical configurations (regimes) to produce relatively rapid, disruptive social progress. Iconic examples are the shift from sailing boats to steam ships, from horse-and-carriage to automobiles and from biomass to large scale-fossils. The transition perspective offers a coherent and descriptive explanation to such processes of seem-ingly coincidental change. Only through continuous dialectic processes of choice and resistance does society change, not in an endless gradual but in a shock-wise and non-linear way. In these processes technological innovation is as much a critical element as institutional, economic, ecological, societal or cultural change.

The period of Great Transformation can in this perspective be understood as the aggregated process of a multitude of underlying shock-wise transitions in our societal systems. Transition scholars have traced back the roots of our current societal fabric to its origins in the mid-19th century and identified the transitional patterns and dynamics indeed driving the Great Transformation. The figure below illustrates how I see the process of Great Transformation as the aggregation of underlying transitions, referring to some of the historical transitions research. I take the fossil resource intensity of our economy as core indicator, because the main challenge our centralized, fossil resource based linear economy faces is its dependence on depleting resources as well as the negative effects of resource use and depletion on our society and economy.

These historical transitions in hindsight can be described as revolutionary systemic changes, but in everyday practice they were more incremental processes of experi-mentation, breakthrough, institutionalization, behavioral and cultural change and so

Understanding the Great Transformation as a family of socio-technical transitions.

on. As such processes of 'evolutionary revolution', the transitions of moderniza-tion and industrialization completely altered society. Strikingly, it seems that many of these historical transitions were driven by a few very fundamental common drivers that provided the basis for the transitions of modernity: the cathedral of the modern society was built upon very specific foundations.

Most of the progress achieved in the Great Transformation has been powered by central planning, fossil resources and linear thinking. As much as social struggles and economic innovations have contributed to progress and growth, I argue that it is the triplet of central *control*, fossil *resources* and linear *thinking* that is the driving engine of modernity.

Central control

The rise of the nation state as central authority came along with the emergence of centralized systems of provision. The new technologies of the industrial age enabled the large-scale distribution of power, food and services to the masses and central planning facilitated their development and organization. Not only through raising the enormous capital investments needed but also through top-down planning and coordination. So could transitions from often decentralized

systems of provision towards modern centralized systems take place. In this way a coal-fired power plant is not much different from a ministry: being in control over resources one can plan, distribute and manage how these resources are divided and used. The authority of science and knowledge production as input for technological innovation and ultimately market development was crucial in this.

The central way in which societal systems are organized has a clear origin and understandable historical rationale. The nation-state model emerged out of an era of conflict and revolutionary social change. In a time when potentially huge leaps in development were not yet benefitting the masses, the Marxist tensions between classes necessitated a more democratic and fair distribution of resources. But simultaneously did a vast majority of the population lack the necessary knowledge, skills or resources to self-organize. The representative democracy with its typical top-down policy regime and the associated welfare state model were therefore a logical answer to the challenges of that time. This ensured in a modern way central decision-making while creating enough societal support to mitigate threats of social unrest and revolutionary change.

Fossil resources

The availability of cheap and abundant fossil resources has been critical to the Great Transformation in many ways. It co-evolved with the emergence of a range of new fossil-fuel based technologies such as the steam engine. The new technologies based on cheap fossil resources made it possible in the following century to develop mass-production, intensive mobility, industrial food production, centralized energy systems and so on. It has also been a necessary precondition for our current economic and financial systems creating enormous sources of revenues for nation-states that could therewith fund the development of their economies and the welfare state. The availability of cheap energy was increasingly a social demand and necessary condition for economic development, leading to a co-evolution of fossil-based energy systems and structures of power and decision-making.

Linear thinking

The paradigm associated with this dominant orientation to centralized organization is that of top-down linear thinking, which is still dominant in our current society. This paradigm relates closely to the suggestion of the ability to control and predict. It can be associated with a culture in which growth is achieved through planning, specialization and ever continuing efficiency

Icon of mass production, the T-Ford

Central systems.

Oil refinery in paradise

increases. The linear model of innovation has widespread consequences. It presumes a direct causal relationship between knowledge production and material impact in the real world. It presumes predictability of actions and the possibility of straightforward planning. It also leads to a gradual and incremental understanding of change and innovation building step by step forward upon the current situation. Bureaucracies are governed by target setting, project-based working and a dominant focus on (technological) innovation to help achieve growth in existing (top-)sectors. Universities are governed by output measurement and valorization rhetorics suggesting the superiority of (mono)disciplinary knowledge production. Business is governed by shareholder value, quantitative targets and indicators. In general, our dominant economic models and paradigms are also linear in terms of assuming rational behavior, predictability, externalities (as impacts external to a system) and direct cause-effect relationships.

led to breakthroughs and periods of relatively swift systemic change towards a new regime. These regimes are in a way dynamic equilibria: they provide stability and to some extent predictability while they continuously change, adapt and improve.

The modern society in many ways is built upon the combination of these foundations. The control over resources (energy, knowledge, money, decision-making) facilitated exponential growth through centralized planning. It helped to generate so much wealth that persistent social challenges of the early 20th century like poverty, disease and poor living conditions could be adequately dealt with by developing the welfare state. And in this way also mitigate the possibility of social unrest and revolutions, a very real possibility at the start of the 20th century. My opinion is that it was the unique combination of central control, fossil resources and linear thinking that produced an economic growth explosion benefitting large sections of the population. And that a fairer distribution of wealth was a common interest not in the last place of the elites. The 'engine of modernity' I described thereby created a broader societal change throughout society that has become deeply embedded in how we collectively think, organize and act.

From my perspective, it was the very slow and fundamental driving force of modernization that helped to create the transitions in many sectors from pre—modern (often distributed, based on biomass and knowledge extensive) to modern. What transition studies show is that the transitions in seemingly all societal systems can be described as non-linear processes of transformative change: previously dominant regimes were gradually pressured by the shifting context of modernity and challenged by emerging alternatives. Typically the convergence of these dynamics

Understanding our current lock-in as predevelopment

"The fact is that, with the ecological crisis, we are trapped in a dual excess: we have an excessive fascination for the inertia of the existing socio-technical systems and an excessive fascination for the total, global and radical nature of the changes that need to be made. The result is a frenetic snails' race. An apocalypse in slow motion. Changing trajectories means more than a mere apocalypse and is more demanding than a mere revolution. But where are the passions for such changes?" (Latour, 2010)

The central idea of societal regimes is that they are historically contingent and provide stability to societies. But vice-versa that they in themselves tend to become inert through the process of optimization itself. In other words, improving existing regimes will help their performance in the short term, but preludes more disruptive larger change in the future. As regimes are no homogenous entities but hybrid amalgams of implicit rules, routines, actors, institutions, technologies and so on, there is no central agency or control governing this process. Only over time persistent problems become manifest and are recognized as a systemic problem by a much larger group of people, after which alternative futures might be debated and experimented with in a more coherent way.

I argue that the development of the modernistic regimes part of the Great Transformation started to stabilize around the 1960s. At the same time we can see that the New Transformation started to develop in niches. Already from the early 1960s, people started to become aware of the inherent unsustainability of our systems of consumption and production, in terms of environmental impact, economic equity and social justice. Ulrich Beck has previously pointed at this process in which societies become increasingly aware of negative externalities and start to deal with these and called this 'reflexive modernisation' (Beck 1994). The established regimes however predominantly focused on optimization, improvement and efficiency to reduce negative impacts. Over time however these regimes, because of their focus on optimization, became increasingly locked-in, adding to the persistency as well as their systemic vulnerability. Simultaneously the understanding of the persistent nature of our problems along with the alternative technologies and practices slowly ripened and matured. We are now in a period where dominant regimes become fundamentally challenged by these alternatives, creating the contexts for tensions, conflicts, surprises and, ultimately, disruptive systemic changes.

There is a broad consensus on the unsustainability of our current economic system, social structures and resource use. The rate of extraction of resources and minerals, the growing population and consumption, the environmental impacts and continuing economic growth are by now leading to serious impacts associated with the 'overshoot collapse' scenario by the Club of Rome in the 'Limits to Growth' report from 1972 (Meadows, et al, 1972). Due to successful environmental policies, technological innovation and unforeseen forms of social innovation most direct negative impacts seem to have been mitigated and much has improved in terms of global poverty, environmental degradation and economic growth. The messages of the scientists pointing at the systemic problems in economy, ecology and society and the need for Sustainable Development have taken root in national policies, business strategies and societal visions.

By now, it is for example hard to imagine a world without fossil fuels, while historically it will be no more than an anomaly. Hubbert already convincingly presented this idea in his report for Shell and the American Petroleum Institute in 1956 (Hubbert 1956) and it has since then become a more mainstream idea known as 'peak oil'. But also more in general our consumption society has been made possible by the availability of cheap and abundant resources. It is now accounted that we yearly consume substantially more resources than our earth can produce or reproduce (Wackernagel, Schulz et al. 2002), so the autonomous growth in consumption unquestionably will somewhere in the future become problematic. We have already been predicted to hit Peak Oil and perhaps even Peak Resources (the moment after which the production starts to decrease), and even though structurally uncertain it is clear that we will face a situation of increased scarcity in the future (Murphy, Hall 2011). If not a scarcity in terms of physical availability, then a scarcity because of the amount of energy needed to harvest resources becoming larger that the return (Gupta, Hall 2011, Murphy, Hall 2011).

Ecological crises?
Since Rachel Carsons 'Silent Spring' in 1962 and the report by the Club of Rome (Meadows, Meadows et al. 1972) the environmental concerns about the impacts of our economies have steadily grown. It led to waves of environmental policies and struggles addressing pollution, resource depletion, emissions and waste. It helped to clean up and improve industries, created public awareness and slowed down

environmental degradation. Major successes were achieved such as the banning of CfKs, prevention of dumping and landfilling waste, cleaning up rivers and surface waters and increasing (fuel and energy) efficiency. But most if not all of these successes have been outpaced by the growth in consumption. Even a relative decoupling (a stabilizing environmental impact against economic growth) has only been achieved in a limited number of areas, while absolute decoupling (lower environmental impacts against economic growth) has not been achieved at all at the level of national economies. The climate debate, originating from the 1970s, is illustrative. The problem has been primarily debated for three decades and still a consensus is far away. It has certainly stimulated carbon reduction policies leading to a relative decoupling in some industries, but these again were offset by ever continuing growth. Environmental regulations it seems have now become an integrated part of established regimes, adding to their complexity and lock-in.

We are by now facing a number of serious ecological crises as a result of foreseen economic and demographic growth (Meadows, Randers et al. 2004). Both in terms of availability of renewable resources and in terms of the environmental impacts of our consumption and production, we are pushing beyond the limits. Leading to impacts of climate change, acceleration of extinction rates, ocean acidification, loss of clean potable water and so on (Rockstrom, Steffen et al. 2009).

Economic crises?
In the same period from the 1970s onwards a similar, yet counter-directional, debate around the negative economic side-effects of the core model of industrialization led to the start of the market era. State planning and the welfare state model in which benefits were shared were argued to limit growth and innovation because of the inefficiencies of bureaucracies. The dominant paradigm emerging was that economic growth, which had by then become central to our collective thinking, was necessary to keep up with population growth. And that this could best be achieved through a neo-liberal capitalist system in which business and markets were as free as possible. From the Reagan and Thatcher era onwards this led to ever increasing privatization and liberalization,

and market-based thinking penetrated society, along with the rise of the global economic-financial complex.

Initially this approach helped to improve the existing societal regimes and boost economic growth, but a strong argument is made that from around 2000 much of this added growth was fictional and artificial leading to the sequence of crises we are still in and the subsequent need for alternative approaches (Jackson 2013, van den Bergh, S. 2006, Costanza, Kubiszewski et al. 2014). While the benefits of liberalization are still debated, it seems clear to me that the transfer of control from government to markets has substantially diminished possibilities for governance, adding to the complexity and lock-in (Loorbach, Lijnis Huffenreuter 2013).

Social crises?

From a social perspective, the 1960s marked the period in which in many ways democracy and emancipation as envisaged decades earlier moved towards completion. Mass education, equality of man and woman, and the freedom of individuals in many ways completed the social revolutions of the Great Transformation. It also marked the beginning of the end of the traditional social structures in Dutch society along the lines of religious and politics groups. Gradually society moved towards a network-society in which new (informal) forms of organization amongst individuals and organizations emerged, creating complex social webs of interaction. In this context the already hollowed-out ability of the central government to steer further decreased, leading to what policy scholars call the 'democratic deficit' (Bekkers 2007). Through multi-level governance networks actors were able to influence policy and concentrate resources to achieve impact. Combined, the individualized and networked society add to the persistence of grand social challenges: *every actor can steer but no one can decide*.

This created a context in which government is seemingly unable to deal with the ecological and economic crises, but also historically built- up societal institutions are being undermined. The welfare state with collectively organized solidarity through pension funds, unemployment benefits, labor policies and so on, is structurally chang-ing creating uncertainties and opposition. Societal organizations that used to provide stability like labor unions, churches, political parties and all sorts of associations hardly have a support base left, adding to the feelings of individualism and loss of identity.

Problem industrial complex

These combined developments have led to today's predicament. We are con-fronted with systemic problems deeply embedded in our societal regimes. We are increasingly experiencing growing tensions in our societal regimes based on centrally organized control over and distribution of resources and problem-solving end-of-pipe. It seems difficult if not impossible to solve these problems through the traditional means of regulation, liberalization or negotiation. This lock-in is evident in many societal systems now increasingly confronted with the changing societal context and the economic crisis. An efficient waste-management systems, an efficient health-care, and efficient energy system, and efficient food production and an efficient building sector have all been thriving upon demographic and consumption growth but are now completely locked-in in regimes focused on growth, efficiency and old ways to solve past problems. Increasingly we now see that the limited effects of increased efficiency are no longer enough to provide the financial space to support welfare states, especially in times of economic crises. The reform of the welfare state in the Netherlands, especially the current 'transition' in the social domain is an example of how a reorganization and budget cuts are seen as ways to sustain the current systems by making them more efficient.

Waste management and care as problem industrial complexes

Two rather different sectors, but similarly dependent on a (growing) demand for problem-solving, are the regimes around waste management and health care in the Netherlands. Waste as much as sickness, is the outcome of deeper lying processes. Waste is produced through liners modes of production and consumption at the end of the process. Health-related problems in many cases are the result of lifestyles, living conditions or socio-economic factors. In both cases the tangible, measurable and treatable problems only manifest themselves at the end of such processes. While in both areas the idea of prevention has been present from early on and much scientific evidence points at the substantially lower cost and higher social and environmental quality of prevention, it did not take shape in any substantial form through policy or institutions. The benefits of prevention are hard to quantify and are indirect: society would benefit greatly from healthier people and less resources dependency, but those who need to invest are not the ones that profit from it.

In practice this has led in both areas to end-of-process problem solving. In case of the waste management system, the Netherlands experienced a transition away from landfilling towards incineration and energy recovery. During the 1990s strong and focused policies helped to build up a national waste market, professionalized the sector and triggered huge investments in large incineration plants. Around 2004 our research (Loorbach, Parto et al. 2003, Kemp 2006) already suggested an inherent unsustainability of this regime based on its dependence on waste in light of the desired shift towards more circular systems. The dominant policy discourse was one in which the waste-issue was solved by the development of an efficient waste market and incineration. Due to the liberalization of the market, the investments in infrastructures for waste treatment and incineration and the dominant framing of efficient incineration to produce sustainable green energy, an almost autonomous regime has evolved not only dependent on growing volumes of waste but also including many governmental organizations and actors that have committed themselves to this, for example through contracts with incineration and recovery companies at the local level, or through the dependence on waste-to-energy to boost national renewable energy figures.

At the same time, all sorts of new concepts, products and services based on cradle-to-cradle and circular economy related thinking are emerging. Based on design for recycling, upcycling of materials and resources and closed-loop production and consumption new realities are developing that in essence could lead towards a minimization of waste. Although these developments are enthusiastically hailed in in national policy programs and sustainability debates, they meet resistance and barriers in practice. An example is the recent compensation demanded by waste company Attero in one of the Dutch provinces because the amounts of waste produced by the population were substantially lower than their contract with the municipalities promised. This is a signal of on the one hand the lock-in between government and market actors around end-of-pipe waste management and on the other hand the potential for reduction of waste earlier on.

Our research that looked at the changing practices of waste management at the municipal level and compared how different municipalities performed (Van Raak, Loorbach et al. 2013) shows that through a combination of clever organization, prices incentives and good services municipalities in principle are able to substantially lower the cost for citizens, radically reduce the amounts of waste produced and increase the recovery of high quality materials (see also page 61). This conclusion was fiercely challenged by among others a local green party politician who fiercely defends the choice for entering a long-term contract with a company on end-of-pipe separation of municipal waste by pointing at the technological innovations that will make it increasingly efficient. Such debates suggest that the lock-in is besides financially and technologically also mentally: it is truly believed that a sustainable waste management system is possible and could at least be of equal quality to a situation where no waste is incinerated or produced at all. Without taking a normative position in this debate, merely pointing at the policy initiatives around a circular economy as well as all the societal initiatives around reuse, banning bags from supermarkets and so on, makes clear that there are two opposing ways of thinking about and acting in that conflict.

In the area of health care a similar transition occurred during the nineties liberalizing health care hoping to stimulate efficient problem-treatment. By now evidence is mounting that the cost of health care did not decrease but also that the quality of care did not increase. This is leading to concerns over the affordability of health care and the current reorganization of especially long-term care and youth care towards municipal level with a strong emphasis on peoples' own responsibility and networks. In practice it seems that the responses to the systemic problem of affordable health care are primarily 'structure' oriented, seeking more efficient and early-response approaches through neighborhood teams, in-home-care and an emphasis on quick recovery and reintegration. The dominant discourse of measurability, efficiency and professionalization is not fundamentally changing, it is

merely changing shape under external societal pressure. One of the characteristics of the health care system is a focus on innovation and experiments, of which there are enormous amounts ranging from new treatment procedures, technologies, financing or insurance concepts or organizational forms. In many ways, like in the waste sector, the field is dominated by organizations and professionals that are conditioned to take care of problems and are financed based upon their problem treatment capacities.

At the same time the insights into how health care problems arise and new ideas on problem prevention can be seen to emerge everywhere. One of the projects in which we are involved at DRIFT is located in the neighborhood of Carnisse, Rotterdam and is called 'Veerkracht' (resilience, http://www.veerkrachtcarnisse.nl/). We work together with three other partners around the philosophy that a healthy happy life can only be achieved when a good basis for it is provided. A good basis in terms of a stable household, a healthy diet, good education and an interactive public space with social control. We work together with partners that support complex problem families to stabilize the situation at home (Bureau Frontlijn), that offer cooking and philosophy lessons at preliminary schools (Vakmanstad) and that develop vacant lots in neighborhoods with local citizens into public gardens, farms or playgrounds (Creatief Beheer). Through working at homes, schools and in the public space, it is easy to signal potential problems early on and take quick action because of the presence in the neighborhood and the close cooperation. But perhaps even more importantly, it is an approach that works preventively through establishing role models, sustainable lifestyles, concrete and positive activities and in general instill a larger amount of confidence, trust and resilience in local populations. Especially in such neighborhoods with relatively weak socio-economic populations such approaches over time can have an enormous impact on the career paths of young people, helping them to stay in school, become more confident and healthy citizens, have a social network, develop ambitions and so on. The project however is also meeting a lot of resistance from established regimes, governmental and health care and welfare related, as the impact can only be measured and proved over a longer period but perhaps more strikingly would, if successful, undermine the current business case of established interests. An official of the juvenile penitentiary for example wished us good luck but would not openly support the project as they are funded by the amount of young people they hold in their facility.

The example of 'Buurtzorg' (neighborhood care) is also exemplary of these tensions between the dominant discourse and practice and alternative models. Out of frustration with the large-scale providers of long-term elderly care based on protocolled and impersonal support for elderly people, a new model developed based on self-steering teams of mixed professionals that are able to manage their own clientele as they see fit. The model does away with the multiple management layers, the straightjacket professionals experience in their daily work and the client position of the people involved. The initiative met with fierce opposition from incumbent providers of elderly care, but in the end was able to win political support and become a mainstream alternative. The transition point here was the sudden collapse of Meavita in 2012, a large- scale provider of elderly care employing over 20,000 professionals. In other areas of health care such a transition is far more complex because it involves more specialized forms of care or coordination between care and other domains like education, housing and work. But nonetheless I argue that like in the waste example a more fundamental shift towards a focus on health and prevention is desirable and possible, but completely contrary to the current system.

Government lock-in

The two cases are to me clear examples of the ´sustainability lock-in': we seem to be caught in a vicious cycle of optimizing and inherently unsustainable system which closes down the space for the development of inherently better alternatives. The complexities associated with escaping this lock-in are evident: not only are financial investments and interests at stake, but the dominant discourses and routines are also blind to alternative possible futures and all sorts of institutional structures and rules are keeping the old situation in place. Governments and more in general our current representative democratic regimes are intrinsically part of the lock-in and increasingly internally divided when it comes to their position. Not only are national budgets seriously dependent upon energy and fuel taxes, revenues from natural gas sales, consumption taxes and so on, but they are also developed based upon a role as central planner and coordinator. Any fundamental change in these factors is potentially threatening and undermining this position.

The currently dominant model of central government through representative democracy was historically based upon a society in which there were relatively low levels of education, independence and access to knowledge and resources.

For decades or perhaps even a century this model served well to create stability, a future orientation and a coordinated era of progress.

The current era of austerity I understood as the context in which modernistic regimes and their governance agency seek to sustain their existence through increasing their efficiency (and thus reduce their operating costs). However, *'(i) n times of financial crisis, those with governmental responsibilities are seeking measures to make governing more efficient [... But] when moral principles are sacrificed on the altar of efficiency, the basic values of our society are threatened'* *(Loorbach, Cohen 2013).* The focus on efficiency increases this way undermines the legitimacy of incumbent regimes, but it almost seems the only way forward from the perspective of regime actors. The evolved and embedded ways of thinking, sunk costs, built-up infrastructures and institutions, developed routines and networks all limit the possibilities for larger scale changes towards new ways to solve current and future societal challenges.

In other words: we have developed societal regimes based upon (past) problem solving through central (government) planning and control, based on cheap fossil resources and linear modes of innovation. This perspective predetermines a particular way of addressing problems such as health problems, lack of education, poverty, hunger, waste, access to cheap energy and so on. It inevitably leads to solutions that are based upon singling out problems, quantifying them and implementing planned solutions through policy (or market based strategies). In practice this has led to societal regimes based upon 'problem-solving': when waste is produced get rid of it, when someone is sick treat him, when there is energy shortage build a new plant, when there is hunger intensify agriculture. This has led to regimes that are dependent on the (growing) demand for problem-solving and, in other words, depend on sustaining an unsustainable status-quo. This is what I call the problem-industrial complex.

Environmental policies much like the Sustainable Development discourse have become part of these established regimes and have primarily served to optimize these regimes making them a bit less unsustainable. **I thus come to conclude that Sustainable Development itself has become part of the problem.** The currently dominant regimes based on the foundations of modernity, are systemically unsustainable in a fundamental way. Besides the fact that their designs are based on historical societal problems and are therefore not adequate for today's societal challenges, they are unsustainable because the foundations upon which they are

built are eroding rapidly: in terms of the resources they use, the underlying financial models, the power relationships and their performance. In practice, we can see all sorts of societal regimes that are experiencing this existential challenge and trying to develop strategies to prolong their existence in many different sectors such as energy, waste and health care.

The New Transformation

It seemed to me that all over the world intelligent people were waking up to the indignity and absurdity of being endangered, restrained, and impoverished, by a mere uncritical adhesion to traditional governments, traditional ideas of economic life, and traditional forms of behavior, and that these awaking intelligent people must constitute first a protest and then a creative resistance to the inertia that was stifling and threatening us. These people I imagined would say first, "We are drifting; we are doing nothing worth while with our lives. Our lives are dull and stupid and not good enough." (Wells 1930)

It is my argument that the period of reflexive modernization also set in motion a New Transformation. While at the level of regimes the focus was on optimization, all sorts of alternative niches started to develop. Since the 1970s alternative currencies, renewable (energy) technologies, local democracies and sustainable community initiatives started to appear. For long these were small, expensive and often ridiculed as too alternative. But over time and with experience they grew, developed and matured. By now, many of these alternatives are starting to touch mainstream, from urban gardens and farms to energy producing buildings and from renewable energy cooperatives to credit unions and collective health care insurances. As I will argue such examples are part of a more fundamental underlying and structural process of transformation in which we shift from the drivers of modernity towards a new set of drivers. These new drivers undermine our current regimes and therefore their power base and enable new cultures, practices and structures.

The New Transformation that is emerging is in essence a socio-economic revolution. It is a fundamental power shift away from powerful elites controlling resources, money and power towards diverse and distributed forms of collaboration between professionals and citizens. In that sense it is a democratic struggle not so much different from those that led to emancipation, equal rights and freedom (Stirling 2014). It is however in our times a more a gradual and creeping revolution in which citizens, consumers, social entrepreneurs, civil servants, researchers and activists are changing the way in which we live, consume, produce in small but certain steps. The growing dissatisfaction with incumbent powers, managers, bankers, large corporations, political elites and so on is evident, but apparently not leading to a major revolution, protest or related massive counter-movement. The

anti-globalization movement came and went, bankers and politicians are targeted by social activists, Occupy camped out at Stock exchanges. Organizations and bonuses reorganizations and bonuses in the public sector are openly protested against, but such protests and movements seemingly did not demand a particular change or target a specific center of control. Rather, they highlight unsustainable practices and draw attention to these issues, in transition terminology helping society to ´structure´ the problem, or in other words gradually move to a consensus on the problematic nature of unsustainable socio-economic systems.

As we no longer live in Marx' time where powerful elites were smaller but, more importantly, easy to locate in palaces and other centers of control, the revolution of our time is a more gradual and hidden one. Especially in developed democracies it is not the time anymore of grand revolutions where a tsar, dictator or monarch is removed from his palace. We still see this type of revolutions in contexts with centralized control like the 'Arab-Spring' revolutions, but the New Transformation in our Western democracies is of a completely different nature. It is made up by individuals (both as citizens and as professionals) that do so by choice: they can increasingly decide to move their money to a sustainable bank or develop an alternative currency, produce their own energy, get their food from the farm, collectively organize care and set up a collective pension fund. As Paul Hawken argued in *Blessed Unrest (Hawken 2007)* by identifying over a million civil society organizations that are concerned with environmental and social issues, this movement is atypical: it is decentralized, does not have any recognizable leadership and cannot be grouped under one label. Rather, it can be interpreted as an uncoordinated common shift driven by very similar values and ideas but every time acted upon in very specific and localized contexts. This movement can be witnessed amongst individuals as much as professionals, and the revolutionary character in my opinion is that such societal entrepreneurs increasingly are able to co-create alternative realities largely independent from the dominant regimes.

In general such initiatives are often referred to as ´bottom-up´ and from a government perspective often framed as part of the 'participation society'. But because of their growing numbers, distributed network character and ongoing professionalization, this development is increasingly becoming a structural force challenging the modernistic regimes. This can be visible in the governmental domain as in markets where traditional structures and developments are pressured. This leads to a co-evolutionary process in which the slow but steady disintegration of the old world co-evolves with the emerging build-up of alternative regimes. As

PV Park Piacenza, Italy

these two worlds seem to exist in parallel, our future becomes the more confusing. I understand this confusion to be an intrinsic part of the period of change we are amidst. The old stability of the welfare state providing growth, security and governance is destabilizing, and the alternative direction is still fragmented, suboptimal and uncoordinated. This state of confusion is bound to persist for some time, expressed by social feelings of unrest and a negative attitude towards the future as well as by a number of fundamental drivers undermining the dynamic equilibrium of modernistic regimes.

These drivers are directly contrary to the drivers behind Great Transformation and are the foundations of the counter movement that is the New Transformation. These increasingly lead to visible conflicts between established regimes and their interests on the one hand and the alternative 'proto-'systems that are emerging on the other. The new triplet is distributed control, renewable resources and systemic innovation. It is powered by the fruits of modernity (internet and communication technologies, knowledge and skills, access to resources and wealth) and acted upon by all sorts of individuals and organizations that explore the potential of inherently more beneficial ways to fulfill societal needs.

Distributed control

The concepts of the network-society (Castells 1996), (meta-)governance (Jessop 2002) and the now popular concept of 'self-organization' all signal the increased capacity in devel-oped societies to organize societal functions in hybrid and decentralized, distributed forms. The accumulation of knowledge, capital and skills in social networks has led to increased social agency that is more and more independent from institutionalized and centrally coordinated forms of policy-making. New technologies help to enable direct two-way cooperation and exchange between producers

and consumers but also to by-pass previously central mechanisms of coordination. The fundamental consequence is that the dominant way to centrally organize societal systems becomes fundamentally challenged. This is as much true for centrally organized governmental regimes as for large companies, corporations and institutions: especially in transformative social and economic contexts such centrally organized larger institutions are too inflexible and rigid to adapt to non-linear changes and are outcom-peted by more effective distributed network-based organizations.

Renewable resources

The necessary shift from fossil fuels and wasteful economic models towards one based on renewable energy sources and cyclical resource flows is still in its (late) predevelopment phase but has over the past decades been steadily gaining speed. Renewable energy technologies are experiencing exponential growth figures in many countries, drawing enormous amounts of investments and gaining attention and support rapidly. Circular resources concepts and products are being developed and successfully implemented across the globe. In many ways, the main achieve-ments in these areas so far seem to be technological, but increasingly new
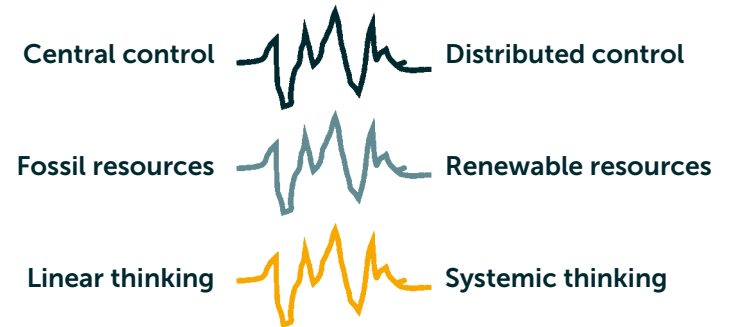
business models and social innovations are accompanying these. The develop-ment of energy cooperatives, ecocities, circular business models, energy producing buildings, biobased products, urban landfill mining, green chemistry, waste water recycling and so on are all increasingly substantial contributors to the development of an economy within ecological boundaries.

Systemic thinking

The increasing interconnectedness of our world has since the 1950s led to new branches of science around complex systems theories and thinking. Over the past decades this paradigm of (complex) systems thinking has

Drivers of the
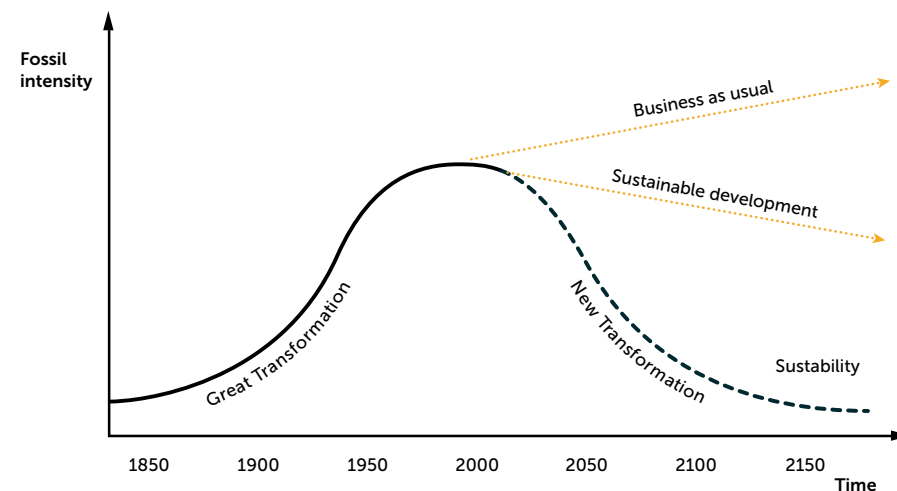Great Transformation

Drivers of the
New Transformation

Central control — Distributed control

Fossil resources — Renewable resources

Linear thinking — Systemic thinking

developed into a wide variety of theo-ries, methods and concepts to address processes of change and innovation in systemic ways (Midgley 2003). It is by now increasingly acknowledged that new technologies and products alone will not by themselves solve our major sustainability challenges. A lot of economically interesting alterna-tives are readily available but do not diffuse unless they help to optimize existing regimes. In particular the type of disruptive innovations associated with transitions take the shape of socio-technical or systemic change, in which new socio-economic conditions are co-evolutionarily developed with new technologies and institutional contexts. Such an understanding of social innovation departs from the

dominant understanding of knowl-edge production and (technological) innovation in terms of 'valorization': the transfer of fundamental knowledge developed in a scientific context into practical application in the real world. In systemic innovation, the new societal context often develops in co-evolution with new knowledge and technology, creating multi-directional flows of different types of knowledge ranging from scientific to practical, from entre-preneurial to institutional, with no clear point of origin. Systemic innovation then refers to the approaches, theoretically and practically, that seek to create con-ditions favorable to the co-evolutionary development of new ways of thinking, organizing and practicing around a (technological or other) alternative.

Towards a lock-out

I see these three drivers as fundamental long–term developments empowering many of the alternative practices and solutions that are emerging but also as grad-ually destabilizing modernistic regimes. These are, I argue, drivers as fundamental as those behind the Great Transformation and will in a similar way drive future transitions. In my opinion we are now coming closer to the crossroads between the later stages of the Great Transformation and the gradually accelerating New Transformation. This would open up the possibility for strategically advancing the New Transformation and guiding it into a direction which leads to socio-economic regimes that are low-carbon, equitable and resilient, breaking away from our cur-rent pathway of stabilization and sustainable development. I depict this in the figure below, quite similar to how the German Council for Sustainable Development conceptualized the necessary transformation in their landmark report (WBGU 2013).

The New Transformation as the possible pathway to a Susta(ina)ble world.

Although we are still in many domains in a situation where incumbent regimes are able to control, slow down or adapt to alternatives, there are also a number of examples where the old modern regimes are fundamentally challenged by the alternative and emergent New Transformation. And not only challenged in terms of disruptive technological innovations but by transformative social innovations in areas fundamental to the functioning of the dominant modernistic regime such as resources, finance, energy and governance. As with the Great Transformation, the New Transformation also implies a fundamental shift in power in multiple domains and levels. Basically each societal system or domain will be restructured and rein-vented in the longer term, through processes of creative destruction.
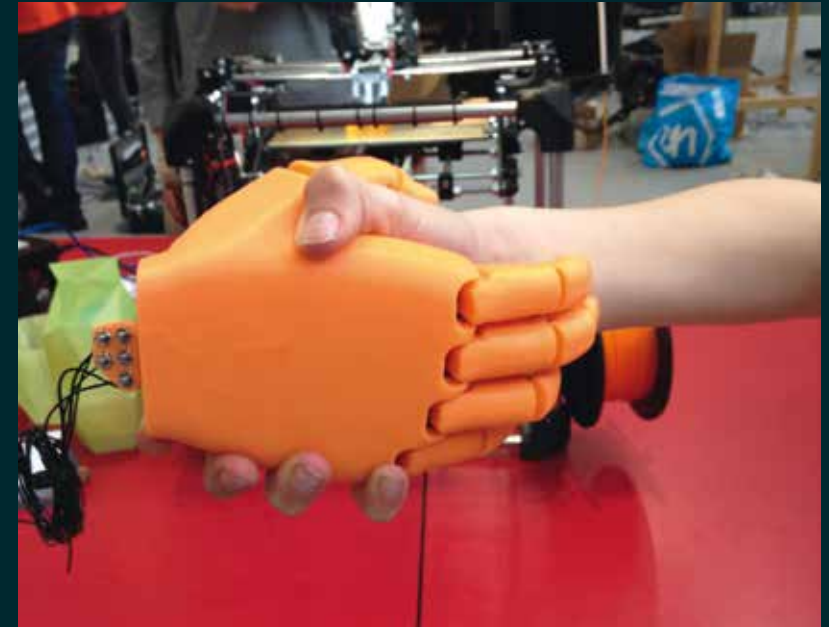
Examples of creative destruction

Direct banking: new currencies like Bitcoin are part of a broader development towards direct banking between citizens facilitated by new ICT possibilities. Not only do they cut out the control and role of banks, but they also confront the current system of taxation with fundamental challenges. As direct trade of goods and services between individuals becomes more accessible and normal, the question is to what extent incumbents can follow. An interesting debate for example now unfolds over banks focusing more on the role of safeguarding privacy and safety of online transactions.

Advertisement for disruptive energy start-up: never pay for energy anymore

Direct energy: the exponential growth of decentralized production of renewable energy and its socio-institutional context of energy cooperatives combined with technological innovations that make this ever easier and cheaper is rapidly destabilizing the dominant business model in the sector. But is it potentially also threatening the budget of the state in which taxes over energy use are an important part. New business like BAS energy or Vandebron are successfully developing business models based on reduction of energy or direct exchange of renewable energy, in spite of existing institutional barriers.

Direct services: recent successful examples such as AirBnB (a way to share your own home), Peerby (a way to share products like tools) and Uber (a way to share your own car) show how another type of economy is emerging based on direct links between producers and consumers of services, bypassing all sorts of professional organizations previously in central control. The disruptive nature of such innovations relies on the open sharing of information and data and the facilitation of direct interaction between actors. In addition they lead to lower environmental impacts, better use of resources and self-correcting mechanisms for quality control.

Shaking a 3d-printed hand.

Direct care: the example of neighborhood care has become exemplary of a way to deliver care in direct exchange between professionals and clients. Without an overload of risk control measures, management layer and protocols, more resources and space are available for adequate and personal care. The decisions are made in the interaction between professional and client and its quality measured by the customer satisfaction primarily.

Direct democracy: there are many examples through which new forms of democracy and participation take shape, ranging from the G1000 initiative in Belgium to citizens budgeting, citizen juries and so on. The Dutch ministry of Internal Affairs even established a team on 'do-democracy' to stimulate self-governance of citizens. The transition arena as a process through which selected actors co-design strategies and experimental actions is also a form of governance outside the policy arena: it is through networks and direct actions and decisions by professionals and citizens that they change their everyday contexts.

These are only a few examples of how the foundations of modernity are becoming challenged. Such transformative social innovations based are undermining the modernistic foundations of control, fossil resources and linear innovation models as in each of these examples central mechanism of coordination are taken out (power plants, central banks, central government, health care organisations, taxi centrals) undermining the dominant financial models and defying central control. In a market context one could argue that this is a very common process of creative destruction, but in these cases the financial logic of the state is also put to the test alongside socio-economic values such as transparency, accountability, security and so on. The examples also show that they are not directly driven by the common good or sustainability values, although in many ways they do (potentially) lead to more effective use of resources and a democratization of power and control.
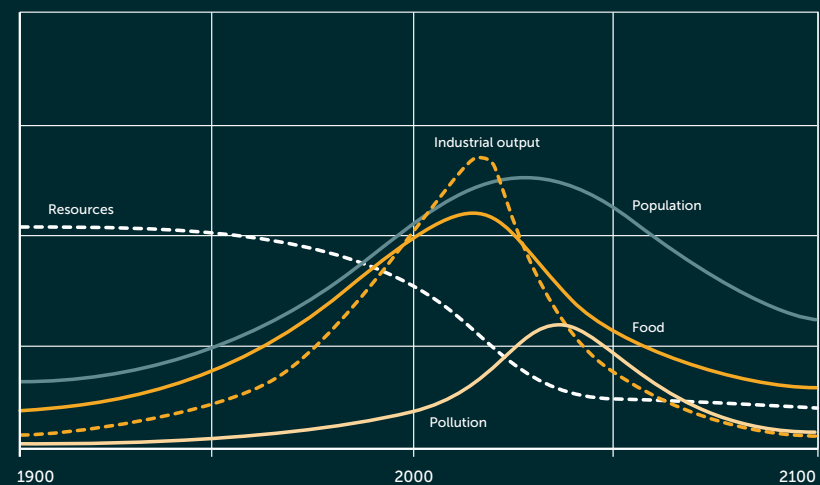
Tipping to transition

Such examples are more of an indicator of the underlying fundamental transformative changes emerging and the impossibility of existing regimes to control their disruptive effects. In my perspective it is merely the autonomous dynamics of optimized regimes that are increasingly difficult and costly to sustain competing with increasingly efficient and inherently more flexible and current alternatives that ultimately will lead to the so-called ´acceleration´ of transitions. In this phase both the processes of destruction of regime structures and elements as the creation of new systemic structures accelerate, highlighted by socio-economic crises and shocks that can take any form or shape but in general have a serious impact on public and political debates. A popular term nowadays to refer to such shocks or incidents is 'tipping points'. Drawing on the use of the concept in ecology (Scheffer 2010) and the sustainability debate (O´Riordan, Lenton 2013), tipping points refer to rapid and sudden irreversible shifts in a system state often as the result of an external influence to a system (like a forest fire or invasive species changing the dynamic equilibrium). More recently, 'tipping points' are also more directly related to societal responses and their role in system shifts (Galaz, 2014).

Transition scenarios

In transition studies the s-curve model of innovation has been quite dominant to conceptually sketch how transitions unfold: a non-linear shift from one equilibrium to another. In complex system models, this pattern of change is quite common, but can also be seen as part of bigger processes of change. As I have described the long-term process of transformation as the aggregated outcome of underlying transitions, so can individual transitions be described in terms of their underlying dynamics, often a combination of exponential and linear changes. An interesting theoretical debate is to what extent regimes that have evolved over time in a more or less gradual way also will fade away at the same pace. In for example the Club of Rome's World3 model it is anticipated that the decline of industrial output and food production will more rapidly decline than they historically grew.
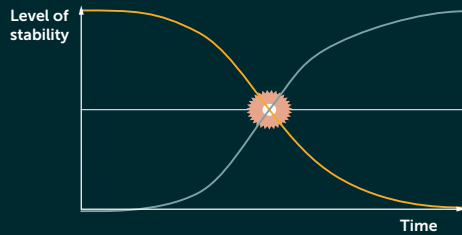
State of the world

The Club of Rome's predictions on the limits to growth and inevitable decline

This effect is also referred to as 'Seneca's cliff' (Bardi 2013) as he wrote in his Letter to Lucillus: *'…increases are of sluggish growth, but the way to ruin is rapid.".* If we need to at least acknowledge this possibility of disruptive decline and the associated societal instabilities, we need to consider pathways along which the level of societal instability can be reduced while still moving to another (more desirable) equilibrium. Conceptually I see the following possible scenarios in transition contexts.
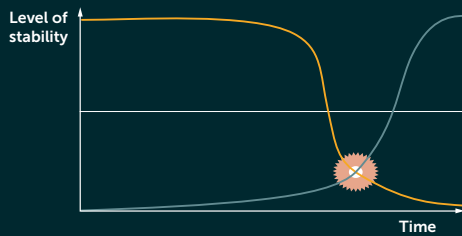
1. ideal typical

The scenario in which an old and stable regime is gradually replaced by another creating some societal instability but not in a disruptive way. Will not be common as decline will generally be more rapid and build-up slowed down by stable regime.
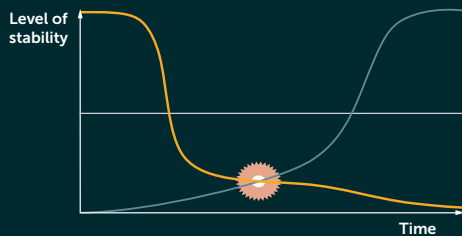

Level of stability / Time

2. disruptive

The more probable scenario in which a dominant regime is able to prolong its existence, adding to sustainability challenges, until a shockwise decline after which a period of instability takes place in which a new regime emerges.
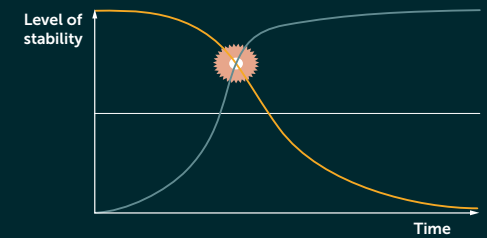

Level of stability / Time

3. destructive

The most undesirable scenario in which disruptive change leads to chaos and a long period of societal instability, in which only gradually after a very long period of time a new regime emerges.
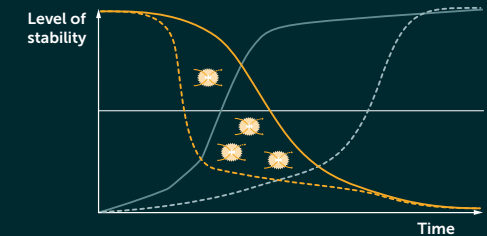

Level of stability / Time

4. sustable

The most desirable scenario in which the regime decline is relatively smooth and the build-up of a new regime relatively rapid creating relatively little societal instability.

Level of stability / Time

5. managed transition

This figure visualizes the intent of transition management to soften 'Seneca's cliff' and to strategically develop an alternative regime using transition points.

Level of stability / Time

These shifts (in the terminology from resilience theory (Holling 1973, Walker, Holling et al. 2004, Folke 2006) from one attractor basin to another) is non-linear and almost irreversible. In a resilience perspective, ecological thresholds and planetary boundaries that are being passed might lead into uncontrolled chaotic change possibly with enormous impact on the possibilities to sustain current living conditions on this earth. From a transition perspective, encountering tipping points or thresholds in societal regimes is seen as a necessary precondition to achieve accelerated and more profound systemic changes towards sustainability. In other words; to be able to stay within the ecological boundaries as defined by Rockstrom et al (Rockstrom, Steffen et al. 2009, Galaz, Biermann et al. 2011), it is necessary from a transitions point of view to transgress societal tipping points. However, these have so far been poorly defined and are possibly also much more complicated to identify.

Transition points

Social contexts are fundamentally different as there is no objective outside observer, and factors like power, interpretation and agency play a major role (Westley, Olsson et al. 2011). In my perspective therefore we can only understand incidents that somehow trigger systemic changes in relationship to governance and agency. In a societal context therefore I understand tipping points as *incidents that are acted upon to change the regime*. I will refer to these as 'transition points': possible breakthrough events through which an incumbent regime might be put under stress or opened up to some extent creating space for counter-movement and –agency to accelerate transitions. The ´acceleration phase´ of transitions is then the period in which a sequence of incidents is acted upon to reorient or reconfigure a societal regime. De Haan (De Haan 2010) identified stereotypical patterns along which a regime can then reorganize towards a new dynamic equilibrium, but the most common is the one in which particular elements of an old regime combine with successfully matured alternatives, the hybrid pattern. In general, transitions are thus not understood as sweeping one-off changes but as sequences of transition points that might lead to a new dynamic equilibrium.

Transition points do not necessarily lead to full scale transitions, nor do they automatically trigger changes that reinforce each other towards more sustainable futures. Transition points in this sense is a neutral concept, like Kingdons 'windows of opportunity' (Kingdon 1995), pointing at the possible modulation between events, systemic changes and fundamental long term trends.

From studying the impact of transition points over the past years we learn that they only help to accelerate transitions if a number of elements are in place, such as an alternative narrative of change, an established interest in change, a concrete set of steps and actions and a frame through which the event is linked to a dominant system. This becomes obvious in recent examples like the accident in the nuclear plant in Fukushima, Japan following an earthquake and tsunami. In Germany, it triggered the political decision to phase out nuclear energy and set in motion the Energiewende. Which by the way had all the characteristics of political opportunism and could only take place in a context where an established economic interest in renewables along with a longer cultural resistance against nuclear energy were present. In the Netherlands, the then minister of economic affairs directly after the event stated that such a thing could never happen in the Netherlands and the government would continue with the tendering of a second nuclear power plant. In a way, the context in the Netherlands was and still is one in which the fossil energy regime is still dominant and stable, and in position to dominate the framing of such events.

This also holds good for the situation in Groningen I referred to in the beginning of this text, where a transition point occurred but was not seized to accelerate a transition. This example illustrates how transition points can help to accelerate an emerging process of transformative change, but only when specific alternative agendas and futures have already been developed.

Transition point Fukushima: accelerating the Energiewende in Germany but no impact in the Netherlands

As the New Transformation progresses, tensions between the dominant regimes and their countertrends or –transitions will increase leading to possible transition points. Such events or incidents often take the shape of crises, shocks, break-throughs or catalyzing events. We already see that in the areas of resources and energy, geopolitics, institutional capacity and socio-economic equity tensions and instabilities are growing. Such signals point towards a longer period of destabilization in which incumbent interests, powers and routines are increasingly challenged by alternatives. In this perspective we can refer to 'expected surprises' as incumbent regimes are gradually moving towards a threshold and inevitably superior alternatives will break through. It is however unpredictable in which ways the tensions and stress will manifest themselves at the regime level and which alternatives will break through in which way. What is clear is that the fundamental nature of the changes we are seeing is bound to bring along a longer period of disruption and instability.

Transition points are by definition unpredictable in terms of their appearance, timing and impact, but foreseeable and predictable in that they will take place under certain conditions: building up structural pressure, increasingly critical socio-economic regimes and competitive alternatives. If we know such events will eventually occur against the background of ongoing transformation, it should be possible to prepare to seize them as levers to accelerate desired transitions. I therefore argue that it is possible to anticipate such expected surprises and develop the preconditions that are necessary to turn such shocks and crises into tipping points for sustainability transitions. The dominant approach to prevent crises, to soften their impact, to enhance adaptive capacities in existing regimes and to look for incremental solutions in response is in my perspective therefore counter-productive. What is needed is not only a deeper understanding of what drives the tensions within regimes, but also how to use these tensions more strategically to dismantle unsustainable regimes and more rapidly build up sustainable systems. These tensions I argue are predominantly of a socio-economic nature: they are about ideological conflict, issues of distribution and equity, the question who is in control.

A vision: towards governance panarchy and sustability

In the field of future studies and sustainability, visions and scenarios are omnipresent: there are at least as many future visions of a sustainable world as there are definitions of what Sustainable Development is. For example the work done under the header of ´the Great Transition' offers a number of pathways along which future developments could take place indicating necessary steps, changes and policies to enable a just and sustainable future. It is one of the inspiring and provoking

examples of how scenario thinking can help to envisage desired futures and how to get there. Futures are however by definition unpredictable and in the current times of non-linear shock-wise change even more so, and it is therefore also impossible to define what would be considered sustainable, just, equitable and democratic in the future.

As I have argued before, the concept of sustainability and its associated visions became part of optimizing societal systems, contributing to an over-all lock-in of modernistic and unsustainable regimes. Certainly visions of sustainable futures along with the enormous amount of practical alternatives carry the seeds for the New Transformation, but in essence often disregard the persistence of incumbent regimes and their power as well as the disruptive pattern of change necessary to arrive at these futures. The vision put forward by transition management is in a sense a vision on the process of transformative change and how disruptions and non-linearities could be dealt with to shift towards another inherently sustainable dynamic equilibrium or attractor basin. Here, I use the word 'sustainable' in its literal meaning: a future that can be sustained ecologically, socially and economically.

The transition management perspective, rather than offering a substantive vision of a desirable future, thus offers a vision on the process of transformative change. In my perspective of the New Transformation this will be a process of disruptive socio-economic change. The socio-technical, socio-ecological and socio-economic transitions that will constitute the New Transformation are power shifts that come along with the disruption of stabilities and structural uncertain-ties and instability for a prolonged period of time. On the one hand I see the emerging New Transformation and its distributed and decentralized nature as a new interconnected form of anarchism: self-organizing networks that are able to coordinate outside mechanisms of central control by drawing upon their own resource bases, knowledge and capacities.

The new technologies nowadays enable individuals to shift between networks, communities and governance contexts almost freely. From this perspective we could argue we live increasingly in fluid contexts in which different types of institutional and governance regimes are present. This situation has presumably already been labelled in the 1860s as 'panarchy' and recently been reintroduced to describe the situation in which individuals can move between different contexts of governance (Hartzog 2005). It is in this sense different from the use of the term related to shifts in socio-ecological systems (Gunderson, Holling 2002) because it includes agency

and the basic idea of self-organisation. As I will argue in the next section, it is exactly this emerging context of panarchy that could provide the basic philosophy for a new form of governance building upon the experiences with transition management so far and I would like to focus my coming research on this idea.

The new emerging context of governance panarchy fundamentally undermines our current understanding of how a democratic society is institutionally organized and how basic societal values we associate with it are ensured. A first problem is that in such ad hoc contexts, common interests and values are not necessarily safeguarded. It can easily become a society in which the stronger and more agile profit, therefore necessitating new forms of central control. The second is that a lot of citizens do not have the abilities, capacities or experiences necessary to become more entrepreneurial citizens. This requires a strong focus on empowerment, education and new support structures. Thirdly, there are many collective issues, decisions and actions that are not automatically addressed through transformative social networks, nor is it desirable from an efficiency perspective to let society develop completely bottom-up demanding every community, group, network or actor to self-organize all aspects of everyday life.

These concerns combined with the inevitable instabilities associated with the shift towards the New Transformation and its underlying transitions would require an approach that focuses simultaneously on safeguarding basic sustainability values, facilitating governance panarchy to achieve the most effective solutions in varying contexts and dampening the shocks and non-linearities associated with transitions. As I argued before, the current actions from governmental actors and regime actors primarily seek to prevent crises and sustain equilibria and status quo. This approach ultimately will lead to increased shocks when inevitable shifts towards new system states occur. In my vision a focus on sustainability in terms of making existing regimes less unsustainable should be replaced by a focus on strategies that facilitate the least disruptive and (economically and socially) costly pathways towards new dynamic equilibria. This is what I would like to call *sustability*: working towards stable dynamic equilibria through processes of transformative change. This idea of 'sustability' in addition also refers to our inability to to make the necessary transformation through sustainable development: susta(ina)bility.

An interesting theoretical challenge is whether we could conceive of future dynamic equilibria (or regimes) that are truly sustainable in the sense that they are able to sustain their performance by balancing between stability and transformation, thereby

adapting to changing societal contexts and demands. The experiences over the last decades, in which scientific evidence of unsustainability and arguments around necessary systemic change have been abundant, suggest that this will be a challenge indeed. In my vision, however, the emerging context of governance panarchy could be the basis for sustability, yet the uncertainties and unpredictability of future developments will require forms of governance and government that no longer seek to sustain the old world, but rather shape the new. From a transition perspective, this would imply a quite fundamental shift in power-relations and –structures: a reconfiguration of the basic socio-economic regimes that cuts across our society and societal domains.

Transition research so far has predominantly focused on socio-technical transitions in particular domains such as energy, waste, food, mobility, care and housing. Over the past years a growing attention has been paid to the spatial dimensions of transitions and spatial context in which transitions take place (Coenen, Benneworth et al. 2012) such as regions and cities (Bulkeley, Castan-Broto et al. 2010). This has also drawn more attention to the synergies, tensions and potential conflicts between transitions in different domains and how they relate to over-all transitions in specific spaces. The cross-cutting socio-economic patterns and mechanisms I described as the New Transformation have so far mainly been indirectly discussed in the critical debate around the (a) political nature of the idea of transition management (Shove, E., Walker,G. 2007) or in a more general way addressing the inherent political nature of sustainability transitions (Meadowcroft 2011). I would now like to turn explicitly to this question of governance, the state and the necessary policy transition in light of the socio-economic transformation.

Governance and the New Transformation

"The State" said the German anarchist Gustav Landauer, "is not something which can be destroyed by a revolution, but is a condition, a certain relationship between human beings, a mode of human behaviour; we destroy it by contracting other relationships, by behaving differently." Gustav Landauer

As individuals, networks, institutions, companies, collectives and all sorts of other types of agency are increasingly self-organizing societal functions in alternative ways, it is no wonder that the 'bottom-up', 'participation' or 'big' society are dominating public, political and scientific debates. As I have argued however, I feel that this is only indicative of a more fundamental reshift of power relationships and structures coordinating society. And that we are only in the first phases of this shift in which current (governmental) regimes are still able to frame the bottom-up society as part of a strategy of decentralization, austerity and efficiency increases. If indeed it is inevitable that this more structural trend towards governance panarchy will continue and that it could also provide more effective ways to organize society in terms of ecological, social and economic value, the question is what type of governance and government could help to realize this.

The challenge I put central to transition management studies and governance in general is to develop new understandings and mechanisms to use the current period of instabilities and disruptions to shift towards a new and sustainable equilibrium. Transition management in practice will be increasingly focused on mediating growing numbers of transformative change networks and change-inclined regime actors so as to co-construct hybrid transition pathways. This focus also implies a move away from the so far dominant focus on frontrunners, shadow networks and experimentation towards institutional change, advocacy coalitions, networks of networks and new ways to identify, measure and explicate value. In other words a focus towards the reconfiguration of social systems based on principles of inclusivity, circularity, and true value. In this understanding of desired futures, the question is not so much how to safeguard the interest of future generations but how to collectively deal with the loss, instability, uncertainty and new values, services and profits that we associate with the New Transformation.

This will require not only adaptive policies and institutions but transformative ones: institutions and meta-governance arrangements that ensure basic values

and social services based on emergent social economies and governance panarchy. Such meta-governance institutions need to be able to deal with diversity, surprise and uncertainty but also to transition themselves. In a way these institutions need to be able to destruct as much as they help to innovate, to facilitate as much as they direct and to be able to work context-specific as well as generic. To me, this is the logical next phase in the development from a central state model via facilitating agency and network-governance actor towards *non-linear government*. The dominant and linear planning model is found to work only in some cases, being replaced by hybrid context specific and temporary forms of co-creation. It is in such contexts that effective solutions can be found and implemented at a much higher pace, but also that the fundamental values to a democratic nation state such as accountability, transparency, equity and equality are put to the test.

This is a much true for actors that advocate short term individual interests through lobbying (the democratic deficit pointed to by multi-level governance scholars) as for actors that self-organize social functions outside the involvement of the nation state. In both cases, this development further undermines the authoritarian central position of national bureaucracies. The question in my opinion should therefore not be how to regain legitimacy and effectiveness of policy-making by making the process more efficient, transparent or inclusive, but in what way governmental organizations could safeguard the basic values of modern societies, set the boundary conditions for a sustainable future and help to accelerate desirable alternatives. These could draw on broader debates around sustainability, ecology, social science and not the least basic humanist values, and should in my opinion be science based. A preliminary set of boundary guiding principles could be based upon specific scientific insights:

- Boundary 1: Equity range. A redistribution of resources creating equitable societies in general leads to larger well-being and fewer social tensions.
- Boundary 2: Ecological limits. Using resources and producing waste and emissions within boundaries of regenerative capacity of the earth will preserve our basis for existence
- Boundary 3: Legal and democratic control. Power, finance and decision-making need to be controlled and possibly held accountable so as to prevent misuse
- Boundary 4: Diversity and competition. Space for multiple options and possibilities will enhance innovative capacities and prevents lock-in

These principles, obviously very generic but nevertheless quite explicit, will need to be further elaborated, debated and refined, but in the end could lead to a set of basic criteria for governance in any form and at any level. Moreover, it is not so much a question of generally reaching an agreement in an abstract way upon such or other boundaries, but to explicate these vis-a-vis currently dominant trends and practices. We for example agree politically upon limiting CO_2 emissions to stay within a 2 degree temperature increase, but in practice completely contrary decisions are being made.

This brings back my point that currently dominant regimes, also including the notion of sustainable development, seek to slow down emerging transitions rather than wholeheartedly choosing to strategically advance them. My argument therefore is that we need to develop strategies that help to overcome the inherent tensions and resistances against more radical social changes that evidently contribute to common betterment. And that simultaneously help to build up alternatives as well as dismantle undesirable regimes. Transition management theory and experiences so far have mainly focused on predevelopment dynamics and on creating the preconditions for desirable breakthroughs via transition points. The perspective I presented here addresses the actual transitional phase: not only the build-up of alternatives, but also the provision of strategic guidance and managed phase- out of unsustainable regimes. This leads me, combined with the experiences with transition management in practice over the past years, to three basic governance mechanisms: *top-down guidance, bottom-up innovation and phase-out support.*

Bottom-up innovation

This governance mechanism focuses on facilitating in specific, selective and structured ways the development of new regimes through transition arenas, experiments, coalitions, cooperatives and networks. There are already many ways and (policy) instruments through which bottom-up innovation is stimulated but they are still in a very institutional or policy oriented way. I propose that government officials will become embedded agents that work with innovation networks, arenas, cooperatives and so on to develop more structured agendas and projects, link up to other related initiatives and develop (institutional) structures starting from the everyday practices. Within bureaucracies already an increasing numbers of civil servants are (also) becoming part of transformative social networks. In many of the bottom-up initiatives civil servants play a role (as citizens in their neighborhood), and in many cities civil servants are seeking to find new ways to accelerate alternatives. One could even argue that this development is starting to transform governmental organizations bottom-up and inside-out: through proactive and transformative civil servants that operate at the very edge where bureaucracies meet society.

Music

There are by now many examples of new ways through which governmental agencies and officials try to stimulate social innovation bottom-up. One of the more systematic projects to build up such new practices and the necessary competences is the Interreg funded MUSIC project in which five cities coop- erated with the Luxemburg based modelling institute Henri Tudor and DRIFT at Erasmus University Rotterdam. The five cities (Aberdeen (UK), Ludwigsburg (GER), Montreuil (FR), Rotterdam (NL) and Ghent (BE), all sought a new way to develop a strategy to tackle energy and climate-related challenges in their cities. Over a process of three years, small transition teams in the five cities, composed of civil servants from different departments developed a transition network in their cities based upon existing social innovations, a strategic agenda and the development of facilitating elements such as a common vision, platform, information base and policy support.

Through the process, the civil servants started to familiarize themselves with the new perspective of social innovation and transitions, working simultaneously in policy and societal arenas and building bridges between the two. Over time, like in the city of Ghent, they were able to reframe policy goals to become part of a broader societal vision (a livable, clean and green Ghent), link up a diversity of social innovators, actions and movements (like carrot movements, university

and business based initiatives, projects by citizens and policy experiments) and develop a common language, network and context for bottom-up initiatives (http://www.gentsklimaatverbond.be). As a result the initial process organized in a transition arena branched out into all sorts of fol- low-up activities that, instead of facilitation support required creating space in existing policies and acquiring political backing or financial backing. The civil servants involved this way played multiple and changing roles, enabling them to mediate between inspiring and strengthening social entrepreneurship and transformative social innovations on the one hand and influencing the incremental and fragmented policy regime on the other.

Top down-guidance

This governance mechanism should simultaneously prioritize guiding visions, goals and targets as produce decisions to stop investing in or developing unsustainable practices. It should also set boundaries in terms of emerging innovations, safeguarding basic values. Such top-down guidance could start from strategic assessments of emerging system innovations in specific societal domains or areas and their emerging new characteristics and structures. In science-policy based arenas involving strategic change agents, but open for public participation and involvement, new institutional conditions should be negotiated, institutionalized and enforced. The participatory process leading to the Dutch energy agreement (by the Socio-economic council SER) could be an example, but should have been explicitly focused on achieving a renewables based energy system within a few decades. Such top-down guidance should thus produce transformative agendas and new conditions that guide and facilitate emergence. It should be not based upon a consensus between existing regimes and potential alternatives, but on the best available knowledge, possibilities and practices, and progressively evolve with these. In other words, this governance mechanism should institutionalize emerging new structures of the New Transformation, helping to accelerate and direct bottom-up innovation and creating legitimacy of the process. It does however also mean an explicit acknowledgement of the inevitability and desirability of transformative change and thus also warrants the third mechanism.

VNG

A practical example of such a more strategic top-down strategy is our work for the organization of municipalities in the Netherland, VNG, on waste management. Commissioned by the VNG, we did a strategic assessment of local waste management practices and their associated effectiveness in terms of environmental and economic performance. We could identify based on a systematic analysis and a lot of interviews that there are significant differences in the way different municipalities organize their waste management and how effective this is. We also found, looking at the data from a perspective of circular economy and sustainability, that the best results came from municipalities with a particular combination of pricing mechanisms, reversed collecting and high levels of service. This clearly came out as the direction in which the lowest amounts of waste will be produced as it also achieves the highest rates of (high quality) recyclables against the lowest costs for citizens. In practice, the costs for citizens between the best performing and worst performing municipalities range between 80 and 3500 Euros per household.

As each municipality has taken its own decisions on how to deal with waste management, which system to choose, with which waste management company to enter into (long-term) contracts, there is a lot of resistance against comparison and a lot of fundamental discussions around the variety of options, quality measures and calculations. This leads to a practice in which we might have high sustainability ambitions at the national level but do not translate these into top-down guidance for the local level, also because this implies conflict, imposing change and limiting choice. Very similar patterns can now be observed when it comes to climate and energy ambitions (each municipality trying to develop their own ambition, sustainable house or energy performance contracting) or the decentralization of health care (each municipality experimenting with their own solutions like neighborhood teams). As there are no over—all comparisons on quality and performance (also an absence of critical standards in this respect), the end-result is far from optimal.
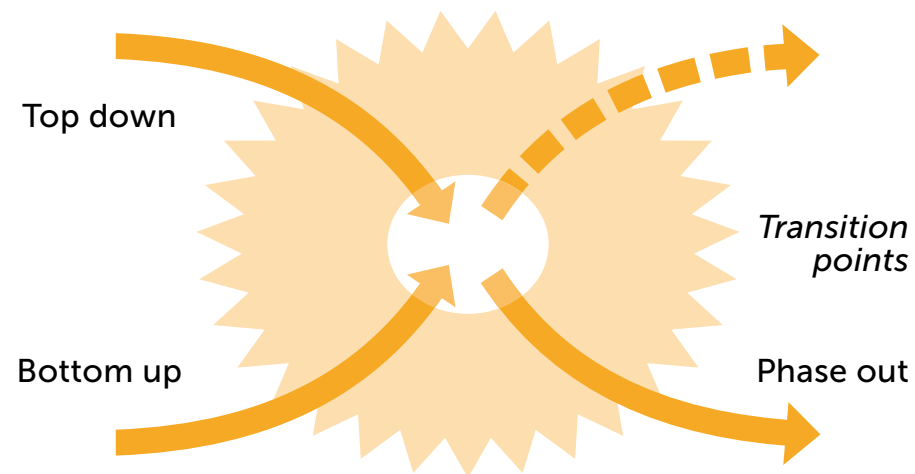
There is a clear added value to developing solutions within context (and many sustainable alternatives are more local or regional), but there also is a clear danger of repetition, fragmentation and loss of valuable capital, not to mention the danger of new unsustainable lock-ins. In this example, my proposed strategy would thus be a much more strategic and confronting approach measuring and comparing quality of performance of municipalities on their implementation of

new solutions around food, housing, energy and mobility. The insight can then be translated into top-down guidance in terms of the best possible solutions in a progressive way: continuous reassessment and development of the criteria and their implementation. This would however require an institution mandated or at least legitimized to impose such quality standards to municipalities with a focus on accelerating transitions. By definition this would not have the support of the majority of municipalities, thereby necessitating the development of an alternative institution to the VNG.

Phase-out support

This governance mechanism should develop phase-out strategies and policies disrupting, destabilizing and dismantling existing regimes and fairly compensating the losses involved. As a major part of the resistance against systemic change can be related to financial investments, sunk costs and potential loss of market share, jobs and so on, effective and least disruptive transitions require strategies that help to mitigate such resistance. The compensation should be fair and based upon the societal gains associated with the desired transition, but also take into account the profits incumbent regimes have made over the years (often at the expense of the common good). For example energy companies that have profited from cheap fossils while not being taxed for environmental degradation should be somehow compensated for closing down nuclear or coal fired power plants, but their profits as well as the deliberate market risks they took should be taken into account. To ensure a fair compensation as well as fair and just procedures a (temporary) institute or *ministry for destruction* could be established to coordinate this process, ultimately destructing itself. Such a ministry could at the same time seek out societal partnerships that form counter-movements not only against current unsustainable societal regimes but also against the dominant role of the state itself including creating a transformative legal council and economic agency.

These three mechanisms I see as complementary and mutually reinforcing, but each requiring different institutional contexts, skills sets, instruments and processes. They will create a context within which the three basic governance mechanisms could be deployed. Combined, these three strategies could provide the context in which transition points could be 'used' to accelerate transitions. This is visualized in the figure below.

Three governance mechanisms that need to come together to seize transition points.

They could in principle apply to different levels and should be developed as they emerge: in a panarchistic manner building upon emerging practices of different types of governance. In other words: as problems emerge they require effective solutions strategies and governance mechanisms that fit the context. However, as we have already for a few decades developed understanding of challenges and possibilities in areas such as energy, food, housing and care, these could be the first domains to start to develop the three mechanisms in coherence. These could partially build upon those networks, institutions and arenas that have been developing, but should be mandated politically much more strongly, demanded publicly more widely and supported scientifically much more explicitly.

Transition Science for the New Transformation

I obviously realize that such a plea and demand for strong society wide, also top-down, support for such a transformative systems governance is somewhat naïve and idealistic. But it is also based on scientific ratio and arguments. I think it is also the responsibility of scientists, especially in the social domain, to draw from scientific insights and speak truth to power in the sense that sustaining evidently unsustainable systems is the wrong way forward.

Acknowledging that the future is uncertain and alternatives will have to compete and develop to prove that they are more effective and can indeed offer better solutions at a societal scale does mean in my opinion that such alternative visions and ideas should indeed be put forward with all their limitations and reservations. This line of thinking is part of a broader debate in science under the headers of 'post-normal'(Funtowicz, Ravetz 1993, Ravetz 2006) or 'sustainability' (Kates et al, 2001, Martens 2005) science: the thought that inherent ambiguities and uncertainties in the social domain when it comes to persistent and complex challenges are so structural that they require novel, inter- and transdisciplinary processes of knowledge co-creation embedded in practical experimentation.

These approaches seek to develop scientific ways to involve diverse knowledge sources in science for policy by calling for extended peer communities and by emphasizing the inherent uncertainties and values in policy-related science. A key notion is the acceptance of uncertainty and ambiguity. Acknowledging the impossibility of objective and universal truths when it comes to persistent sustainability problems requires the use of broader concepts that provide a frame of reference to discuss and direct differences in perception, ambition, and understanding between actors. Concepts such as Sustainable

Development, transitions or the New Transformation can play such a guiding and structuring role when used as boundary objects in interactive processes. The rationale behind this assumption is that new solutions can only be considered to be legitimate, diverse, resilient and effective when they are (co-)developed, implemented, and sustained by societal actors (Clark, W. C., Crutzen, P.J. en Schellnhuber, H.J. 2005). This means in my opinion that developing scientific knowledge in the context of the New Transformation is not a goal in itself but rather a means to achieve progress through influencing its speed and direction. Scientists in the process of sustainable development are not providers of objective truths but part of the enquiry and joint exploration process. Scientific knowledge as well as political and social knowledge becomes as subjective as the solutions and outcomes (Hisschemoller, Hoppe et al. 2001).

My vision on the role of science in the New Transformation is as much informed and inspired by academic and theoretical debates as by debates in transition arenas, practical experiments and insights from practitioners I have been privileged to be part of over the past fifteen years. In the current academic regime this position is also quite uncommon and quickly criticized as unscientific, normative or too activist. It is also incongruent with the structures of academia along disciplinary lines and the dominant discourse of linear knowledge production and valorization. The majority of scholars in the social science domains seem to have abandoned the idea that there are identifiable patterns of change and broader explanations and therefore prediction and *ex ante* analysis are impossible. Based upon my understanding of our current societal context of the New Transformation I argue that the social sciences in particular and universities in general need to fundamentally rethink their position and how they create societal value.

The dominant response managerial paradigm seeking to modify and optimize the existing regime, is not leading to creating science with social relevance for the New Transformation. It only results in pressures to increase production (of students, scientific articles), on valorization (transfer of scientific knowledge into society) and on drawing in new financial sources through contract research. These in turn meet their resistance through initiatives such as ´science in transition´ (http://www.scienceintransition.nl/), that oppose the publication pressure and quantitative approach to valuing research. These initiatives to me are too limited as they do not address the fundamental problem, which is that knowledge creation in a linear, disciplinary and mainly descriptive and empirical way in the social domain has lost most of its value and relevance. I therefore

argue for a more fundamental rethink of the role of science in light of the New Transformation, one that is being explored already for a number of decades and in a growing number of examples has touched ground (Trencher, Bai et al. 2014).

Transition management as activist research

Transition management has been concerned from its start with this paradox that societal change is too complex to manage in a classical way but as an emergent result of deliberate actions is in fact the result of steering (Brown, Farrelly et al. 2013, Loorbach 2007). Transition management then is theoretically a form of meta-governance: creating conditions under which the actions of autonomous agents somehow add up to contribute to a bigger whole. Transition management takes insights from transition concepts, governance, social sciences and complex systems theories as starting points for developing hypotheses on such conditions and experimenting in real-life settings with these. The original principles for transition governance (such as long-term thinking, a focus on experimentation and learning, selective participation and dealing with systemic uncertainties) are derived from the understanding of social change as systemic, non-linear and complex.

The field of transition studies and especially transition management has from its start tried to build upon these developments to develop into an inter- and transdisciplinary field of research. Transition management research has developed as a particular strand at the intersection of theory development, action research and social experimentation (Markard, Raven et al. 2012). The resulting field of theories and practices is multi- and interdisciplinary (combining and integrating scientific disciplines), transdisciplinary (integrating tacit, lay knowledge with scientific knowledge), and normative. It is characterized by a focus on complexity, uncertainties, nonlinear development (also of knowledge), and disruptive or transformative social innovation.

Methodologically, the new research field of transitions requires new types of research that have an integrative nature, are normative in their ambitions, have a desire to contribute to societal change, and are participatory. Transition management is a unique example of such a research topic, in which the researcher is part of societal networks (in which he or she has a specific role and influence), and is normative in its orientation toward sustainability. Through a learning-by-doing and doing-by-learning approach in which fundamental research, theory development, participatory research, and applied research are combined, coherence between the theory and practice of transition management is achieved. The research methodology is unfolding during the research process: as new theoretical insights emerge, experimental and exploratory cases are used; conversely, when observations about operational processes inform or challenge theory, they need to be structured, integrated, and grounded.

Transition management research so far has sought to combine the perspective of postnormal science with and action orientation (Wittmayer, Schäpke 2014), trying to simultaneously understand patterns and mechanisms of transformative change conceptually as well as to influence these while studying them. Transition management in its practical application has helped to destabilize dominant discourses (Bosman, Loorbach et al.) and helped to create cognitive dissonance in regimes as precondition for them opening up. Through transition arenas and transition experiments new narratives of change, new practices and new organizational forms were established empowering change agents to further transitional change in their areas (Frantzeskaki, Wittmayer et al. 2014). Through engagement of transition management researchers, standardized approaches could be made context specific but also generalizable, replicable and comparable (Roorda, Wittmayer 2014, Nevens, Roorda 2014).

Off the streets (Van de straat)

There is a significant group of young adults (ages 16-23) whom are ending up on the streets of The Netherlands. This group of registered homeless that seek shelter counts roughly 9000 young people and this amount has been almost stable since formal counting began in the early nineties. Since the late eighties there has been a growing professional field around shelters, coaching, reintegration and so on[1]. Together with professional umbrella organizations in this field, DRIFT is organizing a transition arena process to try to create a breakthrough (from 2013 - 2016).

From our transition analysis (see: Van Steenbergen, 2013), it becomes apparent that the problem of homelessness is of all ages and that over the past century a number of regime shifts have taken place in how society deals with this problem. The regimes alternate between community based (through religious groups and local communities) to top-down state models and back. Currently we are again in a shift toward individual responsibilities, which is framed in terms of 'participation society'. This is however ambiguous in its meaning: it can be understood as a move towards more community based forms of governance as well as a way to decrease the state responsibilities and cut budgets. The only constant throughout the last century seems to be one of institutionalization, as every shift led to new forms of organization, regulation and structure.

In the current situation again the dominant focus of 'every young person its own plan' suggests new professional practices and structures. The dominant reflex of organizing and caring for is expressed by frequent remarks like: 'we need to collaborate better', 'we need to organize that' and 'we'll just take care of that'. In practice we noted a tension between the dominant practice of problem solving and actually helping young people to become more independent and self-reliant. Most young people ending up on the street have an instinct for survival and they also have a long history of problems and disappointments with professional help. They experience that their problems are constantly enlarged and sustained by professionals so that they can be addressed (which leads to a social stigma), rather than that they are supported to look forward.

[1] *Of this group almost 70% have a history with professional youth care (pre 18 years old) and are often dealing with very complex and multi-faceted problems.*

As one of the young people put it: 'by constantly having to tell my story to yet another professional we are forced to live in the past'. Our conclusion was that the field of professionals themselves are in this way unable to deal with the problem, which is created earlier on (in their home situations, in the professional youth care, on the streets) and that the reflex to organize solutions has mainly led to an increasing field of professionals and increasing systemic costs with no apparent impact on the quality of life of the young people involved. Also there is a constant competition between professional organizations and interest groups for (small) subsidies to conduct 'innovative projects' in some sort of search for the holy (institutional) grail for fighting youth homelessness. Furthermore, as solutions seem to be in other domains like school, home and work, the challenge seems to be how to empower solutions here in a situation where the actors themselves are unable to move outside of their dominant problem framings, institutional contexts and practice fields.

In the transition arena we involved a range of professionals, social workers, local officials, as well as young people living in shelters. We discussed over a number of meetings the transition challenge we identified in our transition analysis: a shift

from taking care of homeless youth to empowering other actors to facilitate the 'inclusion' of the young people into society. This would imply a quite fundamental reorientation for the sector towards cooperation with other societal domains as well as letting go of dominant practices. As the transition we identified would predominantly require a shift in thinking and practices, the discussions were designed to help professionals and young people come to a new understanding and practice. To put it bluntly: the professionals needed to find out themselves that they were in part sustaining the problem. In the past couple of months there has been some progress on developing this shared understanding, formulating a corresponding vision and identifying some breakthrough projects. However, it is also becoming clear that the transitional problem is persistent and that the regime itself is very robust.

An example could be one of the identified breakthrough project around education. Young (ex-) homeless people often have difficulties following the regular education format with fixed times and courses. We used the analogy of education for top-sport youth for which tailor-made educational tracks are offered and asked why this could not be achieved for the homeless youth. As youth care is decentralized in the Netherlands, municipalities get control over budgets. The idea is that a municipality could together with schools develop an education menu for this group which they could directly finance so that young people could get an education in their own pace and timeframes. The set-up would also address the debt-situation often complicating access to education as well as to establish contacts with employers and possible mentors. However, to make this happen it would require persons that are networked into municipalities and the educational system and have experience with building new kinds of structures.

This example makes apparent the tension with the dominant logic in the field. Also, the field is under pressure from budget cuts, which causes a lot of competition over resources which helps to sustain the dominant focus on short-term project financing and 'solving the problem'. The problem is also systemic: different financial logics, the need for reporting and output measurement, the fragmentation of the field and the diverting logics of practice between various types of (voluntary, religious, professional, market-based, public) organizations all complicate more integrated, preventive and qualitative approaches. It is therefore questionable to what extent the sector is able to reorient completely by itself. From a transition perspective it is necessary that the sector would open up new collaborations aimed at early prevention and capacity development through cooperation with other domains with new kinds of people and expertise.

This example underlines the nature of transdisciplinary work. combining more historical interpretative analysis with qualitative interviews provided the basis for a more objective factual input for the process. The selection of the transition arena participants was then done based upon bringing in different perspectives and values, as well as different relevant professions. The dialogue in the transition arena then served to 'validate' the transition analysis, as well as that it formed the process of 'problem structuring'. the facilitation of this process obviously is not a neutral activity, in fact it is very subjective and activist, seeking to bring a group of selected actors to certain shared conclusions and actions that will help to solve a persistent problem. Over time however, such an approach leads to both scientific insights and knowledge, empirical data, societal impact and new sets of theoretical questions.

In this way, scientific ways of thinking, scientific knowledge and scientific discourses are combined with tacit and lay knowledge, real-life experimentation and direct impact. This normative, engaged and action- oriented form of research I argue is intrinsically more in tune with the ambiguous and shifting realities of today. It provides an example of how scientists in the social domain can regain authority by proximity: by stepping outside into the real world, acknowledging the limitations of scientific knowledge and understanding and in a more modest way become part of social experimentation, new knowledge can be produced simultaneously to being socially relevant. In such a context, the amount of publications is more limited to the amount of time than to the amount of data and ideas. The funding of research is more dependent on the ability to show societal value than on the ability to satisfy reviewers. And the relevance of science is more determined by its social usability than by internal scientific standards and rankings.

My agenda for the New Transformation

The field of transition research has experienced exponential growth over the last fifteen years and has had a significant impact, socio-technical. It has produced a wide range of analytical concepts along with science based interventions. It has however also become to a certain extent locked-in into a focus on socio-technical regimes in the predevelopment phase. By now more and more transitions enter new phases, triggering socio-economic tensions. The scientific challenges becomes then to try to better understand and deal with the disruptions of the New Transformation.

In recent years therefore the research agenda we developed at DRIFT shifted focus to the next phase of transitions in which all sorts of tensions, dilemmas and new mechanisms are identified. In the EU projects ARTS (www.acceleratingtransitions.eu) and TRANSIT (http://www.transitsocialinnovation.eu) we focus on such new questions. In ARTS we draw attention to the possible interactions between emerging transition initiatives in different domains as a possible mechanism behind regime change. But we also seek to better understand the dilemmas and tensions that arise when transitions start to happen, for example in terms of social conflict, inclusivity and democracy. The TRANSIT project has set out to develop a theory of transformative social innovation. By looking at a set of global change-oriented networks, such as hacker communities, ecotowns, complementary currencies, and how these link to developing global discourses and systemic changes within society, the idea is to uncover the ways through which the New Transformation is emerging.

I have tried to sketch out the contours of the emerging socio-economic transformation ahead of us, as well as the contours of the new type of democracy, governance and science needed to guide this transformation into a direction of a just, equitable, ecologically sustainable and economically resilient *sustable* future. I have argued that this would require to escape the pathway of optimizing existing regimes, dealing with disruptive social changes and addressing emerging questions around democracy, legitimacy, solidarity and so on. With our institute DRIFT we have already for a decade sought to better understand the mechanisms behind escaping the lock-in and creating attractive progressive strategies. Our focus is thus shifting towards a new set of questions and ideas related to accelerating transitions, which I would like to further develop in a similar activist and transdisciplinary way.

My personal focus will be on further developing the understanding, idea and practice of governance panarchy in light of the New Transformation. How can we reconceptualize the role of government and the state, how to reinvent the democratic system and how to reorganize our societies within social, economic and ecological boundaries. The basic idea of the three governance mechanisms I presented (bottom-up, top-down and phase-out) I will take as starting points to develop further a theoretical conceptualization of *governance panarchy* in the context of societal transitions addressing the period of instability, chaos, conflict, disruption and, hopefully, emergence of new *sustable* regimes. I aim to do so by working in a transdisciplinary way with proactive and transformative actors within government, business, science and civil society.

The focus areas in which I would like to further develop this theory of governance panarchy are the following four:

1. socio-economic transitions
2. new democracy and governance
3. developing transition agency
4. transformative knowledge institutes

Socio-economic transitions

The field of transition studies has been dominated from the beginning by aso-cio-technical and more recently by socio-ecological framing of societal regimes. As becomes clear from my understanding of the New Transformation and the

examples given I will focus increasingly on tran-sitions in the socio-economic domain, including fields such as care, education, social security, labor and welfare. The New Transformation also requires a novel understanding and conceptu-alization of the Welfare state which in itself has already entered transition. An important part of my ambition is to better understand the role of finance, economics and business in the welfare state transitions. One of the challenging debates emerging is around de-growth and the extent to which growth is a necessary prerequisite for an equitable society. Unlike Piketty, who recently

Author protests against G8 summit in Genoa. Banner said: 'G8 Elitemacht'

argued growth is a prerequisite to create more equity (Piketty 2014), others suggest that prosperity without growth is possible (Jackson 2013). From my perspective this would at least require a deep change in how we measure value, define labor and organize the financial system.

The social and economic domain were separated long ago, but increasingly I see evidence that they are reconnecting. From the outside mainly in a negative way in which economic recessions lead to austerity measures and budget cuts. But from the inside also in more promising ways in which businesses are creating regenerative and social value based business models enabling growth of social capital, a wider definition of work through time sharing, new economic indicators measuring quality of life and so on (Loorbach et al 2014). The focus on transitions in these areas will require new ways to understand dominant concepts in the transition research field such as regimes and niches and transition experiments. But they also require more attention to 'softer' factors such as behavior, culture, personal change and routines. By working with institutions and businesses committed to transformative change in areas related to the welfare state as well as developing a more theoretical understanding of newly emerging economic paradigms, I intend to contribute to the development of an inclusive economy within social and ecological boundaries.

New democracy and governance

One of the most challenging questions to me is the changing role of the state and democratic system. In my perspective the nation state model itself with its representative democracy is in so many ways part of the modernistic regime that we can question the ability of this system to transform itself (Jhagroe, Loorbach 2014). In my perspective the reorientation of government towards the New Transformation implies a fundamental break away from the current discourse of optimization, growth and policy centrism. It would require governmental agency that coordinates (temporary) coalitions and networks while safeguarding basic values. But it would also require a governance system which is concerned with the politics of the New Transformation to create spaces for contestation and articulation of conflict to make the depoliticized political again (Jhagroe, Loorbach 2014). This in turn would require opening up the political arena to minority positions, to a broader participation and to a more critical reflexive debate.

My personal ambition is to further explore, understand and shape the role of the government and our institutional fabrics in the New Transformation. I argue for more attention to the role of top-down and phase-out policies, combined with more facilitating approaches, geared towards achieving least-disruptive transition pathways. This would require new types of hybrid and distributed institutions as well as a more fundamental debate around the role of current policy, tax and institutional regimes. Over the coming years, we will work with local and national governments in these processes seeking to radically alter their dominant way of thinking and working and to experimentally develop new distributed models of non-linear systemic governance with a focus on new roles and associated instruments to effectively coordinate, facilitate and guide the three basic governance mechanisms and give further shape to the concept of governance panarchy.

Transformative agency

Through our projects and especially our education DRIFT has contributed to the development of transformative agency in society, leading to all sorts of diffuse impacts even beyond our own observation. The coming years I expect both a further growth of the demand for visions, strategies and transformative network-building and much larger- scale transformative action. We will need to develop new tools and instruments to respond to this demand but we also need to develop a much better understanding of how such transformative agency can be diffused, empowered and enlarged more effectively. In this context our recently started Transition Academy (www.transitionacademy.nl) is a very important step

forward by providing the breeding ground for experimenting with new forms of education, knowledge transfer and (social) learning.

Equally important to me personally is to develop new ideas and strategies to deal with increasing socio-economic tensions through empowering transformative agency. In some cases these might help to accelerate breakthroughs by putting pressure on incumbent regimes, but they might also block change in general- or lead to undesirable socio-economic effects. Facilitating communities to self-organize, develop resilience and transformative capacities and thereby mitigate the negative effects of transitions (besides seizing the opportunities they offer) is one of the challenges we need to work on.

Transformative knowledge institutes

A fourth element in my agenda concerns the changes in the scientific regime. Similar to the changing role of government there is an emerging literature around the notion of transformative knowledge production, universities third mission (Trencher, Bai et al. 2014) and transdisciplinarity (Lang, Wiek et al. 2012). I aspire to further develop DRIFT as a transformative change agent in the academic world. Pointing at the international trend, I suggest to seriously discuss a reorganization of the university structures focusing on societal challenges rather than scientific disciplines. At our Erasmus University I think the so called BVs of which DRIFT is one already offer a stepping stone in this direction. Forming interdisciplinary groups at the edge between academia and society around specific societal challenges leads to two-way processes of knowledge creation whereby the process itself is a means of valorization as new thoughts and ideas are developed by the participants them-selves. For the coming years I would like to further explore how our experiences could be of use to the university and to what extent we can further build upon the basis we developed at DRIFT. A further growth and strengthening of our Transition Academy as an independent place for reflection, learning and transformative action fits in this ambition.

Epilogue: so what about the gas in Groningen?

In the prologue I described how in the northern part of the Netherlands different types of change culminated into protests and a sudden window of opportunity for policy change. However, I also described how the incumbent regime was able to soften the protests and re-establish the status quo, for now. Following the line of arguments I sketched out, I would like to propose a different type of strategy, to be developed and perhaps forced through at the next transition point.

It is clear that the current resources are finite and that a dependence on external countries (like Russia in this case) is also vulnerable. It is also clear that Dutch households have become dependent on natural gas for heating their homes and cooking. It is also clear that the concerns voiced by the local population in this area are legitimate: there is high unemployment, lack of benefits from the natural gas extraction and a higher risk as a result of the extraction. The bankruptcy of an aluminum factory in the region during the same period only underlined the validity of their claims.

Given this, it seems inevitable that we need a strategy to lower our dependence on natural gas altogether as well as to develop a socio-economic strategy to support the region. Looking at recent developments in buildings, construction and energy, there is an interesting initiative that emerged out of the combining of forces between transition projects in the energy domain and the built environment: energiesprong (energy leap, www.energiesprong.nl). One of their transition

projects is 'nul op de meter': a strategy to develop an industry for zero-energy retrofitting. Through creating a new type of institutional context, technical solution and process as well as financial concept, they work towards bringing down the cost for retrofitting standard Dutch homes within 40,000 Euros through industrialising the process. For this amount, the cost can be financed through the regular energy bill within roughly 8 to 10 years. After this, the home does not have an energy bill anymore.

What would be more logical than to start the revolution toward phasing out the use of natural gas in households in the area where it comes from? Loppersum, the epicenter of the protest, could be taken as the first municipality to start the process to get the entire region of the gas. The aluminum factory could be rebuilt into a plant producing on an industrial scale the elements for the zero-energy retrofitting. Such a factory in itself could create new workforce, but additional employment would come from doing the retrofitting in the whole region. This could help to develop skills, experiences and within a few years lead to a retrofitting industry to provide the rest of the Netherlands with a cost-neutral approach to get rid of energy bills in households. Such a strategy would combine facilitating bottom- up (the movement around Energiesprong is essentially a facilitated bottom- up innovation process), top-down guidance (the commitment to the vision to get off the gas and the development of new (labor) market conditions) and phase- out strategy (gradually exiting the current gas-strategy and the financial dependence on it). Of course, such a proposal has already met all sorts of skepticism and resistance. But the inevitability of increasing problems along with the obvious attraction of such an alternative transformative strategy will somewhere along the line help to tip the scales. Sooner or later, that's up to us: To Transition!

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