

## **The unbearable heaviness of humankind, October 19, 2007**

### SHEET 1

Mister rector magnificus, ladies and gentlemen,

Today exactly 12 1/2 years ago, on April 19, 1995, I was standing behind a like lectern to give an inaugural lecture, at Utrecht University. At that time, the title was: the unbearable lightness of the debate. Today my subject is of a heavier character: it is the unbearable heaviness of humankind.

What is the problem? Today 6.7 billion people live on earth, and hopes are that the number will stabilize, probably at 9 to 10 billion. But even if that happens, it will take at least some decades. Of these people only a relatively small part has a western standard of living. Countries like India and China are growing fast. As countries, they therefore take an ever larger part of resources.

### SHEET 2

For the moment we have only one planet to live on. It has become evident that our ecological pressure on the planet is enormously large. The influence of people is clearly visible from space, and will, most probably, also lead to changes in climate, with grave and, possibly, catastrophic effects.

Our enormous influence entails a huge responsibility. The human footprint on earth should not become too large. If so, ecosystems may find a way without us.

During the last year I visited a number of international conferences that were attended by ministers, scientists (including social scientists), people from industry, NGOs and the media. The consensus at all these conferences was that climate change urges action now! The Nobel prize for Peace for Al Gore and IPCC shows that the Nobel committee too, is of the same opinion.

The present direction of development cannot be called sustainable. Enormous changes are needed in order not to go beyond limits. Is it possible to realize such changes, and how? Can researchers like the ones working at Drift (the Dutch Research Institute for Transitions) make a contribution?

At the end of this lecture I will formulate an answer to these questions, but first I will discuss a number of challenges we are being confronted with: SHEET 3

- the problems we face are complex
- people have to be mobilized
- large changes (transitions) are needed.

### Shift in the problems: towards complex issues

### SHEET 4

In the course of history, people have been able to creatively shift their limits. At the level of human history as a whole, one may speak of four phase transitions. First, humankind was able to domesticate fire. Ten thousand years ago, the agrarian era started; and some two hundred years ago the industrial era. The Netherlands Society of Science is now

speculating upon a worldwide shift toward a socio-ecological era. We are reinventing our dependence on ecological systems. The industrial regime is encountering limits, because we did not well enough realize this dependency, and did not incorporate the consequent conditions well enough in our industrialized society.

Up till now, people have often succeeded to shift limits by taking up encroaching problems in a new and innovative way. To mention just a few examples: When European forests became extinct, peat and later coal were used as new sources of energy. Agricultural productivity has been growing rapidly over the last few decades. Again, at this moment we face clear challenges with respect to energy and the sustainability of food production.

SHEET 5 Past experience enables us to be optimistic about the future possibilities. But historically the tide has not always been turned on time. Environmental problems have a number of times led to the end of civilizations. Everybody recollects the example of Eastern Island, where deforestation has led to the end of human inhabitation, but –for instance- also Maya culture was finished off by a combination of environmental problems and short-sighted leaders.

For the first time in the world's history our influence on geo- and ecosystems is so large that we are able to make a worldwide influence on the environment. Climate is an important example, but also biodiversity and the stratospheric ozone hole can be mentioned. If we do not know to turn the tide, this time the effects will be worldwide.

SHEET 6

During the last fifty years attention to environmental problems has greatly reduced the risks of chemicals and of polluting technologies. But the challenges we are facing now (for example considering climate change) are much more persistent and complex. Above that, science and technology play an ever more important role in determining the risks and in leading the search for solutions.

SHEET 7

To address the types of questions we are facing now, technology, ecology and human society need to be analyzed together as complex adaptive systems, in such a way that it leads to a *perspective for action*. SHEET 8

### Sustainable development and the behavior of people

Sustainable development can be viewed as a perspective for action if it positions people explicitly as actors. The sheer number of people in the world is an important reason for the unsustainable direction of the development worldwide, and therefore the direction of the development has to change. But is it reasonable to expect solutions from people that generated the problems in the first place? A reason for optimism is the fact that it has happened in the past, and that we have many resources at our hands, among which science, technology and creativity. But: accomplishments from the past are no guarantee for future results. And the future of people is at stake.

That future is the central issue in the most authoritative definition of sustainable development, by the Brundlandt committee. The report 'Our Common Future' of 1987 described sustainable development as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs'.

SHEET 9

The most often used interpretation of sustainable development is the triangle people, planet, profit/profitability. The concept sustainable development is much contested. An inaugural lecture is too short to do justice to this entire debate. In the written version I do pay more attention to it.

In this debate, most discussion is about the relative importance of planet and profit. The third corner of the triangle, PEOPLE, has got less attention, whereas humans (with their culture and institutions) are a central corner when we are considering sustainable development of the human society.

The last few years have seen attempts to operationalise sustainable development also from the perspective of 'people'. Up till now the emphasis in those attempts in on the *limits* of what should taken into account in sustainability.

Marshall and Toffel count abolishment of deficits to be part of sustainable development, and quality of life and other values as *not* belonging to it. But, when we view sustainable development as a question of the direction of human development, the role of people and their actions is crucial. If sustainable development is restricted to basic needs only, one views people literally as a passive object of sustainable development, as a stone to be carried by the earth.

It is important to view the process of sustainable development in its relationship to acts of humankind, and not only related to humans suffering from deficits. The shifts that enabled the present dominance of humans on earth are due to human activities. Without (tamed) fire, agriculture, industry and communications technology, no 7 billion people could have survived on earth. We have to engage people (and not letting them be a dead weight) to engage in a sustainable development endeavor.

For that reason, I use the following description of sustainable development. SHEET 10  
A developmental direction is sustainable *when people act* to enhance the quality of their life and to realize values important to them, by generating attractive possibilities within their competence, keeping into mind the developmental possibilities of future generations.

In this description of sustainable development people are not only positioned as actors, but also as social actors. During the last few years economists and psychologists have come close to each other in their thinking about human decision processes. It is clear that human behaviour in social situations strongly deviates from the behaviour of classical rational economic man. It is also clear that in human decision taking emotions and interaction play a clear role. This conclusion is reinforced by findings from neuroscience.

An important reflection to choose this starting point is the limited success of a more classical approach to behavioral change. It has become abundantly clear that informing people about an issue does lead to awareness raising, but that it is not enough for changing behavior. It is important to engage existing knowledge on behavior and behavioral change in the quest for sustainable development. This has happened to only a limited degree up till now.

Another important issue is that most agendas for sustainable development up till now have not been attractive or challenging enough for most people. Change becomes possible when there is a large enough stimulus. It is a pity that stimuli are often created by calamities. If we want to generate change without explicitly disastrous situations, we have to create challenges. Stimuli can come forth from envisioning possible *risks*, but stimuli are greatly enhanced by seeing attractive *options*.

The tandem of risks and creating new opportunities (niches) is an important basis for transition management as it has been developed at Drift. I see transition management as an attractive actor perspective for sustainable development. Transition management provides opportunities for frontrunners (freshlookers and cross-thinkers) to engage in contributing to new development routes. To speak with Moser and Dilling: the challenge is to create a climate for change. SHEET 11

### Transition management

In the research agenda of Drift the hypothesis is that transitions are needed to realize a more sustainable society. A transition is a fundamental change in thinking and acting at systems level, in order to shift to a more sustainable system.

The phase transition to a socio-ecological era I mentioned at the start, can be seen as an example of a transition. Climate change is an important (but not the only trigger). However, the worldwide changes that are needed are so overwhelming that it is impossible to address them directly. Drift therefore operates at a smaller scale level.

SHEET 12 The most often used entry point to address climate change is to take away the *causes* (mitigation). An important reason for human impact on climate is our energy use. For that reason climate policy is often energy policy. It is attempted to reduce climate change by reducing the emissions of greenhouse gases. But, when we think about The Netherlands in connection to climate change there are, of course, also important *effects* of climate change. The most important effect is on water management. The way water quantities are managed will have to be adapted to the changing climate (adaptation). Therefore, we can say that two sectors where transitions are needed in The Netherlands are energy and water management.

### SHEET 13

What does a transition look like? At the start of a transition the existing situation is considered not to be sustainable. In that case the challenge is to work towards change. The idea behind transition management is that such a change begins small: this beginning is called the predevelopment phase. Change initiatives are slowly getting more frequent

and may get a larger scale ('take-off') till at a certain moment an accelerations starts. After some time again a stabilization sets in: the new form of the system.

The water management system in the Netherlands is very complex. The part of the Netherlands where we are now would not exist without a very complex system of dikes and drainage. That has not always been the case. In the early middle ages people could only live in The Netherlands when they pulled back on higher parts of the land in times of high water, and by building houses on mounds, whether artificial or not. The shift from pulling back to building dikes is a factual transition from the past. A typically Dutch early modern democratic institution that came into existence as a result was the water board. About the Dutch water management fascinating stories can be told. The Koninklijke Bibliotheek (Royal Library) in The Hague has a complete room devoted to Netherlands Waterland.

Reconsideration of Dutch water management principles has often been occasioned by calamities. Starting from the seventies of last century reconsiderations started again. This time taking into account other interests besides safety. In the last phase of the Delta works the huge ecological consequences of the dikes in Zeeland became contested. Therefore the Easterscheldt dam has been designed as a half open dam, in order to safeguard more ecosystems. This was the start of a more integral way of looking at water management. Water management could no longer only be considered as a technological project only. Other factors have become more important. These factors can not only be considered from behind a desk, but the specific local situation is important. In general, the interaction between water and spatial planning has become more and more important

At the moment climate change has become an important factor in the reconsideration of water management. Sea level is rising more than would already be the case without climate change, and more and heavier thunderstorms are expected. This leads to consequences for coastal protection.

In the future rain will fall more irregularly, but with greater intensity. The Rhine may change into a rain river. These changes have consequences for river management: more water has to be accommodated, but also period of too little water have to be taken into account.

Higher dikes will no longer be the only answer. At the least more water has to be accommodated, but for this option to be attractive we also need to generate options to live with water. Rotterdam started such a move a few years ago.

Recently Dutch government published a Vision on Water that is supposed to lead to a national water plan in 2009. This vision explicitly starts from the necessity to arrive at a transition in water management, combined in five themes: SHEET 14

- together we create a climate proof Netherlands
- Dutch people live in a sustainable relationship with water
- Dutch people create a stronger economy with water
- Dutch people help with their water knowledge all over the world

-Dutch people rediscover living with water.  
The remaining question, however, is how to achieve all these goals.

Transition management in The Netherlands is still mainly directed at the beginning of the trajectory. With some years of experience by now, some attention is being directed at the next steps after the first phase. One activity is scaling up of transition experiments. But for a change process to go on the undercurrent should become a carrier wave (to use the terminology of Rotmans). SHEET 15 The sheet shows the wave that was created in Dresden in order to remember the possible effects of high water.

An important mechanism to create a carrier wave is the support of large fractions of the population. This part of the trajectory has been little researched up till this moment.

### Sustainability management

SHEET 16 What do I think I can contribute to a more sustainable direction of developments starting from the picture sketched? It is clear that I see transition management as an attractive perspective to support the aspiration of a more sustainable development. It is too early to be confident that the needed changes will be attained by choosing such an approach, but the approach does certainly contribute. An attractive point is also that it is an approach that enables to couple theory and practice.

One can state that in transition management activities one is continuously working on a process of creating, assessing and managing options for systems change. Creating a transition arena, developing a transition agenda, transitionizing experiments can all be seen as a (sometimes more or less implicit) form of assessment and management of aspects of change in a more sustainable direction. In that process transition researchers play an important but basically supportive role.

All my life my research has been motivated by the relationship between science and society. I always want to position my activities on that boundary. As always my starting point is having one leg in practice and one in research, in order that both activities can fertilize each other. I believe in part time science in the sense of being a part-time hermit and a part-time practitioner. Sometimes it is not easy to keep the balance.

SHEET 17 I will find the practice in supporting transition trajectories and forming networks that can lead to fruitful cooperation. My thoughts are then with starting transition trajectories and sustainability experiments, developing the Knowledge Center Innovation and Sustainable development between the three universities in South Holland, and the further support of the Kiss network (Knowledge in Synergy for a Sustainable South Holland).

The importance of sustainable development, for instance in relationship to climate, is so large that reflecting upon questions of sustainability should be core in the education set-up of this university. I plan to explore what possibilities there are, and in what form it could be developed.

## Research

SHEET 18 My research agenda mainly springs from the starting point to support transition trajectories. Not only the practice, also reflecting upon practice and developing the philosophy behind the practice is an important support mechanisms.

### a. *Research of the practice of supporting transition trajectories*

- What are the roles of transition researchers in transition trajectories
- how can one characterize the scientific practice evolving in those practices
- Which normative questions are entailed by those roles

I am planning to direct this meta-analysis of the transition management practice towards supporting and enhancing practice, and researching the effectiveness and legitimacy of those practices.

### b. Transitions on the way to the tipping point: phase transitions

A number of the transition trajectories that have been researched during the last number of years have now arrived at a stage in which the engagement should become broader than frontrunners. This is the case for the energy transition and the water transition. New questions are arising that need attention if the transition management approach has to stay effective and legitimate.

The involvement of broader groups has to be addressed, as well as democratic legitimacy. A start can be made by translating recent insights in social learning processes to their possible role in transition trajectories (social and emotional learning (Cosel-website: [www.cosel.org](http://www.cosel.org)), Moser and Dilling (2007), Wals (2007) ).

It is also important to gain more insight than exists today on the conditions that have to be fulfilled to reach a tipping point. In the earlier mentioned book 'Creating a Climate for Change', Kates gives a four factors that should be fulfilled to reach the tipping point:

#### SHEET 10

- changes in values/attitudes of the public
- imaginative pictures or happenings
- a structure of institutions and organizations that enables action, and
- practicable solutions.

Americans often use the example of the struggle for civil rights for Afro-Americans. Another much used example is the ozone hole. In the written version I elaborate that example. Now I only say: the picture of the HOLE was very important. It stays burned on your retina. Close your eyes and think back to it.

If we apply these condition to the water transition in the Netherlands there is cause for optimism and for pessimism. Many water related issues are debated in the media, but attention does not automatically lead to a shift in attitude. The lively pictures that people have in mind thinking of water in many cases rather strengthen the tendency to hide behind dikes than that they lead to thinking of giving more room to the water, or thinking

about the creative possibilities that can be created with water in this county abounding in water. Searching for pictures we can learn from elsewhere, like Dresden. We can also keep an eye on those areas where historically the link with water plays an important role. An example of the latter is the Biesbosch, SHEET where people tend to think of much water automatically. This is an area where watershed is seen as a natural function, because it fits into pictures we remember, like this one by me as a hiker.

The earlier mentioned vision on water starts out to go in that direction, for instance by creating a water canon. However, one can question whether the structure of the water institutions in The Netherlands is fit for generating the necessary action. In its annual report 2006 the Rathenau Institute states that the research institutes in this area are still looking too little across boundaries between disciplines, but also is making too little use of practical local knowledge.

### Conclusion

I conclude that quite some effort is still needed to realize a transition. I use this conclusion to begin the end part of my lecture. For the coming years I plan to study the practice of societal transitions and its research. At first sight my activities therefore bear a resemblance to my PhD research on phase transitions in solids (perovskites). But the underlying questions now are many times more complex.

By now it must be clear that I aim to involve people in the quest for a more sustainable developmental direction. We need people to go in such a direction, but I also think that devoting one to such a cause can be a way to overcome the unbearable lightness of being.

I now arrive at my word of thanks.

I like to thank the dean of the faculty of social science and the board of the university that I have been appointed at this position. I thank my main readers Arie Rip, Jan Rotmans and my husband Peter Tindemans that they kept me on track by their constructive comments. I thank all people from Drift to have enabled me to think along with the most interesting group at this university. I sincerely hope that we will all be able to help each other and to keep challenging each other intellectually and societally. I hope and expect that in that way we can contribute to transitions in society and in the academic world. My children Simon and Arthur (and of course Maryam) I thank for the material and immaterial contributions to my joy in life and to self-reflection. Simon, amongst others for the picture of Dresden. And Arthur because of his reflection on my first inaugural lecture (he was nine years old at the time): It was like a talk at school, but not a very good one, because you *read* it.

And finally, indirectly my parents. When I was clearing out their house last spring I found a card box carrying the following maxim:

SHEET 23 Life ain't holding the good cards, it is playing a bad hand well.

That is certainly so.