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TBM

QUARTERLY

"The Netherlands is safe thanks to its network of dykes. Or is it?"



Aad Correljé and Bertien Broekhans

Our low-lying country is well protected against water. At least that is what we all like to think. In any case, this has always been the basis for government policy: citizens must be given maximum protection against the risk of flooding. But is this viewpoint actually tenable? How safe are we behind our dykes?

"There is no such thing as 100% safety," says Bertien Broekhans of the section Policy Analysis. Together with Aad Correljé of the section Economics of Infrastructure, she took part in the PRomO project on perceptions and risk communication in dealing with flood risks. The project also involved researchers from the University of Twente, TNO and Deltares. Its results have just been published in the book 'A perspective on water safety'. Broekhans explains the background to the research: "However high the standards applied for water safety, there will always be a risk of flooding. We saw this in 1993 and in 1995, when water levels peaked in the major rivers. It happened again in 2007 when a peat dyke collapsed in Wilnis. Besides, it is clear that we have not achieved the Delta standard in many locations, for example because of societal opposition to high dykes or to major investments in water barriers. This is without even mentioning the issue of climate change. As a result, policymakers will begin to focus much more on the residual risk of flooding and will no longer so readily assume that we are absolutely safe. The idea is that we will need to adapt to face this risk. We will have to think very carefully about our use of land and ensure that our strategies for dealing with emergencies are in order."

Repercussions

The shift in focus from preventive measures alone to a policy based on 'multilayered safety' does have its repercussions. Broekhans: "Flood prevention and water safety is an issue in three different institutional contexts. There is prevention at central government level, risk management, in which mainly

provinces and the municipal authorities are involved and finally the strategies for dealing with emergencies, which are developed in a different context altogether. For citizens, and even for civil servants and public administrators, this is a complex issue. There will need to be effective overall coordination if we are to prevent chaos." Correljé adds: "Policy developers still tend to think too much in terms of categories. The Directorate-General for Public Works and Water Management and the water boards are responsible for the water, the provinces take care of spatial planning and the municipal authorities develop the finer details. All these different layers need to be properly connected. The issue of water must play a key role in spatial planning. And public administrators in all layers of government need to be more effective in communicating the risks with citizens and businesses. Show what the risks are, explain the choices that can be made within the limited space available and highlight the investments that are required for problem areas."

This is not an easy message, neither for citizens nor for public administrators. This is especially the case because no one believes that the risk of flooding will become a reality. Broekhans: "We attended the dyke ring talks organised by the Ministry of Transport, Public Works and Water Management and you could see the reaction of shock from public administrators when they were shown a video of what might happen. In terms of communication, there is an enormous task ahead. We need to correct the impression that we are safe but at the same time we are not yet in a position to advise citizens and businesses on how to deal with the risk of flooding. Should they be able to take out insurance against flood damage? There is still no firm agreement on the appropriate courses of action."

Awareness of water

There needs to be an increased awareness of water and all parties involved must work closer together and communicate more effectively with citizens and private parties. This should involve focusing on the key areas for improvement, because the institutionalised nature of water safety and flood protection is not

something that need necessarily be completely scrapped. For Correljé this is an important lesson that water infrastructure can learn from other infrastructures. "Liberalisation and decentralisation don't work in this sector, unlike the telecom or energy sectors for example. Within those sectors, customers can make individual choices for a specific service at a specified price. If the telephone is out of order, you can always use Skype on the computer. There are no such choices with water. Central government monitors the water barriers at sea and in the rivers while the water boards do the same for inland waterways. For all residents in a specific area, the issue of safety is the same. This is not something we should attempt to change, because safety affects people's future survival. It is simply not an option to weigh that interest against economic or social interests, for example. A high level of coordination is always necessary."

The researchers on the PRomO-project worked in very close collaboration. They also consulted intensively with the Ministry's Directorate-General for Water, with the Ministry of the Interior, with local municipalities and the water boards. It is now a question of waiting to see what happens with the results. Both Broekhans and Correljé can already make excellent use of the results in their TPM research. Broekhans: "My work involves comparing infrastructures with each other and especially those infrastructures that are essential for society. In all of them, any change in policy perspective leads to a reassessment of public values. In terms of science, that is always interesting." Correljé, who has a great deal of research experience in the energy sector, says: "It is extremely useful to compare the different sectors. It forces you to carefully consider the applicability of your research results. The book 'Kijk op waterveiligheid' has only just been published, but it has already featured in policy recommendations issued by the Living Environment Council."

The PRomO-project is part of the Living with Water knowledge programme, which is part-funded by the Ministries of Transport, Public Works and Water Management and the Interior and by the provinces of Zuid-Holland and Zeeland.

Flood protection as a basic constitutional right

Once installed, the new Dutch cabinet will inevitably make cuts in the machinery of government. Sadly, recent government reviews show an alarming lack of intellectual rigour. The reviews are consistent in failing to address public-sector productivity and efficiency. They also ignore the social cost-effectiveness of certain measures or of alternative ways of working. The bureaucratic issue of cost reduction always takes precedence.

Most savings can be made by privatising certain tasks and even more by abolishing government authorities. The same applies to the market. Just one step further and you may as well let the sea reclaim Holland. It would certainly be cheaper, and it would produce sufficient savings to cover the costs of mass migration to higher-lying areas in Europe. A far-fetched idea? Perhaps, but the abolition of water boards as independent authorities has been hailed as the number-one efficiency measure by its institutional competitors. The idea even enjoys wide support in parliament. The provinces, city authorities and (secretly) the Directorate-General for Public Works and Water Management see an opportunity in this crisis. The water board as the last resort in public administration, the independent whistleblower on flood defences, can finally be put out of its misery. The tax revenues released can be nicely re-appropriated. Grid operators and power companies were recently sold for a profit. The next victim is already being lined up for culling.

The abolition of the water boards is not an efficiency measure, it is an attack on the public administration system. The provinces do not want to abolish water boards. They want to appropriate the institutes by turning them into water corporations. As with the housing shortage, our flood defences and water safety issues are presenting opportunities for political gain. The cities do not want to abolish the water boards either. They want to replace them with municipal regulation. At best, this will lead to an extra safety layer, based on river catchment and diked areas. More likely, though, is the establishment of an unseen executive agency for regional water control, managed at arm's length and practically free of any external oversight. And the Directorate-General? It is accustomed to national politics that ignore the long-term interests of strategic management and maintenance of large-scale infrastructure. It could certainly use funding for the overdue maintenance of its properties in the 'dry sector'.

Water management has always been a political battle about power over water. The water boards are full of technicians, engineers and lawyers. They are happy to communicate their technical achievements, but not the fundamental values and societal interests they represent, thereby unwittingly confirming the impression that they are nothing more than an executive agency. In our constitutional democracy, central government, the provinces and cities have the right and duty to weigh all options for efficiency's sake. Weapons are weighed against butter, work against income. Flood defences and water safety are not bargaining chips, however. Without them, the Netherlands would cease to exist. Seen from a system perspective, the water boards are constitutionally-embedded buffers to protect against bureaucratic efficiency and attempts at political gain. They are the institutionalised constitutional right to water safety in the Netherlands. After a recent analysis of the banking system crisis, the Scientific Council for Government Policy (WRR) concluded: "Flimsy buffers are good for profitability, but represent a threat to future existence." That says it all.

Prof. Theo Toonen, Dean

Arcadis and the world of science



Floods are increasingly experienced on television. Water safety and management has long ceased to be an exclusively Dutch issue although our country has a centuries-old history and a worldwide reputation in this area. Effective water management, both nationally and internationally, calls for close interaction between government and the business sector, with engineering consultancies, or in this case the world of science, linking them all altogether. A perfect example of the latter is the new chair in Water Policy and Governance at the TPM faculty, which is supported by Arcadis.

After the threats of the flooding of the Dutch river basins in 1993 and 1995, the notion of 'fighting against water' in the Netherlands was superseded by the idea of 'living with water'. But the battle against water will never end. Last year saw the publication of an extensive programme by the Delta Commission, chaired by former minister Cees Veerman, outlining how to protect the Netherlands in the next hundred years against flooding and dangers from water and how to prevent drought and maintain freshwater supplies. "Only in the Netherlands does this process involve a wide range of developments in the short, medium and long term", asserts Arcadis' Harm Albert Zanting. "And this is on top of all the other water-related problems threatening the rest of the world."

Advice and implementation

Three years ago, Arcadis responded to these developments by establishing its own Water division. Within this division, Zanting is director of the Deltas and Rivers group. In its role as advisor to the government, the company plays an instrumental role in the issue of water safety. In addition, Arcadis is also heavily involved in implementation. "We provide support, assistance and advice to the parties involved. This may be the government in its role as commissioning body, but it can also be the parties who carry it out. "It may seem strange to be providing support to both sides, but it is totally feasible. You just have to make sure that you make a clear choice in each individual project", says Zanting. "Our staff do increasingly find their attention is divided between The Hague and the contractor. On the one hand, you have to realise that in every phase of the decision-making process the state secretary must be accountable to the Lower House of the Dutch parliament. At the same time, you have to know the contractor and understand the way he works, his deadlines and the major equipment he uses. We can make the connection between phases, disciplines and parties."

Independent knowledge development

According to Zanting, it is important for the scientific community to resist being pushed in any particular direction within the complex power play in the water sector. "Otherwise, there is a danger of universities becoming so dependent on contract funding that they are part of the circuit itself. Of course, universities need to involve themselves in what is going on in practice, but they must not become entangled within it. Otherwise, the university will be more like Deltares or a consultancy before you know it. I believe that independent knowledge development must remain key. Universities must feel free to adopt contrary viewpoints and make it clear if we in the practical world are pursuing the wrong path."

This message from Arcadis has definitely made its mark in



A perspective on water safety

With: Herman van der Most, Sten de Wit, Wietske Roos, Bertien Broekhans, Aad Correljé

This book explores in ten essays different aspects of the new policy on water safety.

Research into future freshwater supplies in the Netherlands

The national programme Knowledge for the Climate (Kennis voor Klimaat) has awarded a subsidy to a consortium that is to conduct research into future freshwater supplies in the Netherlands. A postdoctoral student from the policy analysis section will identify which long-term uncertainties will play a role in freshwater supplies and which policy strategies should be recommended in the light of these uncertainties. The research will involve collaboration with Deltares and Utrecht University.

Delft, where Arcadis is supporting the chair of Sybe Schaap by providing funding and support to students. "We aim to adopt a clear position within the water sector and our involvement in the scientific world is part of that process. For us, it is essential that research is conducted so that the results can help us in our consultancy work. We are also, of course, keen to recruit the very best students."

Thinking in terms of systems

Within his own field of expertise, Zanting encounters all too few people who are capable of thinking in terms of systems. In his view, this is where TPM comes in. "If you consider how a Delta programme is established and how weighty decisions are made, you can understand the importance of it being more systematic. In the past, policy analysis more or less amounted to a process of making scientific and objective choices. But we have since learnt that this is not possible. It is up to politics to make decisions. But when it comes to preparing the options for these decisions and systematically identifying the issues on which decisions must be made, in terms of content, society and finance, TPM could lead to an injection of new ideas and the development of new, modern approaches."

In Zanting's view, the faculty can also play a useful role in the development of administrative arrangements, especially focusing on planning and policy: where should the responsibilities lie and what should they involve? What can best be done locally? How do you involve other sectors than your own water industries in the implementation of projects? "It is currently often the case that the central body that comes up with an idea ultimately also takes care of the implementation. In this phase, I would rather see local coalitions of entrepreneurs, governments and stakeholders."





FORMER TPM STUDENT AT THE ASSOCIATION OF WATER BOARDS

Water defence assurance in practice

Judith van den Bos-Scholtes was raised among the horticulturalists of Westland. In 1998, extremely heavy rainfall led to major flooding, leading to the loss of much of the harvest. The event had a significant impact, which helped Van den Bos fully understand the social relevance of her studies at TPM. "Article 21 of the Dutch constitution states that every Dutch citizen has a right to a country that is habitable and to improvements in the living environment. When you consider what a built-up country we live in, this can only be guaranteed if water management is effectively regulated."

Van Bos plays the role of coordinator. As an example, she cites the muskrat dossier. "If I had to speak to everyone in Brussels with an influence on the dossier, it would be almost a day's work. Along with the Association of Water Companies, we have three lobbyists working in Brussels. I provide them with information, outlining the situation here on the ground. They then take the information to the people who need it." In addition, she has regular meetings with government. She also writes short memoranda for water board executives who represent all the water boards in negotiations with government on the flood defences.

Hardly the most comfortable experience...

When she saw the vacancy for her current position, her initial response was to throw it in the bin. The Association of Water Boards was looking for someone with five years' experience. "Although I was enthusiastic, I also didn't really think I was the all-rounder that they were looking for. When I started working I was only 22 and often had to deal with people with thirty years' professional experience. It was hardly the most comfortable experience, but I donned my suit and tried to sound convincing.

Fortunately, I have the ability to get to grips with new subjects quickly. And thanks to TPM, I have highly-developed analytical skills."

As a first-year student, she had no idea what to expect of the course, explains Van den Bos. "I come from a very ordinary family, where going to university was not a matter of course. The university world was something completely new for me. I had finished my pre-university schooling and was looking for a course on subjects that interested me and that left my future options open." TPM proved to be exactly what she was looking for. "I remember how much we were expected to work independently and how TPM teaches you how to identify the core of any problem. Because you are more detached than those directly involved, you have a better overview and can analyse more clearly. It's not only about the content, but also the process itself. In the world of The Hague, and Brussels as well, networking is incredibly important. Everyone has different interests and objectives and there are different power relationships." In her view, there could be more focus on the subsidiary area of politics at TPM. "We did cover the politics of state governments, but the fact that there are all kinds of lobby groups circulating around The Hague is something I only really discovered in practice."

In 2002, she studied administrative decision-making in the enforcement of emergency floodplains. After working at the Directorate-General for Public Works and Water Management for a year and a half, Van den Bos has been employed by the Association of Water Boards for the last six years. In her role as a member of Water Safety policy staff, Van den Bos (31) endeavours to ensure that the water boards adopt the same line on a range of issues relating to water safety. This is done by issuing short memoranda highlighting a problem and proposing possible solutions. The unanimous position that emerges is then presented to the world of politics, to enable The Hague and Brussels to use the information to develop policy that can be implemented in practice by the water boards.

TPM and District Water Control Board join forces for Delfland EUWFD policy monitor

The European Water Framework Directive (EUWFD) came into force in 2000. As part of the directive, every river basin within the EU must draw up its own management plan. The Delfland District Water Control Board called on Leon Hermans, assistant professor in Policy Analysis, to provide assistance in drafting the EUWFD policy monitor for Delfland.

The Netherlands has four international river basin districts: Rhine-Delta, Meuse, Scheldt and Ems. Government authorities within each river basin district work together on a management plan outlining how water quality can be improved. The Delfland District Water Control Board is responsible for drawing up the plan for its own area of jurisdiction within the subsidiary river basin area of Rhine-West. They faced a complicated task. Delfland is located in a densely populated area which called for cooperation with the municipal authorities, greenhouse horticulture, and nature and environmental organisations. Many of the targets envisaged proved not to be achievable by 2015, but will be by 2027. In addition, there are many uncertainties in terms of the costs and effects. Water quality involves a complex aquatic ecological system and is an area where much still remains unknown.

A process of policy monitoring was required to ensure that during the initial planning period (2009-2015), careful attention is paid to these uncertainties and the opportunities and risks involved in achieving the targets. This was when TPM became involved, with Hermans as project manager. He was awarded his PhD at TPM for his research in actor analysis and has experience in water management and water policy in various

countries and projects. "One of my current concerns: how can you learn from a policy which you are implementing in situations in which you need to cooperate with different parties?"

First step

In the spring of 2009, Hermans set to work for Delfland with his colleagues Arienne Naber and Bert Enserink. When devising the monitor, his basic premise was that the process of monitoring serves both as a means of providing accountability and an opportunity for learning. "A logical first step in a case like this

is to turn to policy theory, which enables you to identify the causal links by means of system diagrams: what effect do you anticipate the measures taken will have in terms of the system and targets, possibly influenced by external factors?"

The second step was to think in terms of adaptive policy analysis: if a system is complex, how can you apply monitoring priorities or eradicate critical assumptions? "The third step involves applying ideas from multi-actor theory. Different actors have different ideas and they cannot always be accommodated together. We found a solution for this in elements of Pieter Bots' Dynamic Actor Network Analysis. Finally, in the implementation process, we made use of interviews and workshops." Meanwhile, a procedural plan has been developed which outlines how Delfland can most effectively devise its monitoring instrument and implement it together with other actors. "We also learnt quite a few things that we had not expected. The process of monitoring turned out to be a much bigger job than Delfland had envisaged. Personally, I discovered that the actual implementation process is often underestimated. For example, for adaptive water governance, learning by doing is an important concept. Implementation and monitoring are essential in this but are rarely mentioned in the current debate."



The seminar **Water Management, Governance and Policy** held at TPM was a success. As well as highlighting the TU Delft vision on the Delta issues, the seminar also looked at the future of research into water management and cooperation between TU Delft and the ministries and the business sector.

Four authorities on the subject of water present their visions on water management and safety.



“Water management is of crucial importance”

Ir. Annemiek Nijhof MBA

“The Netherlands is situated in a delta. Without effective water management, there would be a continual battle of give and take between water and land (that has been acquired at great cost). It is therefore of crucial importance that we keep our water affairs in order. The world of water is moving fast, across various levels of scale. Numerous parties are also involved at many different levels. That is another reason why we need a well-oiled system that operates effectively.

However, there are threats lurking around. One of these is the risk that the Directorate-General for Public Works and Water Management and the Water Control Boards do their job so well that nobody even notices what is being achieved. People are already starting to question whether these bodies and investments are actually necessary. So how can we, without scaring people to death, make it clear that this is an area where the work is never completely finished? The message is a mixed one. We are proud that citizens have so much confidence in our water management. On the other hand, the subject is hardly top of mind, almost like a silent killer. If gaps appear in the asphalt caused by frost, we notice it immediately and direct action is taken. But if we ignore the flood barriers, there are no reminders set down in legislation and ten years can pass in the blink of an eye. As in the rest of the world, the problems we face with water in this country are substantial. There is the alarming prospect of rising sea levels but also dangerous changes in the discharge of water via the rivers. Our country is actually threatened by

water from both sides. At the same time, there are impending shortages of freshwater as a result of reduced rainfall and salinisation. Furthermore, the people who use this water are in fierce competition with each other. There are numerous opposing interests at stake.

Despite all this, I am optimistic. I am also happy that the Netherlands has a Delta act, a Delta programme, a Delta fund and a Delta commissioner. But I'm committed to doing my bit, to ensure that water safety remains high on the agenda. We need to pre-empt any catastrophe so that our children can also say that they too were born after the great water disaster. My second great aim is to forge links between the water sector and other worlds. I want to raise people's awareness of what water management actually involves and why it is such a wonderful discipline. I would also urge TPM students to opt for water management. It offers a world of opportunity for ambitious, creative people.

One of my key motivations for working in public office is the fact that solidarity and sustainability are its guiding principles. But I strive to fulfil this public duty in a new and different way. I believe that a policy should not be developed from behind a desk, but that it must be open to society and the processes within it. We need to find ways of connecting with society and I would like to be part of the movement that achieves this change in attitude. If it were not for my fascination for water, I would have the same ambitions for healthcare. Water is a controversial public area. If the government stands by and does nothing, the country will be inundated. It's as simple as that.”

Annemiek Nijhof (1966) is Director-General for Water at the Ministry of Transport, Public Works and Water Management. Her previous jobs include acting as Council Advisor to Prime Minister Balkenende on Spatial Planning, Sustainability and the Environment.

Water management and politics

Professor Sybe Schaap

“Anyone who takes the time to read through the parties' election manifestos will notice that there is very little focus on water management, but quite a lot on the water boards. The hype around reducing bureaucracy has led to the administrative autonomy of this layer of public administration coming under increasing pressure. The most often cited option is to put the water board under the control of provinces. But this will not deliver any savings or increased efficiency and bureaucracy will not decrease. It is more a case of a poorly-considered attempt to be decisive. Even though the proposed move could probably never be implemented, it does highlight a risky trend: the politicisation of water management. The democratic system (central government and the provinces) is attempting to gain a grip on this age-old function. This is an unadulterated attempt to seize power, which risks neglecting a vital component of our infrastructure: safety and the habitability of our country. I would like to make a few points.

management could end up facing the same fate as the water-related activities of the Directorate-General for Public Works and Water Management: the loss of its own management expertise and the postponement of investment and maintenance. Water management calls for an administrative culture that focuses on planned activities over the longer term as the timeframe involved in the Delta programme shows. The democratic system has too little interest in the longer term. This is why much investment in infrastructure, education and scientific research is long overdue. The short-term interests of the Netherlands do gain political attention, but the longer term is neglected. That is why the management of the water boards must again be depoliticised: there is too much debate about prices and too little about long-term returns. At the same time, the water-related activities of the Directorate-General for Public Works and Water Management should be placed under the responsibility of the water boards, including their funding in the form of an additional charge. Merging the water boards with the provinces would shift the funding of water management to the provincial fund, which will not hesitate to make cuts.

The loss of the water board as an independent institution also conceals another risk. This is something that is already being seen across the world: an imbalance in the relationship between water management and spatial planning. Across the board, spatial planning dictates the agenda and water management is the weaker, more obedient relative. If the provinces take over the

powers of the water boards, the same threat will loom: the subjugation of water management to the interests that dominate spatial planning. Water management will be forced to give way to the dictates of other interests, such as project development or nature management objectives. The beneficial duality of water and spatial planning, with guaranteed powers for water management, will be seriously undermined.

After 1995 and 1998, water management had gained a position in which major damage by irresponsible spatial planning was supposed to be prevented. Before that, it had been possible simply to build right across the Westland area, as water storage was an alien concept. Just imagine how the IJssel bypass near Kampen would have been developed if the water board had not had a powerful position. Across the world, major risks to safety and habitability are actually currently leading to the establishment of independent regional water authorities, following the Dutch example. It is to be hoped that an understanding of state government and constitutional democracy can hold sway in the face of irresponsible political hype.”



Sybe Schaap (1946) is Professor of Water Policy & Governance at the TU Delft. Since 2007 he is member of the VVD party in the Senate. Until 2010 he was dike warden of Water Authority Great Salland and president of the Association of Water Authority.

Firstly, the risk of enforced cost-cutting. Regional water

and in the future

“It is time to start thinking beyond borders”

Professor Joost Schrijnen

“Never before have water management and water policy been as exciting as they are now. My approach is largely district-related; as an urban planner, it goes with the territory. Besides, I am a great proponent of multilevel governance and a cross-sector approach as well. All major projects, such as those we are discussing, involve cooperation between various different government authorities. Ultimately, multilevel governance is the only option.

But the exciting question at the moment is how to configure the policy. After all, the National Delta Programme is about dealing with water safety and fresh water supplies over the long run. It sets the conditions for the details of spatial planning across the whole of the Netherlands. This is an enormous challenge but also a wonderful opportunity for the years to come. The Netherlands is a unique country: we are the first country to adopt such an integrated approach to our thinking about the future and issues of climate change. In this, it is important that we keep a sense of perspective and do not allow ourselves to be carried away by the latest trends. We need to prepare ourselves for a range of possible futures, influenced by changes in the climate that will happen in the future. The policy response therefore needs to be about raising awareness.

Creating certainties

The Netherlands is a small country, but one that plays an extremely important role. This is because our Delta brings together all the economic interests in North-West Europe. It is therefore up to us to create certainties right down to the lowest

level of public administration. We need to do this in order to enable spatial investments by major companies such as Shell, for example, but also for more minor things like hospitality and catering facilities based around the water. Clarity is an essential precondition, for any investment.

An important factor in all of this is that the government must take more responsibility than ever before. That is obvious. It needs to outline a potential plan of action that enjoys the support of multilevel governance, otherwise it will not succeed. In my view, we will be entering a new phase which will place major demands on our intellectual capacities and even on our humanity. We need to rise to the challenge and dare to take action that transcends boundaries. In this, I am actually an advocate of the ideas of Geert Teisman, professor in Public Administration at Erasmus University. We have an exciting task ahead of us, but I believe that we are already starting to learn.

Thinking beyond borders

It is absolutely essential that TU Delft understands the need to think beyond borders and to respond effectively so that engineers become more than just engineers. Of course I am pleased that engineers understand their subject so well and would never doubt it. Take the example of the construction of the North/South metro line in Amsterdam, which involves huge responsibilities. But I still urge all engineers to understand the issue of thinking beyond borders to enable themselves to get the very best out of their discipline.”



Joost Schrijnen (1947) is Professional Practice Professor in Spatial Planning and Strategy at TU Delft. He is also the programme director of the South-Western Delta Steering Group. Previously, he was director of Structural Vision Almere 2030+, director of Spatial Planning and Mobility at the Province Zuid-Holland and director of Urban Development for the municipality of Rotterdam.

WaterPACT set to become an important discipline in the next forty years

Dr Peter-Jules van Overloop

“Water management in the Netherlands is clear-cut and democratic. This can be traced back to our history of dealing with water. The polder boards originally developed in response to the threat from water faced by residents and users of a polder. The first job was to work together to build the dykes and maintain them. For safety reasons, the level of the ditches had to be kept sufficiently low but there needed to be water available for agriculture as well. They had to be deep enough for boats to transport goods. At that time, ecology had not even been invented. After exhaustive meetings with all interested parties, a polder water level was determined and this water level needed to be maintained as much as possible throughout the year. This was a statistical approach, despite the fact the condition of a polder and its exposure to external factors is extremely dynamic across the different seasons. Seen from the current perspective, this form of water management seems simple and conservative.



Yet modern water management has in fact changed very little. It is true that nowadays different winter and summer levels are applied in order to influence the condition of the system but these still remain static over a six-month period and take no account of external factors. Even on a larger scale, the situation is much as it was. If interested parties from the port of Rotterdam, a nature association, a drinking water company and inland shipping need to agree on a compromise, there is a mismatch between what they really think and what they say in public. Their respective thinking may be along the lines of: ‘The port of Rotterdam must maintain its leading world position’; ‘Conditions must be improved for the animals’; ‘The salt content of the incoming water already increases significantly in summer, which could lead to problems’; ‘The Netherlands must remain an important country for inland shipping’, whereas what they actually say is: ‘The Maeslant barrier may NEVER be allowed to be closed, unless there are extreme storms at sea!’, ‘ALL human (engineering) interventions are unnatural and must be prevented!’; ‘Keep the water COMPLETELY fresh!’; ‘The depth of the rivers must ALWAYS be sufficient to accommodate even the largest types of ships!’

Obviously, the resulting compromise will be far from optimal. A much more effective way of negotiating is to clearly state one’s own wishes and boundaries of what one will accept and

to avoid any direct statements about water management: ‘As a port, I want to be profitable now and in the future; I want the system to be sufficiently dynamic to enable a healthy ecosystem’; ‘My input water must remain above the freshwater standard of approximately 2 g/kg’; ‘Blockages must be avoided as much as possible’. Although this would make water management more complex, it would increase the potential for solutions.

Modern optimisation technology provides an excellent way of identifying the best solution at any given moment, taking account of the condition of the water system and the external factors to which it is exposed. We have powerful computers for this, which, applying Moore’s law, will be 2 to the power of 20, or a million times more powerful in forty years’ time than they are now. That will bring us to the benchmark year of 2050 when the measures currently being taken to combat climate change will be put to the test. By then, special sensors, accurate prediction models with a ten-day horizon and clever computers operated centrally will effectively coordinate all the locks and pumps in the Netherlands’ main water system. This Water Prediction and Control Technology (WaterPACT) will become an important discipline in the coming forty years. Because it uses the existing infrastructure, it will be a perfect and cheap method for ensuring that Dutch water management is made safer, more efficient and adaptive.”

Peter-Jules van Overloop (1969) is Assistant Professor Operational Water Management at the TU Delft and international expert on the application of measurement and control in water management.

In short

Dissertation



PAUL LINDHOUT
Language problems underestimated factor in serious accidents
May 10, 2010,
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Inaugural speech

On Wednesday 10 March, Professor M.J.G. (Michel) van Eeten gave his inaugural speech, entitled 'The impotence strategy: fatalism in politics and technology'. In the speech, which has been published in essay form, the author addresses three questions. Firstly, why is fatalism a taboo subject in politics? For public administrators the situation is different. Unlike politicians, administrators sometimes have no choice. They are forced to accept their impotence. This raises the second question: what goes awry when administrators try to sell fatalism? The final question is: how can you effectively sell the idea of impotence? The essay, published by the Netherlands School of Public Administration can be downloaded from nsob.nl.

NWO subsidy awarded for research into energy transitions

A subsidy worth more than €500,000 has been awarded from the NWO energy transitions programme to an alliance that includes the TPM faculty's Policy Analysis (BA) and Policy, Organisation, Law & Gaming (POLG) sections and VU University Amsterdam's Institute for Environmental Studies. The research programme, entitled *Overcoming System-level Transitional Inertia: Accelerating the Dutch Energy Transition* has been developed under the leadership of Wil Thissen and Erik Pruyt from the BA section, in collaboration with Igor Mayer (POLG) and Matthijs Hisschemöller (VU). The research focuses primarily on energy supplies and consumption in relation to the built-up environment and will employ a combination of system dynamics, gaming simulations and practical experiments. The programme committee described the proposal as 'original and the research methods highly innovative'. The research will be conducted at TPM by a post-doctoral student and a PhD candidate, and a second PhD candidate will be appointed at VU University Amsterdam.

Aspasia grant for Sabine Roeser

Sabine Roeser from the Philosophy section has been awarded an Aspasia grant by NWO for TU Delft in the light of her appointment as associate professor. The Aspasia grant is awarded to female academics in receipt of a personal subsidy (VIDI/VICI) who will be promoted to associate professor or professor within a year.

DR TINEKE RUIJGH-VAN DER PLOEG:

"The world of water is fascinating like no other"

Water is a very wide-ranging area. Seven years ago, the TPM faculty made a decision to focus particularly on the design aspects of the subject. This was an enlightened choice, believes Tineke Ruijgh-van der Ploeg, assistant professor in the Policy Analysis section: "Design is an important all-encompassing framework for understanding and solving issues relating to water. It brings together the worlds of planning and implementation."

Ruijgh-van der Ploeg was originally a marine biologist. Alongside her role as associate professor, she sits on the Transport, Public Works and Water Management Council. She is also a water board executive on the Delfland district water board, which provides her with a wealth of practical experience. "It is there that I have learnt to develop plans that can actually be implemented." She has been teaching about water-related issues for many years and teaches on the Master's programme in that domain. "The world of water is absolutely fascinating, especially for TPM people. We have arranged things so that water students have to follow the technical courses in Civil Engineering. It teaches them to speak the language of civil engineers. This bridge between technology and public administration provides them with an excellent springboard for their future career." There is a great deal of work to be done, especially in hydraulic engineering, also as an export product. Thanks to this combination of civil engineering knowledge and the institutional approach, TPM has an important role to play in this. Unfortunately, this happens all too rarely. "I've seen many students who have specialised in water but end up working in other areas. Of course, we are proud that they have been able to find jobs in other sectors, but we are concerned that the world of water

does not seem attractive as an employer." The Super Dykes Design project is a good example of how interesting and socially important the programme is. This was a graduation project from 2009 by SEPAM student Carlijn van der Sande, based at Arcadis. Carlijn conducted research into the procedural obstacles that inhibit or prevent the design and realisation of super dykes in the Netherlands. "Currently the areas around the dykes are largely undeveloped and only accessible for shipping, cyclists and walkers. The idea is to make the dykes extra large and to develop them for multidisciplinary and climate-proof applications."

During her research, Carlijn encountered the two very different worlds of Spatial Planning and hydraulic engineering. Both have their own development philosophy and attitude, which can lead to misunderstandings. "My advice would be: structure any dialogue in such a way that everyone is given an equal opportunity to contribute. Begin negotiations as early as possible in the process and be clear about what is and what is not possible. All in all, there are enormous challenges in hydraulic engineering, also for TPM people."

Dyke Patrol

The simulation game *Dyke Patrol* is a good example of the challenging world of hydraulic engineering. TPM student Casper Hartevelt designed the dyke inspection simulator, in alliance with Deltares and five water boards. Dyke guards can use it to practice inspecting dykes in a realistic 3D environment on their computer. The software is used during courses and workshops for on-the-job training.

DR JILL SLINGER ON COASTAL MANAGEMENT:

"At TPM they really are bridge-builders"



When it comes to coastal management, the Netherlands is a world leader. But there is still a great deal of room for improvement, according to Dr Jill Slinger, assistant professor in Policy Analysis and a member of the advisory body, the Expertise Network for Flood

Protection (ENW). TPM people have an important role to play in this, as bridge-builders between engineers, policymakers and residents.

Jill Slinger studied applied mathematics at the University of KwaZulu-Natal (South Africa). She received her PhD for her work on policy-support modelling of South African estuaries. Later, she became involved in the scientific preparations for the reform of South African water legislation. Back in the Netherlands, she worked from 1998 as a senior consultant on water and coastal management and was involved in the development of the World Water Vision and the Strategic Long-Term Plan for the Schelde Estuary. At TPM, Slinger conducts research into how models can be used in decision-making, especially in the area of integrated water and coastal management.

Because of her international experience in integrated water and coastal management, Slinger is part of the ENW's Coastal working group. Its focus is the area of coastal dunes, which helps protect the Netherlands from being flooded by the sea. She also works on such areas as national policy on dune reinforcement and risk management in coastal resorts. "The South African coast is extremely dynamic. There is a strong link between freshwater and the coastal dynamics and citizens are highly involved in coastal management, even more so than in the Netherlands." Slinger's contribution to the Coastal working group helped broaden the strategic vision on coast-related issues.

Better prepared

Slinger is currently working on the issue of standardisation. "How do we tackle standardisation within Dutch water policy? It is essential to link together policy knowledge and an understanding of pure civil engineering. Slinger has been a great proponent of cooperation between TPM and Civil Engineering in terms of teaching. Starting in September, a specialisation on Water and Governance will be introduced within the SEPAM curriculum (Systems Engineering, Policy Analysis and Management). This will provide an increased technical focus for SEPAM students and enhance civil engineering students' understanding of public administration. It will enable students to be better prepared to tackle what is ultimately a multidisciplinary environment in the world of water."

Since 1990, the Netherlands has adopted a dynamic coastal management strategy designed to maintain the basic coastline by adding sand to reinforce the dunes. "But the time has now come to determine our strategy for the next fifty years. For this, the key question will be: do we need to reassess our policy assumptions or not? In this, and this is something that I learnt from the mistakes made during the reforms of water legislation in South Africa, it is important that scientific ideas are included in the way policy is presented and not only in the method applied."

Brokers

If we fail to do that, there is a danger of policy being misinterpreted during the implementation phase. "Those responsible for coastal management must enforce the law. But if they do not understand the assumptions on which the law is based, the implementation can fall short of what is actually intended. Flexibility and the ability to provide accountability to residents become impossible if the law is presented without the underlying scientific concepts. This is why I believe that there should be a dialogue between scientists, civil servants and citizens from the outset. I also believe that TPM is uniquely equipped to assist in shaping this dialogue. TPM can act as a broker between engineers, policymakers and residents."

Professor profile

NAME

Ernst ten Heuvelhof

POSITION

Professor of Public Administration in the TPM Faculty at TU Delft. Professor in the Faculty of Social Sciences at Erasmus University Rotterdam.

Tell us about your personal life

"I am married and have two daughters, aged eleven and thirteen. We live in Rotterdam. I love watching my children grow up. It is like reliving my own youth all over again, but this time in my own children. I have a lot of interests outside my work, but nothing especially active. I do like reading about all kinds of subjects. But I do not do anything out of the ordinary."

What is your favourite hobby?

"I like engaging in sport in the open air. This can include anything: I have a racing bike, I like going jogging, and I enjoy winter sports and walking in the mountains. I also like listening to music, especially religious music and opera, and I read a lot of newspapers, novels and also popular scientific literature about other disciplines."

What was the highlight of your career?

"I have had lots of wonderful experiences. I can mention the obvious things: being appointed as a professor, the TU Delft Teaching Award. But I also enjoy a lot of more trivial things. Students who respond to lectures so that you can actually see and hear how much they have improved. Public administrators who respond positively to advice. Clients who come back for more. These are the small things that make life great."

Your greatest challenge at the moment?

"There are two. Firstly, I am the chairman of the task force whose members also include administrators from our electricity networks. This task force has been instructed by the Ministry of Economic Affairs to draw up an investment plan for the introduction of what are known as smart grids in the Netherlands. Secondly, I am increasingly active in the world of water. I was involved in evaluating the Room for the River (Ruimte voor de Rivier) policy and I'm currently evaluating the implementation of the Water Framework Directive. I am also involved in the implementation of the forty Room for the River projects."

What do you enjoy most about your work?

"The combination of studying and conducting research, writing, giving advice and teaching. I consider myself fortunate to be able to do this with so many inspirational colleagues, two of whom I would like to mention. I have worked on a great series of publications with Hans de Bruijn. Our collaboration goes back some twenty years. And along with Margot Weijnen, I have the honour of managing an extraordinary and inspirational research programme entitled Next Generation Infrastructures."

Why Delft?

"For an expert in public administration, TU Delft may not seem the most obvious choice. But I find TU Delft to be a highly inspirational place where work is done on solving some really major social problems, such as energy, transport and water. The TU Delft

DRI's (Delft Research Initiatives) are extraordinarily relevant to society and highly interesting in scientific terms, so it is a pleasure to contribute to them from the perspective of a public administrator."

Your best characteristic?

"You will need to ask other people about that. I have been told that I am good at engendering enthusiasm in others. If that is true, it certainly is a good characteristic."

Your worst characteristic?

"You will need to...My ostentatious body language. It seems that it is completely obvious to everyone if I'm bored, annoyed or tired."

What subject do you think should be high on the political agenda?

"It's a cliché, but education can and must be improved, at all levels."

Your source of inspiration?

"I don't have one all-embracing source of inspiration. But I do feel inspired from time to time. In such cases, it can be any random speaker or writer or a piece of music. However, I do have two favourites from the field of public administration. Aaron Wildavsky is an excellent writer on a wide variety of themes and his work is always original, makes sense and is grounded in real life. Lindblom is also inspiring because he has been able to translate his careful observations into decision-making strategies that I find extremely appealing. Wildavsky and Lindblom are convincing proof that incremental policy is not only the dominant force in the reality of public administration, it is also a sensible strategy. Adopt a sensible approach when tempted by major visions or highly promising future prospects. Improvement should be made in small steps, by tackling each problem one by one and sorting out any issues: it should be done in a way that is reversible, applying trial and error and always trying out new things. And finally: make sure you keep it all in perspective."

Your life philosophy?

"I'm not really sure I have one."

Previously published in the section professor profile:

- Prof. Yao-Hua Tan, Professor of Information and Communication Technology and head of the ICT section
- Prof. Lorant Tavasszy, Professor of Freight Transport and Logistics
- Prof. Hans de Bruijn, Professor of Policy Analysis and Management
- Prof. Marija D. Ilic, Visiting Professor of Intelligent Electricity Networks
- Professor John Groenewegen, Professor of the Economics of Infrastructures and head of the Section Economics of Infrastructures
- Prof. Wil Thissen, Professor of Policy Analysis, head of Policy Analysis section - Dr. Cees van Beers, Professor of Management of Technical Innovations - Prof. Margot Weijnen, Professor of Process and Energy Systems
- Prof. Milton Mueller, Endowed professor in the field of the security and privacy of internet users

You can read these profiles on the TPM website.



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The Rising Waters: the second Elsevier Technology Debate

Willemijn Dicke

Researchers can often cringe when they have to listen to social debates about their area of research: the facts may be inaccurate or the solutions should be sought for in a completely different area.

In order to bring together the world of research and policy, TU Delft, Elsevier magazine and The Hague Campus organise monthly technology debates. A researcher from TU Delft presents the facts and background to a problem (road congestion, safety and security, nanotechnology, the rising waters, electric vehicles, internet banking) and then engages in debate with entrepreneurs, politicians and policymakers. In the intervals, young researchers and entrepreneurs from Delft present their latest findings and models. Elsevier journalist Simon Rozendaal is on hand to ensure the debate remains interesting and appropriate.

April's debate was about the rising waters. TU Delft professor Han Vrijling adopted a stance completely at odds with prevailing opinion. Vrijling believes that we cannot yet know whether sea levels are rising more quickly and if so by how much. Measurements carried out by his PhD student show that the rise in recent years is a recurrent, temporary rise related to the Earth's position relative to the moon. According to these measurements, sea levels will actually fall in the coming years. Vrijling believes that it would be better to reinforce and pump the dykes than to opt for emergency flood plains. "These do nothing to strengthen the dykes. To accommodate the peak high waters in the Rhine, you would need the whole of the

Betuwe area." Rather than worrying about rising sea levels, we should make sure that our dykes are in order. Maintenance is long overdue. The weak areas should take precedence over any megalomaniac plans to deal with metres of rising sea levels, when it is not even clear that such a thing is going to happen.

This was followed by a debate between politicians, consultants and the Delfland Water Control Board chairman. The audience was eating out of Han Vrijling's hand. This became obvious after the vote on the propositions: the rising sea levels are not really a problem, and rebuilding pumps and dykes is preferable to introducing emergency flood plains. The audience in the auditorium was concerned that diverging opinions and measurements such as those highlighted by Han Vrijling receive insufficient attention in the current debate on water management.



In the interval, technical entrepreneur Karina Czapiewska presented a new way of looking at the rising waters. It was not a problem, but rather a business case! Together with five other TU Delft graduates, she has set up Deltasync, a young company focusing on flood-resistant buildings.

The event was an excellent meeting of science, practice and politics. We hope that it provides food for thought for the new Delta Commissioner.

OTHER ELSEVIER TECHNOLOGY DEBATES

March 29, 2010: *How to solve traffic congestion?* With Prof. G.P. (Bert) van Wee

May 31, 2010: *How safe is online banking?* With Prof. M.J.G. (Michel) van Eeten

September 27, 2010: *The electric car.* With Prof. C.J.P.M. (Cees) de Bont

October 25, 2010: *The Magic of Nano.* With Prof. C. (Cees) Dekker

November 29, 2010: *Combating Terrorism* With Prof. B.J.M. (Ben) Ale

Ask TPM

Dispute to Dutch dikes. The House has recently declared the controversial draft Delta Act. This law consists of a package of measurements planned to protect the Netherlands against flooding due to climate change. Is this a wise decision? We asked Sybe Schaap, Professor of Water Policy & Governance.

In the run-up to the national elections, the Lower House of the Dutch Parliament recently declared the Delta Act to be a controversial issue that cannot be discussed until a new coalition government has been formed. This is a great pity for two reasons and also sends out the wrong signal. First of all, up to now there has been a widespread agreement on the benefits of the Delta programme, the follow-up to the Delta plan devised by the Veerman Commission. The programme still enjoys substantial political and social support. However, there is now a risk that both the legislation and the programme will become politicised, which will present problems for the implementation phase. The cost of this programme and its impact on society mean that widespread support will be essential. I am even less impressed by the specific reason given for declaring the issue controversial: the hype surrounding the IPCC and the suggestion that the Delta programme must precisely reflect specific predictions relating to

climate change. This is faulty reasoning. The Delta programme is a specific response to the issue of safety within the Netherlands, in the present and in a broadly-defined future. This involves a range of different risk factors of which the climate is merely one. Even if nothing were to change in the climate, the programme would still be absolutely necessary. A further factor is that the programme is full of as yet unresolved issues and uncertainties. The totality of social and physical developments is not yet fully known. This calls for a very particular approach, involving a great deal of flexibility, dynamism and inventiveness. These uncertainties perfectly reflect those relating to the climate. As scientists or as politicians, you should be able to deal with these uncertainties. All of this is actually related to yet another issue: the relationship between science on the one hand and political and administrative decision-making on the other. The idea that it is feasible first to demand complete scientific certainties (such

as those relating to climate predictions) and only then to take decisions, is in my view an impossible and senseless approach. I have often heard politicians say: as a scientist, you must offer me certainties, and then I will take the decisions. But science is not in a position to offer these certainties, and definitely not in this case. Indeed, if it were, the Netherlands could more or less do without politics: an efficient technocratic extension of the sciences could do the job just as effectively. Politics needs to have the audacity to take decisions in the light of the ever uncertain environment in which the Netherlands finds itself in terms of policy: this calls for intelligence and courage on the part of policymakers. We therefore need public administrators who can make bold decisions which also take account of scientific facts. There is no question about it, declaring the Delta Act to be controversial gives me a certain cause for pessimism; I hope that it is not a symptom of a wider lack of political gut.

My advice to the Delta Commissioner and the institutes working on the research phase of the programme is this: carry on with your work as if nothing were happening. And I do not only say this as a representative of TU Delft, but I also permit myself this degree of candour as a member of the Upper House of the Dutch Parliament.

TPM's educational programmes

■ BSc Systems Engineering, Policy Analysis and Management ('Technische Bestuurskunde', TB) ■ MSc Systems Engineering, Policy Analysis and Management (SEPAM) ■ MSc Management of Technology (MoT) ■ MSc Engineering and Policy Analysis (EPA) ■ MSc Transport, Infrastructure and Logistics (TIL) (in cooperation with the Faculty of Civil Engineering & Geosciences and the Faculty of Mechanical, Maritime and Materials Engineering) ■ MSc Information Architecture (IA) (in cooperation with the Faculty of Electrical Engineering, Applied Mathematics and Computer Science) ■ MSc Geomatics (in cooperation with the Faculty of Civil Engineering & Geosciences and the Faculty of Aerospace Engineering)

Did you thoroughly read the available information and are you considering enrollment in a TPM-programme? Are you not sure your educational background is sufficient? Then please contact one of our study advisors: Drs. Marja Brand ✉ (m.j.c.c.brand@tudelft.nl), Ir. Jeanette Jeanette Blokland ✉ (a.h.blokland@tudelft.nl) or Drs. Danielle Rietdijk ✉ (d.rietdijk@tudelft.nl).