# SHIFTING THE SANDS

a playful landscape design at the Kop van Schouwen

Elisabeth Floris and Hester Annema
Master Thesis Landscape Architecture
2014
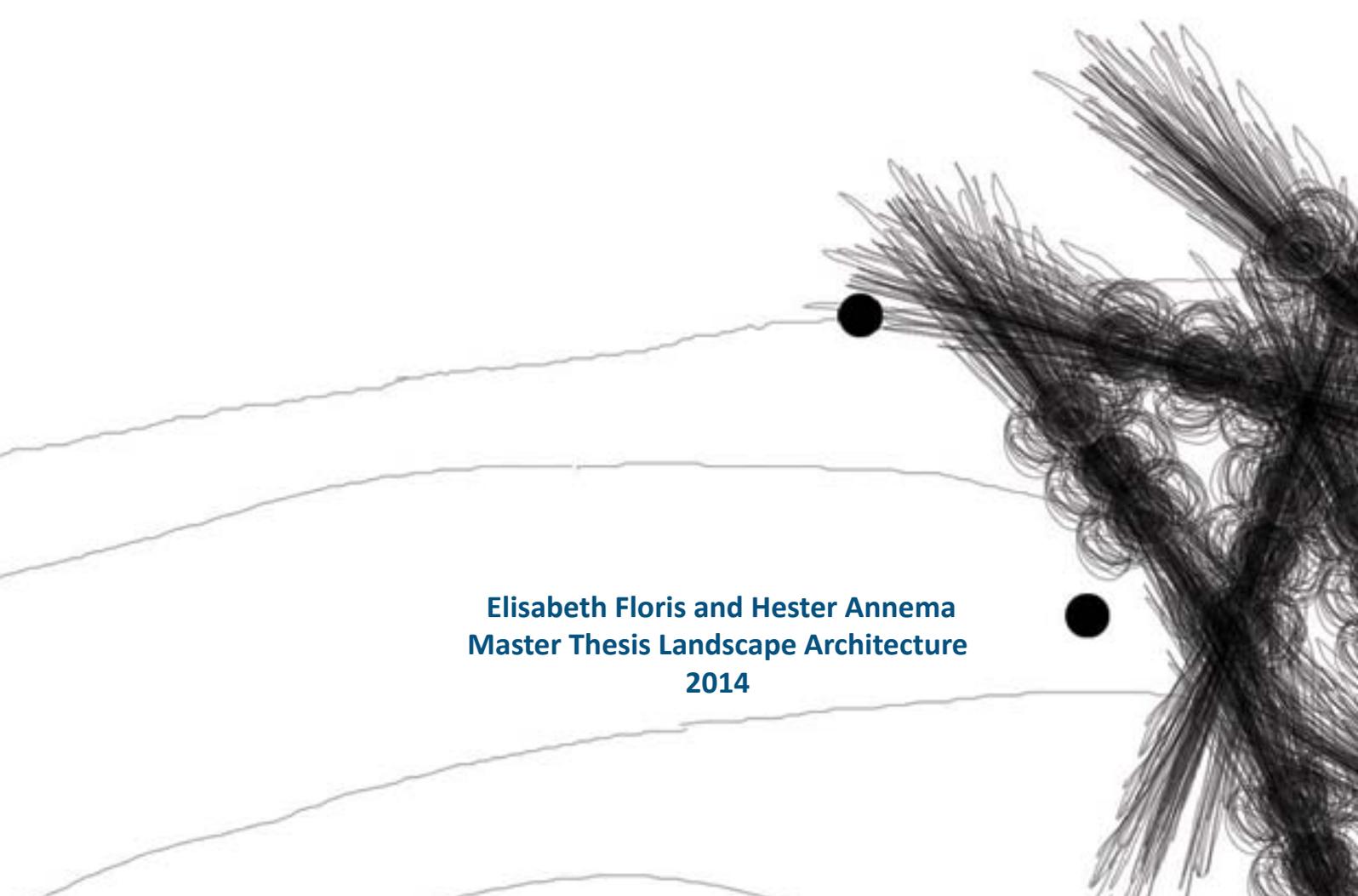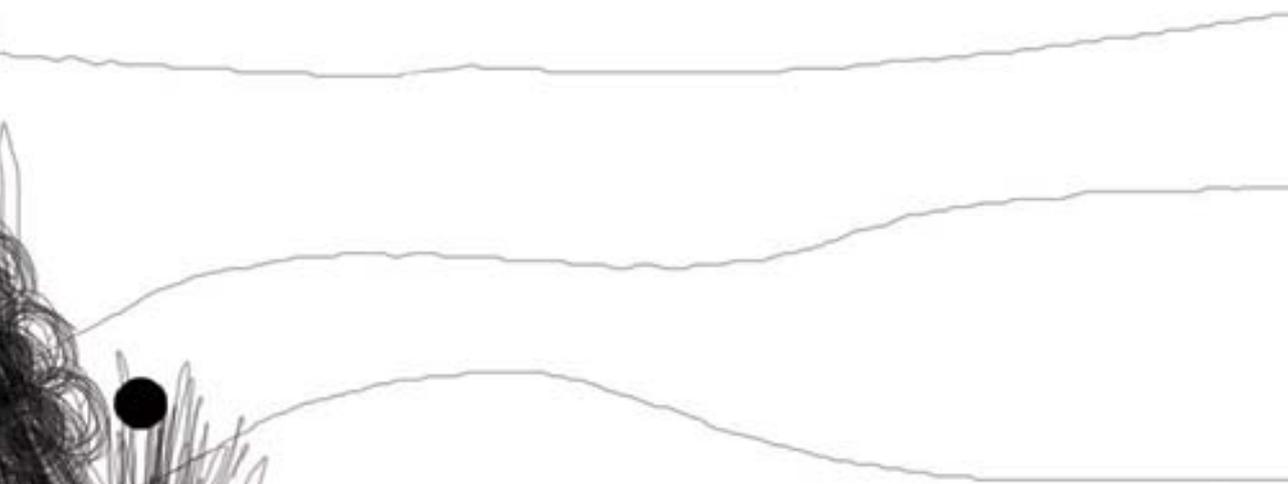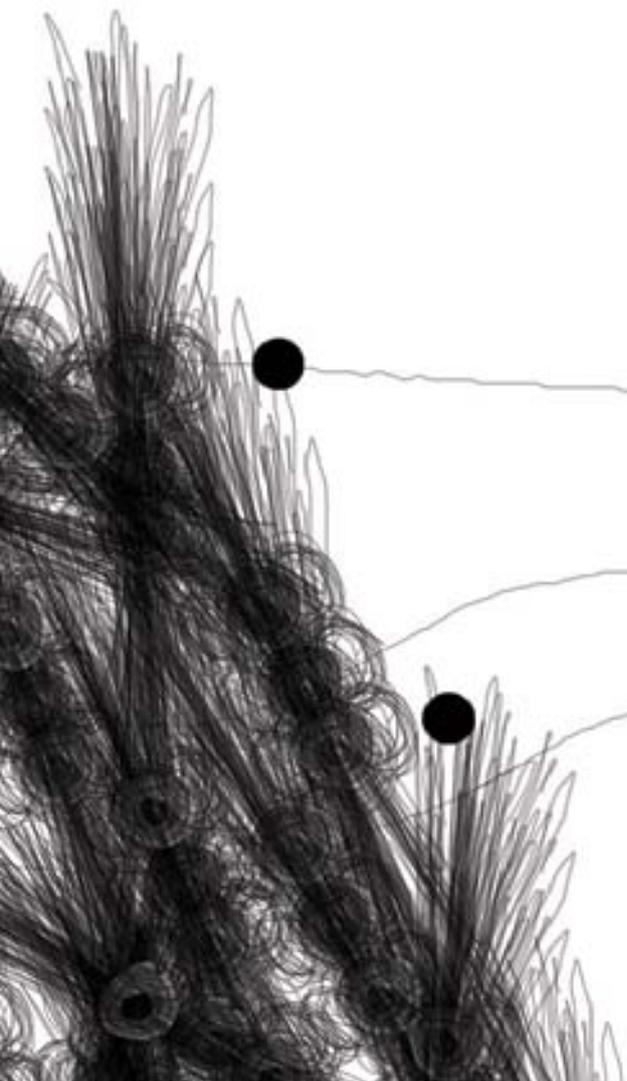
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Wageningen University, 2014
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Elisabeth Floris

However, you are all invited to play the game with us and exchange thoughts and ideas about possible further developments of our design research.

Chairgroup Landscape Architecture

Phone: +31317484056
Email: office.lar@wur.nl
www.lar.wur.nl
Postal address
Postbus 47
6700 BP, Wageningen

Hester Annema
Registration number: 890216015130
hesterannema@gmail.com

Elisabeth Floris
Registration number: 880710241060
elisabethfloris@gmail.com

Supervisors:

Ir. Rudi van Etteger
assistent professor at Wageningen University
Bruno Doedens
landscape architect and projectinitiator of SLeM
Examiners:
Ir. Annet Kempenaar
researcher at Landscape Architecture Group at Wageningen University

Prof. Dr. Ir. Adri van den Brink
Chair Landscape Architecture Wageningen University
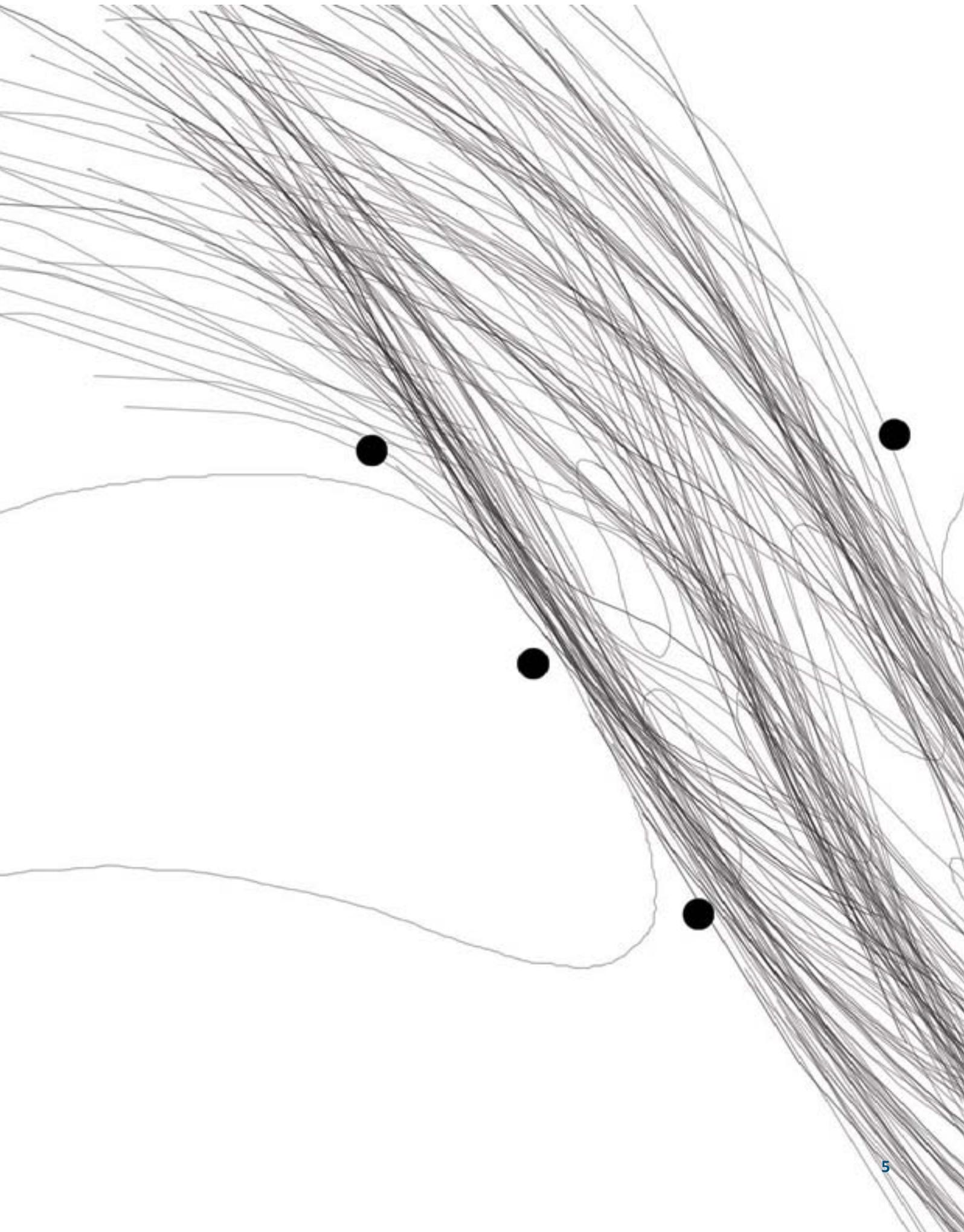
ACTORS OF A SCRIPT

There is a heavy wind blowing; particles of sands are rolling, jumping and gliding through the air to eventually hold stand again on the ground. It is this wind that is always present but always with different speeds, strengths and directions. The wind and the sand particles are main actors of the story that is being told, here on this beach. We also had an important role in this script. With our hands in the sand and our head in the wind we played. In an outlined playground we planted 1500 tiles in a given rhythm and pattern. This pattern of tiles was the starting point for a new landscape to develop. The tiles catch sand particles from the wind and give them a protected spot where the wind cannot easily take them away. Quickly differences in the sandy surface as sand pits and humps become visible and slowly primary dunes develop. This development is totally depending on the way the wind blows and therefore unpredictable. With this play between the tiles, the wind and the sand a new landscape appears, 'Pannenland'.

In the spring of 2013, a few weeks before the festival Oerol started we helped building the above-described project 'Pannenland' at the island of Terschelling. The idea behind and the organisation of this project came from a collaboration between landscape architect Bruno Doedens ('SLeM', 'Stichting Landscapstheater en Meer') and architect Machiel Spaan ('M3H' architects). The next spring a similar project called 'Wadland' was organised in which we also participated. With these projects we came for the first time in contact with the ideas behind cultural landscape development and idea from SLeM.

Cultural landscape development is in short, according to Bruno Doedens and Joop Mulder, the following: 'Cultural landscape development aims to raise and activate awareness - through the collaboration between scientists, students, artists, inhabitants and visitors - for landscape forming processes and with this increasing the understanding of dynamic processes and making the natural beauty and poetics as a result visible (Doedens et al., 2014). In the projects of SLeM the long-term processes of nature are integrated with the shorter development time of humans. Everyday phenomena within the landscape become suddenly special and create an interesting interplay between time and space and between social and natural energies. A play in which the process of transforming landscape is more important than the resulting image (Doedens et al., 2009) (SLeM, 2014). Our personal experiences during the participation of the projects and the vision of SLeM have been a source of inspiration through our research and design process.

We would like to thank our supervisors Rudi van Etteger and Bruno Doedens for sharing their knowledge with us, for their patience, their loyalty and for the inspirational meetings and conversations we had during our design research.

Special thanks go to the main nature manager of the State Forestry Service of the Kop van Schouwen, Camiel Bijersbergen. For sharing his knowledge with us and showing all the accessible and less accessible spots of the dune landscape.

picture 1: Result of Pannenland, 2013

picture 2: Building Wadland, 2014

SUMMARY

We see the landscape as a continuous changing interplay between natural and social energies in time and space. In former times there was a close co-evolution of social and natural energies that together gave form to the physical environment of our landscapes. Nowadays, the landscape development is part of the functionalism of our society, there is a focus on controlling social and natural processes, and thinking in fixed end-results. This is especially the case in large-scale landscape transformations which are often implemented and maintained by higher authorities. Humans that are daily passing through these landscapes are externalized from this process. This externalization of the process leads to little social understanding, a lack of social support and even social resistance against these transformations. This can lead to an estrangement of human of these landscapes.

In our design research we want to find a way in which people can be included in the actual realisation of large-scale landscape transformations. For this reason there will be an focus in our research on the potency of social energies within the realisation of large-scale landscape transformations. Introducing social actions and movements in the realisation phase of a landscape transformation requires a focus on the process site of landscape development. By involving social energies the aspects of uncertainty, coincidence and unpredictability should be embraced. This uncertainty, coincidence and unpredictability will than become an important part of the landscape transformation.

But how do we get people crazy enough to use their energy in order to actively transform the landscape? By letting them play! Literature learned us that it is in human nature to play and that being in play encounters a high degree of fun. By playing with each other, social connections are created and can contribute to the social bonding of the environment that is played in. Uncertainty, coincidence and unpredictability are important characteristics of this playing. However, if we seriously want to use human play to include them in the realisation of a landscape transformation, we should give playing a certain degree of structure. Games can, with their game rules, their playing field and their game goals provide structure to playing. That is why we see an important role for games as a way to include human in the large scale landscape operations. Since these games take place in the landscape we call the games: 'landscape games'.

In order to construct 'Landscape games' we chose a landscape site. The chosen site is the coastal dune landscape of the Kop van Schouwen which is located at the island Schouwen-Duiveland in the province of Zeeland. For the chosen case area is a desire to transform the landscape into another direction by the 'State forestry Service' and the 'Public Water Works department'. Besides, we saw the large amount of social energies on the island as a potential for our landscape games.

Currently the dune landscape is ecologically stabilized, the sandy dunes are is largely covered with vegetation. The desired landscape transformation is therefore to 'transform the entire dune landscape into a more open and dynamic dune landscape'. To reach this desired landscape transformation some landscape interventions have to be taken and landscape criteria have to be formulated to give structure to this process.

The interventions of the landscape transformation process will be executed by introducing different landscape games in a Game Strategy Handbook. In these games both human as nature will be in play within the landscape. This strategy offers the possibility to switch between different games in order to transform the landscape, it offers the opportunity to adapt to uncertainties and unpredictability's on both social and natural level. Besides, the individual landscape games also provide the possibility to change the characteristics of the game in order to adapt to uncertainties and unpredictability's. This will show new possibilities and perspectives.

We will illustrate in our design research a possible sequence of landscape games. This will give insight in a thinkable course of how an interplay between social and natural energies in both time and space, can transform the landscape into a desired direction. It is this interplay of social and natural energies that brings the dynamics into the landscape. The landscape will never come to an end result but will be in an ever changing interplay of social and natural energies. It will be a Landscape game with an open ending.....

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1. LANDSCAPE ACCORDING TO US

Landscape does not mean the same for everyone. The way we look at the landscape as a landscape architect largely determines the way we approach the landscape. This is why it is important that we first clarify what landscape means to us. Our personal view on the landscape is largely formed by our personal background: the Dutch landscape and culture in which we are born and raised and our educational background at the University of Wageningen.

landscape approach

During our bachelor and master in Landscape Architecture at the University of Wageningen we were thoroughly educated by the 'landscape approach' to analyse and design landscapes. This landscape approach treats the landscape as a substrate that is constantly changing (Koh, 2013). In other words, the landscape approach takes time, scale and process within the landscape into account. Beside this, it also includes the human experiences of these processes and how these experiences contribute to the human awareness of and their responses to the physical environment (Duchart, 2007) (Koh, 2013).

This landscape approach is the base for our perspective on landscapes. Many other landscape architects also see the importance of the changing and social aspect of landscapes. Our landscapes are not given, but made and remade; it is an inheritance that is continuously being recovered, cultivated, and projected towards new ends (Corner, 1999). As Marc Antrop (1998) describes the landscape is: 'a result of dynamic phenomena that are continuously changing'. The landscape in this sense is the physical representation of the continuously changing interaction between the phenomena of human occupation and natural processes (Antrop, 1998)(Duchhart, 2007) (Kerkstra & Vrijlandt, 1988). This illustrates that landscapes are not static but always evolving in which change is part of the landscape and thereby welcome. These theories form the fundament for our personal interpretation of the landscape.

interplay between social and natural energies

We started playing with these theories in order to determine and formulate our own idea of what a landscape is. According to us, a landscape can be seen as the dynamic interplay between energies that are present in our landscapes. These energies can be divided into social and natural energies. As social energies we see the individual and collective actions and movements of humans such as cycling, walking or cutting down a tree. These human actions are driven by a human ratio. Natural energies are rather forces than actions because they do not consist of a ratio and because they are driven by a natural law such as the law of gravity. Blowing wind, flowing water, growing plants and moving animals are examples of these natural energies.

Singular social and natural energies are in interplay with each other from time to time. They act and react on each other. An example of this is the social energy of building a dike influencing the natural energy of the movement of seawater. This interplay between social and natural energies changes in time and space and have different temporal physical representations, landscapes, as result. According to us the landscape is therefore rather a continuous changing process than a representation. In this same line speaks Ian McHarg (1969) about landscapes: *'a landscape is not static but always changing, and is therefore rather a process than an object. '* This is consistent with the philosophy of Willem Hartman (2007) who sees the landscape as a fluid system which is continuously changing and therefore rather be seen as a happening instead of an image.

landscape is:

a dynamic interplay between social and natural energies
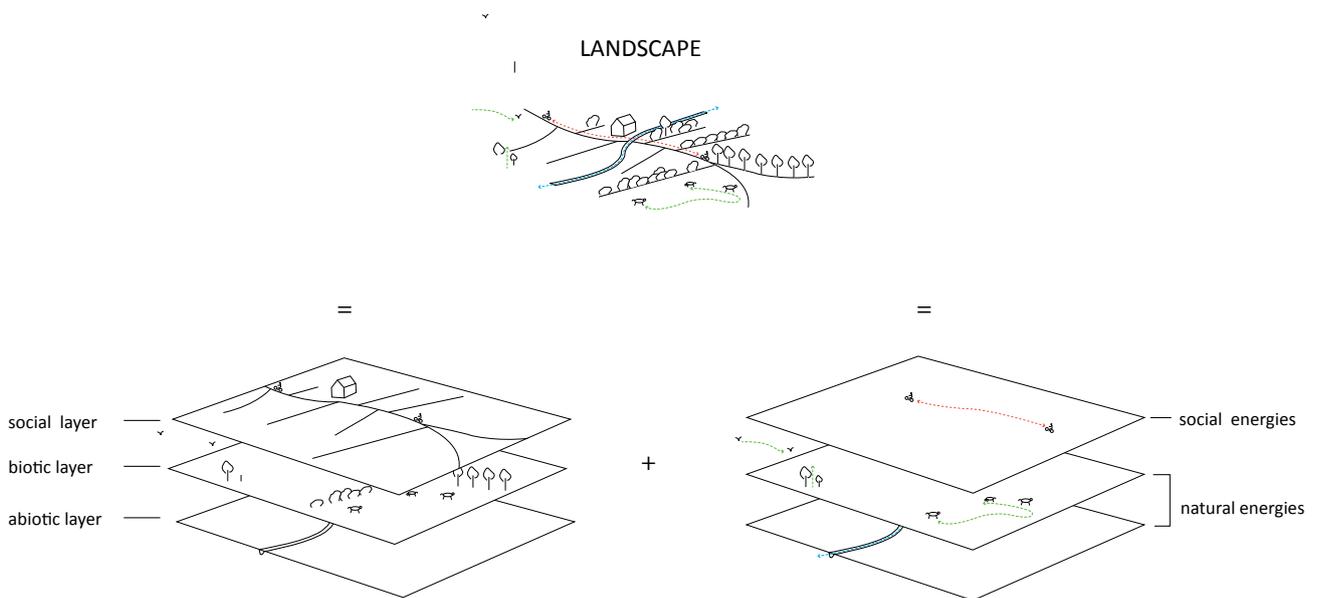
LANDSCAPE

Figure 1: how we see the landscape - based on layer approach based on Kerkstra and Vrijlandt (1988), left the original model, right our own addition to the original model

social and natural energies in play…?

picture 3: natural and social energies in play

2. INSTITUTIONALISATION OF THE LANDSCAPE

As stated in the previous chapter, the landscape is not static but dynamic through a continuing changing interplay between natural and social energies. Both the way human anticipates on the landscape as the natural energies changes over time. To get an idea about this changing interplay and the influences of this on the landscape we will give a short historical overview of the Dutch landscape development.

shifting balance between natural and social energies
Around a quarter of a million years ago the first humans walked through our Dutch landscapes. They lived of what nature offered them to eat by moving constantly from place to place. Such a way of live was only possible with a low population density. The influence of humans on its natural environment was small, but increased once the climate became warmer and the natural variety of the landscape became higher (Barends et al., 2005). In these times, the natural energies as moving water and wind, the growth of plants and the migration patterns of animals were leading for the behaviour and way of life of humans.

About 5000 years BC, the introduction of agriculture created a fundamental shift in our landscapes. People started to settle in permanent residences and became active in shaping and maintaining the landscape to create the landscape conditions in order to survive. Nature was being shaped and formed in order to meet the local demands of that specific time, out of necessity. There was a close co-evolution of social and natural energies that together gave form to the physical environment of our landscapes (Roncken et al., 2011). Humans were actively shaping the natural energies, which had a natural sense of bonding, care and responsibility for the landscape as result (Saito, 2007).

A better understanding of agricultural technologies caused in the early middle ages an increasing growth in population. There was a shift from natural to a monetary economy that made the society wealthier but also more complex. A major expansion of cultivated land took place. Around 1300, the majority of today's cities and villages were present, most rivers were embanked, peat lands cultivated and natural forests and swamps largely disappeared (Barends et al., 2005). Slowly it became visible that the influences human have on the landscape increased and by this cultural landscape were created.

emergence of institutional landscapes
Time continued, and after the Second World War new technological developments, a growth in population and an increasing globalisation changed our landscapes essentially. Policy objectives at both national and European level arose in order to shape the landscape to the demands of the socio-economic demands at that time (Barends et al., 2005). The spatial planning was mainly seen as equipment of the modern state to control and guide social processes. Rigid plans were implemented in order to give structure to coming trends and developments (Hartman, 2007). In the law of Spatial Planning in 1968 this whole elaborated edifice of comprehensive planning was legally founded. Gradually regions and even the whole country were considered to be a physical condition that should operate as efficient as possible in which social progress and economic developments should get there place wherever and whenever they needed. The landscape became part of the functionalism of our society. In this way of approaching the landscape there is a focus on controlling social and natural processes instead of using them, on functional thinking and fixing end-results (SLeM, 2009). This was and is still often the case in large-scale landscape operations in which life-supporting services have an important goal. Examples of this are the Delta Works and the later Room for the River projects that aim to protect the Netherlands against floods.

little support for large-scale landscape operations

Although many of these kind of large-scale landscape operations are of beneficial or even vital importance to human, there is little social understanding. Many of these plans are implemented and maintained by higher authorities and organizations like the 'State Forestry Service' and the 'Dutch Public Works department'. The vision and strategy on the transformation and maintenance of these landscapes are embedded in political issues of that moment, which can change every four years. And although they put a lot of energy and money to adapt to the political fluctuations there is little social understanding of these revisions (Beijersbergen, 2014). In other words, the spatial plans and the execution of them stand far from the ordinary people passing through and living in these landscapes. This lack of little social understanding may lead to a lack of social support for such kind of operations that now and then also leads to social resistance (Hartman, 2007). This can result in a continuously revision and change of spatial plans. According to us this can be seen as a waste of time, energy and money.

As observed by the Millennium Ecosystem Assessment of the United Nations (2005) the externalisation of humans in these landscapes results in an estrangement of human with these landscapes. By this, the so-called 'life-supporting landscapes' have become more and more external to the human within our society (Folke et al. 2011). This is not a positive finding since the landscape is an important factor for humans, not only for the provisioning of products, but also for the feeling of satisfaction, security, happiness and emotional attachment of human (Dam et al, 2008).

For this reason we think it is important that people will be more involved in large-scale landscape operations so that a better understanding, support and bonding will be generated.

aim:

involving people in large-scale transformation and management processes

3. SOCIALIZING THE LANDSCAPE

Although both scientists and practitioners widely agree on the need for involving humans within landscape development, there is still little known about how to do this (Turhout et al., 2010). Currently, social involvement is often seen as the democratic ability of human to have influence during the process of decision making and plan forming and does not include an active involvement during the transformation and maintenance of a plan. There is still little theoretical knowledge and practical examples of how humans can be involved within the realisation phase of a landscape transformation project. What we are after is to find a way in which people can be actively involved in the actual realisation and maintenance of large-scale landscape transformations. For this reason we dare ourselves to add more focus on the potency of social energies within landscape implementation processes.

another approach towards landscape design
The Netherlands is a densely populated country in which more than 16 million people live and move. In other words, much social energy is present which could be used to transform landscapes. We wonder ourselves why we do not make use of these social energies in order to transform and maintain our landscapes. By doing this people can give meaning to the landscape and the landscape could become loaded with memories (SLeM, 2009). But to realize this, another approach towards landscape design is needed. Nowadays many landscape plans are presented with a spatial image of the desired concept. The aim of these images is to give a desired end result as a mean of recognition and argument to convince (Hartman, 2007). But what will happen if we give more influence to social energies moving through our landscapes? Can we then, still deliver a desired end-result? And if not, what do we design than? This will be the main search of our thesis.

social energies as driving force
If you start thinking in terms of social processes and energies in relation to the landscape development, the process site of landscape development becomes more important than the final physical result. It requires an approach in which movements and energies are put more central instead of frames and functions. Currently already some social energies give accidently form to the physical representation of the landscape. Therefore often a multiple sequence of individual actions is needed. A good example of this is the evolution of elephant paths that slowly appears due to a multiple human search for the most logical routing. An example in which a mass of social energies changed the landscape is the day after a festival or a national celebration in which human leave their traces. Could this energy also be used to transform or maintain landscape in a desired direction? We see a high potential for social energies and their ability or potency to transform the landscape. During this research it became suddenly surprisingly illogical to us that the landscape development is under full authority of institutes and governmental organizations, which put a lot of energy in changing and maintaining landscapes, without using existing social energies. Why should we not make use of the energy human have?

including uncertainty and coincidence
While inserting social energies within landscape development uncertainty and coincidence should be embraced (Hartman, 2007) (SLeM, 2009). Social behaviour and actions are namely in a way uncertain since human are in a way unpredictable (Dijkum & Tombe, 1992).This uncertainty and coincidence will than become an important part of landscape development. Developments will than not solely be directed and steered from top to down but they will evolve by a multiplicity of individual actions. Landscape architects together with governmental institutions will become directors that have to keep an eye on the continuity and quality of the landscape process. This is what are going to test by our design research.

challenge:

using social energies to transform and maintain landscapes

picture 4: potential social energies

picture 5: potential social energies

picture 6: current patterns of social energies

4. INTRODUCING LANDSCAPE GAMES

In order to integrate social energies and processes in the implementation of landscape transformations there first has to be a deeper understanding of what humans in essential are and how their energies can be used.

human in play
During our literature study we found out that playing is an important part of human being. In his work 'Homo Ludens' the historian Johan Huizinga writes about the importance of playing for human (Huizinga, 1938). Huizinga describes that there is a duality in human being. At the one hand man can be seen as 'Homo-Faber', which represents the human urge and ability to construct, to create and to build. This aspect is widely embraced in our society; in fact you will be labelled as lazy and useless if you do not give substance to this human aspect. Also in landscape development processes this characteristic of human is well known since landscapes are continuously shaped and reshaped by people. At the other hand, Huizinga describes, human beings can be seen as 'Homo-Ludens', the playing human. According to Huizinga this playing is the generator and guardian of our cultures. By playing with each other and with nature human established culture.

Many heterogeneous activities within and aspects of human society are interwoven with a degree of playfulness. Language for example, can be seen as playing with the composition of letters and words (Huizinga, 1938). A child can play with a rattle, a musician plays music and you can playfully learn skills and gather knowledge (Buytendijk, 1932). Both Buytendijk as Huizinga state that play is also an important part of nature, or at least of how we perceive nature. Dogs can undisturbed play with a bone and horses jump and run through the fields. Also in non-living natural energies we label phenomena with 'play' or being 'playful'. In movements play can be observed, as the wind plays with the leaves of a tree and a ship can be narrated to the play of the waves (Huizinga, 1938) (Buytendijk, 1932). It is disputable whether these examples in nature and animals are really a play. What is certain is that the dynamics of these phenomena apparently possess characteristics that are similar to those of playing, so that we give a similar name to it. Looking at these playing aspects in both nature and culture teaches us that it is interwoven in our society.

importance of playing
What we can observe is that especially in the movements and actions of animals and children a playful attitude can be found (Buytendijk, 1932). In this play and playful attitude there is no goal to reach, no rules to break and there are no specific boundaries; just the act of being in play is of importance. Uncertainty, unpredictability and coincidence are important characteristics of playing. In this play a high degree of fun and kindness is being encountered (Buytendijk, 1932) (Huizinga, 1938). An example of this is a child playing with water and sand, discovering the world unconsciousness. It is remarkable to notice that adults seem to give less expression to this playful attitude and movement than children do. According to Martha Nussbaum adults lose the allowance to play when they become stuck in the constraints of the functionalism of our society (Nussbaum, 2014). The strains of the society make us forget how to play. In contrast to children, adults often do not consists of an undisturbed and unconstrained nature to play. An important aspect of playing is that when people play together social connections are created and provided and this can promote social bounding and community forming (Lippard,1997)(SLeM, 2009). Besides playing can contribute to the social bonding of the environment played in or the instrument played with (Huizinga, 1938). Last but not least playing also encounters a high degree of kindness and fun, which is an important aspect of human well-being (Buytendijk, 1932) (Huzinga, 1938). For these reasons we should take the' homo-ludens' just as serious as the 'homo-faber'.

human in play

play can be found in many aspect of society

playing =

an attitude, a playfulness, a way of being creative, of being open to possibilities and this all with a feeling of freedom

figure 2 : playing can be found in many aspects of society (Huizinga, 1938)

landscape games as a way to structure playing

We think, as already described, that playing is an important activity for people. Playing can make daily activities more fun. An initiative of the 'fun theory' of Volkswagen (2009) shows that something as simple as fun is the easiest way to change people's behaviour for the better. If we have the objective to give people a more important role in the development of landscapes why not doing this by letting them play?

As already described are uncertainty, unpredictability and coincidence important characteristics of playing. This makes it difficult to reach something else than having fun. If we serious want to use playing to include human in the development of landscapes we should give playing a certain degree of structure. In contrary to playing, games consist of specific game characteristics for example rules, goal(s) and a playing field (Salen & Zimmerman, 2004). In other words Games can, with their game rules, their playing field and their game goal(s) structure playing. In a game the coincidence, uncertainty and unpredictability that is present in our playing are more structured. However the essence of a game remains that there is a degree of uncertainty, chance and unpredictability since these are important elements for playing and human. You never know how a game is being played and what the final result will be (Salen&Zimmerman, 2004).

By searching for more recent research about playing and games, we found out that the role of playing and games within our current society is becoming more important. This is for example noticeable in the literature we found around the concept of 'Serious Gaming' (Knight et al., 2009). In the concept of 'serious gaming' game characteristics are being implemented in the organisation and functioning of businesses. Serious Gaming is also implemented in educational programs in order to enhance skills, knowledge and understanding of children and adults (Knight et al., 2009). This shows that there is already some knowledge and research about games and playing at various levels within our society.

That is why we see an important role for games as a way to include human in the large scale landscape operations. Since these games take place in the landscape we call the games: 'landscape games'.

picture 7: Fun theory of Volkswagen

games have the **power** to make annoying or boring activities **fun**!

5. RESEARCH STRUCTURE

research questions

Based on our problem statement and challenge we formulated the following main design research question:

In what way can games between natural and social energies playfully transform the Kop van Schouwen into a more dynamic dune landscape?

From this main question we established the following sub-questions:

analysing games (chapter 6)
• What is the nature and significance of playing for people?
• What roles can games play in our society?
• What are the principles of games?

analysing the landscape (chapter 8)
• Which transformation and management interventions are required to realize the desired landscape transformation?
• Which for the game deployable natural and social energies are present at the Kop van Schouwen and how can they be characterised?

methodology

Our research could be roughly divided into the main methods analysing games, analysing the landscape and designing which were strongly interconnected (see figure 2). As can be seen in figure 1 these methods consisted of different sub-methods and delivered different products. We translated the gathered knowledge from both the landscape analysis as the game analysis into design principles which we used in the designing part of this research. Beside, a more intuitive way of designing in which we discovered our own feelings, memories and beliefs was an important input for our end product as well (see Appendix). The results of these methods can be found in the different chapters of this thesis.

main research question:

In what way can games between natural and social energies playfully transform the Kop van Schouwen into a more dynamic dune landscape?

CHALLENGE

involving social energies in large scale landscape transformation and management processen

ANALYSING GAMES
non place specific
research for design

DESIGNING
both non place as place specific
research through designing

ANALYSING THE LANDSCAPE
place specific
research for design

main methods:
studying literature
+
analysing games

supplementary:
playing ourselves
+
observing people playing
+
taking survey's

PLAY DEISGN PRINCIPLES

designing landscape games
+
intuitive designing

LANDSCAPE DESIGN PRINCIPLES

studying literature and policy documents
+
interviewing
+
analysing the landscape
through the eyes of a game
(field and map analysis)

products

(landscape) game principle model

end products

landscape game design
for the tansformation and management
processes of the dune area
of the Kop van Schouwen
+
answers on the research questions

products

landscape analysis
through the glasses of a game
+
overview of the desired landscape
transformation and management
interventions of the Kop van Schouwen

REFLECTION, EVALUATION AND CONCLUSIONS

Figure 3: Methodology

6. PLAYING AND GAME ANALYSIS

DEFNITION AND HISTORY OF GAMES

Many literature about games and with this many definitions of games can be found. However, these definitions always exclude things that people accept and include things that people reject as being games (Elias, et al. 2012). This indicates that it is really hard or even impossible to make a complete definition of games. Our aim is therefore not to find or to formulate the most complete definition of games but to formulate our definition of games, in order to illustrate how we use the term game in our research. To us a game is: "a framework for playing ". This framework consists of clear rules and a clear goal which gives structure to playing. This definition is inspired on the definition of games of Katie Salen and Eric Zimmerman: "a system in which players engage in an artificial conflict, defined by rules that results in a quantifiable outcome (p.80,2004)." We made the definition a little bit broader because we did not want to exclude a large part of more structured forms of playing. So the games do not necessarily need to have a quantifiable outcome. However, our definition excludes playing without any kind of structure such as the free play of children but includes sports. The difference between playing and games is that most forms of playing are less organized and controlled than games. Playing is always a characteristic of games, games are being played (Salen and Zimmerman, 2004).

By our game analysis we also formulated what, according to us, the most important principles of games are:
• participants play in freedom
• games are both fun as serious
• participants are equivalent

Without these principles a game is not a game. When the participants are forced to play a game, it will not be experienced as a game. One of the most important reasons of playing games is to experience pleasure. However, the participants have to play seriously in order to fully play the game (Huizinga, 1938). Imagine playing a game in which you are really doing your best but one of your opponents is not playing serious at all. His or her behaviour will definitely call for irritation. At last, to us one of the most important fundamental principles is that the participants are equivalent. Rules should be similar for all players otherwise the disadvantaged players are not willing to play (Buytendijk, 1932) (Huizinga, 1938).

Thanks to the fact that playing is in the nature of human, games have a very long history. As far as our sources can reach, games can be found in many different forms and in many different cultures. Asian countries evidences that tug-of-war contests were part of ceremonies in prehistoric times and the oldest evidences of ancient Olympic games in the western world date from 950 BC. Many games we play nowadays have developed throughout history like many sports and board games but also many videogames have their origin in very old analogue games. Now and then new games are created but they often have similarities with older games (Elias, et al., 2012) (Huizinga, 1938).

a game =

"a framework for playing", this framework consists of clear rules and a clear goal which give structure to playing

picture 8: Historical Print of Children Games

LANDSCAPE GAME DESIGN

Although games exist already for a very long time the discipline of 'game design' has a much shorter history than the field of inquiry. This makes that we still do not exactly know what games are. Katie Salen and Eric Zimmerman (2004) take with their book Rules of Games; Game Design Fundamentals a first serious step in this field of inquiry and the writers George Skaff Elias, Richard Garfield and K. Rober Gutschera follow them with the book Characteristics of Games. These books give a good insight in what the characteristics of games are and what game design entails.

Salen and Zimmerman describe the activity of game design as "the process by which a game designer creates a game, to be encountered by a player, from which meaningful play emerges" (p.80, 2004). As a game designer you create a system in which players have to make choices and take actions. These choices and actions range from how and when, to moving your body and to what strategy you will follow. According to Salen and Zimmerman the play is meaningful when "every taken action or decision results in a change affecting the overall system of a game (p.33, 2004)." This means for example, that when a soccer player kicks the ball or runs to the other side of the field that his actions are influencing the course of the match. If the actions do not influence the course of the game, the design can be labelled as not being successful. Beside this, the corse of a game is also determined by the game framework. As stated earlier, a game must consist of game rules and a goal, these give structure to the playing. Imagine a soccer game without rules and without a goal to reach. The players will probably cross the field as animals and touch the ball wherever they can. As a game designer you give meaning and direction to these actions by designing game rules and a game goal. Game rules describe how the participants and the game interact with each other (Salen and Zimmerman, 2004). The game goal can range from achieving or creating something to winning the game. It is really important to communicate the structure of a game well to the players. Players should now what the effects are of their actions and how a goal can be reached.

Meaningful play does not emerge solely from the framework of games but also from the way the players interact with the game, with each other and what the cultural context is (Salen and Zimmerman, 2014). Different players will play and experience the same game differently. That is why you as a game designer always have to keep in mind who your target group is. And even if you know the target group, you can never influence entirely how the game will be experienced.

We introduce a totally different game within this field, namely a landscape game. Landscape games in the way we see them is something new and there are therefore no prescribed instructions about how to design landscape games. We think that landscape games do have many similarities with other forms of games such as board games, outdoor games and sports.

According to Salen and Zimmerman games are either open or closed systems. Whether a system is open or closed depends on the relationship between the system (game) and its context. An open system "receives matter and energy from its environment and gives matter and energy to its environment" a closed system has "no interchange with its environment" (p.53., 2004). According to us, is a landscape game always an open systems since it is influenced by the social and natural energies passing by and moving through the game space. These social and natural energies are in a way predictable but for a large part unpredictable. As a landscape game designer you have to take therefore uncertainties of unpredictability into account.

picture 9: example of a tiny game in the landscape: 'Did I miss something? by Jeppe Hein -
When people takes seats on the bench the fountain starts spouting water

LANDSCAPE GAME CHARACTERISTICS

Game characteristics are "a general group of features that give a high-level description of the sort a game is (p.3, Elias, et al. 2012)." These features give a good indication of the character of a game. To be able to design a game it is important to know what these characteristics are because these are the things you can design. Different combinations of game characteristics evoke different game principles and experiences and this is what you want to influence as a game designer. The characteristics we describe are mainly based on personal experience and analysis and the characteristics as described in the book Characteristics of Games (Elias, et al. 2012). From this book we picked the characteristics from which we think they are important in this specific design process. This means that we excluded the characteristics which we found irrelevant for landscape games and the characteristics which go in our opinion too far in detail.

This resulted in the following list of landscape game characteristics:

number of players
Games can be categorized by the number of players they are designed for. Games can be zero-player (the players are not really playing but only spectating), one-player, two-player, multiplayer (more than two players) and massively multiplayer ("the number of people a given player interacts with is much smaller than the number of people playing") (p.23-p.24, Elias, et al. 2012)."

one-player   two-player   multi-player   massively multiplayer

social interactivity
Games vary widely in their social interactivity. This social interactivity depends on the number of players but also and especially on the relation different players have within the game. Players can have the goal to achieve a personal record such as in a running competition or players can really compete against each other such is the case in many board games. Players can also be divided over teams. In this the number of sides changes. When for example ten players are dived in three teams the game exists of three sides. Social interactions take place within the teams as direct or strategic team work and between the teams as competition.

competition   direct teamwork   strategic teamwork

spectators

A game is or is not spectated by an audience. A game is nice to watch when you understand how the game works. In general games with competition are more favourable to be watched than games without competition because of the human drama that comes with it. The presence of an audience often increases the willing of the players to play well.

audience
friendly

play length

The time a game takes differs per game. Play length can be fixed or non-fixed. When the time is non-fixed the actually game-length is also depending on the people who play the game. A game can exists of one or of different game rounds and some games are more likely to be played in series than others.

fixed   non-fixed   game rounds   no game
                                                       rounds

playing field

The playing field may be fixed or non-fixed. The playing field is fixed when the players have to play the game within clear borders and non-fixed when the players are in a certain degree free in where they play the game.

fixed   non-fixed

amount of choices

A game can be seen as a series of choices to be made. The more choices players can make the more flexible, surprisingly and complex a game is.

many   little
choices   choices

outcome

There are two types of outcomes namely winning or losing the game (and in some cases playing draw) and achieving a personal or team result. When there is no competition the goal can for example be to play as good as possible, to improve the required skills or to create something beautiful.

you can win or
lose the game

achieving a
personal/
team goal

luck and skills

The more luck is present in a game the more uncertain and random the outcome is, the more for example a beginner has the chance to beat an experienced player. The more skills are required for a game, the more difficult a game is and the more influence players have themselves on the outcome. Sports often have very little luck. The required skills can be physical or mental. Luck and skill are not the opposite of each other but they can exist with and without each other.

luck is
important

mental skills
are required

physical skills
are required

fiction

Fiction plays a role in a game when the elements or the framework of a game represent the elements of a fictive world. The largest piece of chess for example represents a king.

fiction plays
an important
role

beauty of

Games can be experienced as being beautiful in different ways. The game characteristics which influences this aesthetic enjoyment are: the game elements, the act of being in play and the result.

the game
elements

being in
play

the result

education
A game characteristic which is not explicitly mentioned in the book Characteristics of Games (Elias, et al. 2012) is the role of education. Some games have a more important role in learning something to the players than others.

eduction plays
an important
role

organisation
Another important characteristic that is not mentioned in the above described book but we think is important is the way the game is organised. A game can be directed by game leaders such as an referee or a game can be organized just by the players themselves.

independent   organized

tools
The tools used in landscape games vary from mechanical analogue, non-mechanical analogue to digital tools.

mechanical   non-   digital
                mechanical

interaction with natural energies
Characteristic to landscape games is the interaction between players and natural energies. These natural energies can differ from the movement of wind or water to the movement, the presence of the sun, the movement of animals to the growth of vegetation.

wind   water   sun   vegetation   animals

LANDSCAPE GAME PRINCIPLE MODEL

landscape game principles

In order to design a landscape game, knowledge of the essential game principles, the fundamentals, is required. These principles emerged from personal playing and analysing different existing games. By these methods we distinguished some principles that were always present. We call these principles 'essential' since they are present in all the games. It is important to know that the game principles are mainly formed and influenced by the presence of specific 'game characteristics' of a game. The essential game principles are the following: tension, challenge, surprise, beauty, flexibility, clarity and social interaction. Since we had not enough time to analyse all different types of games we do not exclude that our results need some adaptation. We tried to keep this risk as small as possible in the game analysis by exploring a broad spectrum of games. We studied games that varied from strategic games to games of chance, individual games to family game and from board games to outside games. By this, an exploration of many different games is done which gave us insight in the shared principles of these games. In addition to this we compared and adapted our analysis with the findings we found in our literature study. The degree of presence of a game principle differs per game. This degree of presence of a principle can sometimes be too little and sometimes too much. Per game principle we will explain in what way the degree of presence can influence the experience of a game. Here follows a short description of the eight principles:

tension
Tension in games can be experienced for different reasons. One of the most important reasons is the uncertainty of reaching intermediate goals and or the main goal (see also the game characteristic goal). Tension peaks are often related to goal-reaching moments. Tension can also come from the unpredictability that arises from the framework of the game. The higher the chance factor, the higher the unpredictability. Tension can also be experienced because a player has to expose itself in interaction with other players or because the game is spectated by an audience. The more serious someone plays a game the more tension he/she will experience. Tension will be experienced as nicely until a certain degree of presence. A high degree of this tension becomes annoying and stressful (Elias, et al. 2012) (Huizinga, 1938).

challenge
Games offer the ability to test and to improve the for the game required skills of the people being in play. These skills can be both physical as mental (see also the game characteristic skills).
Challenge will be experienced as nicely when there is a right balance between the required skills of the game and the skills the players have. Players can be proud when they play the game well and when they are able to improve their skills. When there is an unbalance between the required skills and the skills the players have, the game will be experienced as boring or too complex (Elias, et al. 2012) (Huizinga, 1938).

surprise
People who are playing a game can be surprised in many different ways. They may be surprised by unexpected things happening which are caused by the game itself. The higher the element of luck is present (see game characteristic luck) the more unpredictable a game is. The more choices the players have to make the higher the chance that someone is surprised by the actions someone takes (see game characteristic amount of choices).

Surprise can also be caused by the players themselves. A player can be surprised by his/her own skills or the skills of someone else and since human are unpredictable a player can also be surprised by the choices of others or even by its own choices. When surprise is part of a game it will deliver a high variety of game experiences every time a game is being played. It is therefore more likely that a game will be played more often by the same players when a certain degree of surprise is characteristic for the game. Although it is very personal, in general people do like to be surprised sometimes. When everything becomes expectable, a situation tempts to be experienced as being boring. If the game becomes to unexpected, a chaotic situation emerges which is in general not experienced as nice (Salen and Zimmerman, 2004).

beauty

Players can experience aesthetic enjoyment for different reasons. People may find the game elements such as a set of wooden chess pieces or the ordering of the playing field beautiful. Players can also be touched by the beauty of the act of being in play such as the movement or the balance of the human body. As we experienced ourselves in the landscape games "Pannenland" and "Wadland" the result of the game can also be very beautiful so can be the result of other types of games such as for example the game of playing music. When a game is too much focused on beauty it can overshadow the other game goals (Elias, et al. 2012) (Huizinga, 1938). For example, if a game piece is to beautiful, you might be afraid to break the piece this will influences the way your play a game.

flexibility

A game can also be seen as "a series of choices" to be made (p. 121, Elias, et al., 2012) (see game characteristic the amount of choices). The more choices the players can make within a game, the more flexible a game is. The more choices there are the more strategic the players have to play. Often players experience it as being positive to have the possibility to make individual choices. If the number of choices is too low the game is boring from a strategic point of view. However when the amount of possibilities is too high a game will be experiences as chaotic and complex (Elias, et al., 2012).

clarity

A game is clear when the players know how to play the game and unclear when they do not. Game rules (see also game characteristic game rules) give structure to a game by prescribing the players what actions they can take, what the outcome of these various actions can be and how an accumulation of actions can lead to the achievement of the game goals. These game rules can be communicated on a paper or by for example the judges of a game but they can also be communicated by the structure, the framework, of the game itself. When the game rules are communicated in a understandable way the players will probably experience the game as being clear. It should be mentioned that it is not true that the more rules there are present the more clear a game is. A game with many rules can also be really complex or chaotic. A really structured game can become really boring when everything that will happen becomes predictable and or when structure limits the freedom of players. Structure is than suppressing the flexibility and the surprise of the game (Elias et al., 2012) (Salen and Zimmerman, 2004).

social interaction
Games vary widely in their social interactivity which illustrates that social interactions in games can take place in various ways. Players can play together in a team or they can play against each other as opponents. The degree of this interactivity differs per game. In a soccer game for example many social interactions takes place both within the teams as between the opponent teams. When a soccer players takes an action he influences the game course of all the other players. This is really different to games where each player is trying to achieve its own personal record as for example the case is in a running competition. Here the runners have little influence on each other's outcome. Although they might influence each other's motivation by running fast or slow in most game settings they are not allowed to struggle each other. Social interactions takes also place between the audience (when present) and the players. An audience can give vocal and physical support to the players in the field which can influence the course of the game. Social interactions can become annoying when players aren't able to play their own game. For example when they have to discuss al their choices within their team, when they are all the time held up by competing players or when the presence of an audience stresses the players (Elias, et al., 2012) (Salen and Zimmerman, 2004).

interaction with natural energies
By analysing the landscape "games" Pannenland and Wadland but also more classic outdoor games such as Hide-and-Seek and Playing Marbles we discovered that there is another really important principle characteristic for games played outside. This is the ninth essential principle which is called interaction with natural energies and which is only present in games that are played outside 'open games' . These games are always under the influence of natural energies present in and/or moving through the game space. These natural energies can range from the movement of wind or water, the movement of animals , growth of vegetation to the presence of the sun. These natural energies can bring uncertainty and surprise into the game since you cannot fully control their presence and influence on the game. The degree the game and the players interact with these natural energies differs per game. When natural energies are too much present such as a heavy rainfall or storm the interaction can become annoying, it can be impossible or too dangerous to play the game.

imagination
Games are another reality. With their own rules and freedoms they are other worlds outside the daily real world. With this, games offer the opportunity to have the feeling of losing space and time and to play someone or something else. This feeling can be supported by different game characteristics. It is for example easier to be fully absorbed in a game existing of different rounds which take place within a limited time frame than in a game which proceeds slowly (see game characteristic game length). So it is in games in which many choices have to be made. The game materials can also contribute to the feeling of being in another world by responding to the imagination of the participants. In many videogames but also in for example the celebration of carnival people can play being someone or something else. Many people experience the feeling of being in another world as positive because in this way they can escape temporary from their daily life with all its expectations (Roovers, 2014). However it is important that the game remains a surrealistic world, when a player really loses reality he/she can become really sad or angry when he/she loses the game since the game becomes than the reality. When this is the case a tipping point is reached (Elias, et al., 2012) (Roovers, 2014) (Salen and Zimmerman, 2004).

landscape game principles model

As described earlier, the presence of a game principle differs per game and can be present in different degrees. This degree of presence of a principle can sometimes be too little and sometimes too much. This determines also the degree in which the different principles are being experienced during a game. The experience of these principles differs per player and per game. To make this visible we created the following model:

We placed as you can see the different landscape game principles along the radial dividers of a radar chart. The concentric dividers indicate from the origin of the radar chart towards the outside an increasing degree of the experience of the presence of the principles (see figure 4). After a game is being played the players of the game can fill in to what degree they experienced the different principles of the game. The area between the dotted concentric dividers indicates the area where according to a players a principle was too much present in the game.

0 = too little present
1 = very little present
2 = little present
3= averge present

4 = much present
5 = very much present
6= too much present
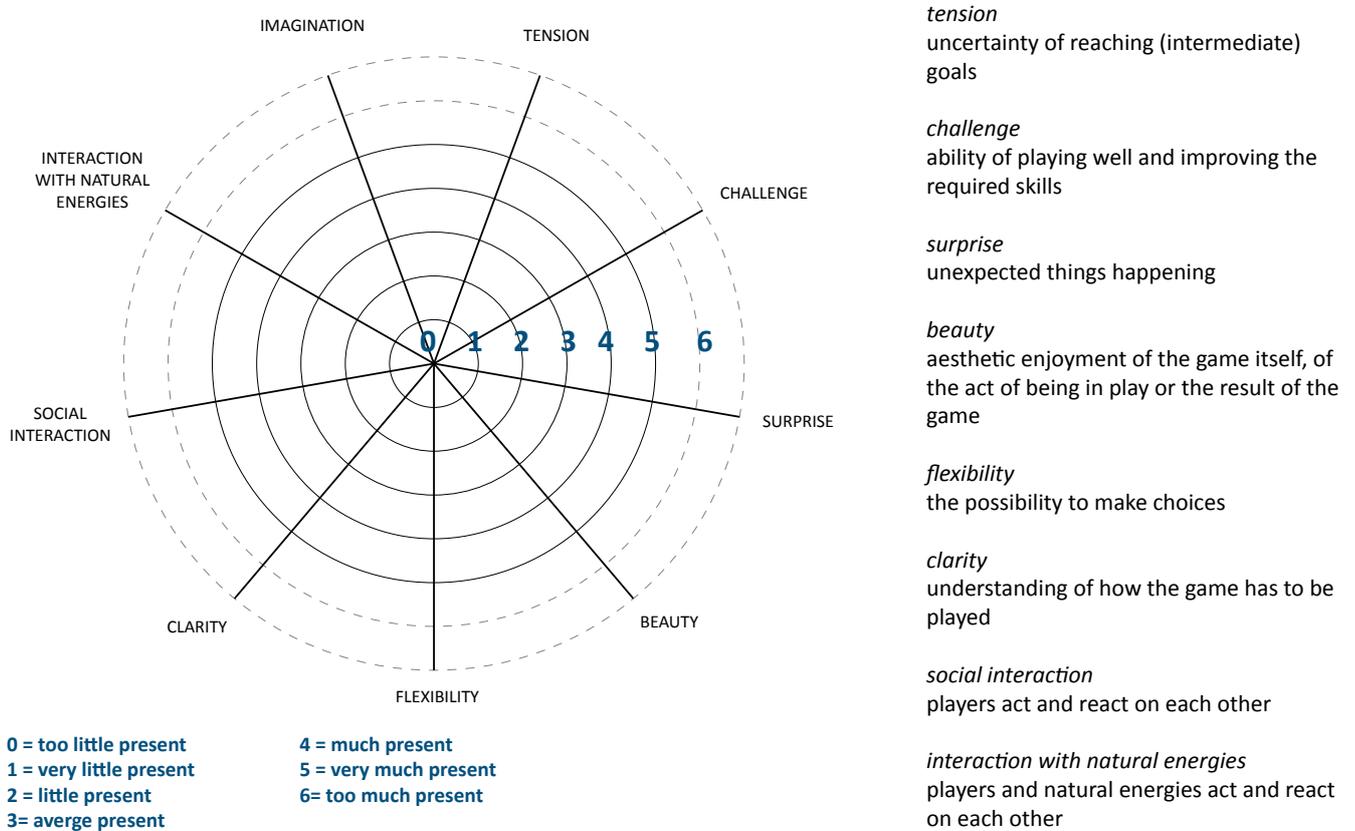
figure 4: experienced game principle model

tension
uncertainty of reaching (intermediate) goals

challenge
ability of playing well and improving the required skills

surprise
unexpected things happening

beauty
aesthetic enjoyment of the game itself, of the act of being in play or the result of the game

flexibility
the possibility to make choices

clarity
understanding of how the game has to be played

social interaction
players act and react on each other

interaction with natural energies
players and natural energies act and react on each other

imagination
being in another world

Filling in this model is really personal which means that different persons will fill in the model differently. We will illustrate this with an example. After an evening of playing the board game Risk we asked the different players to fill in the model (see figure 5).
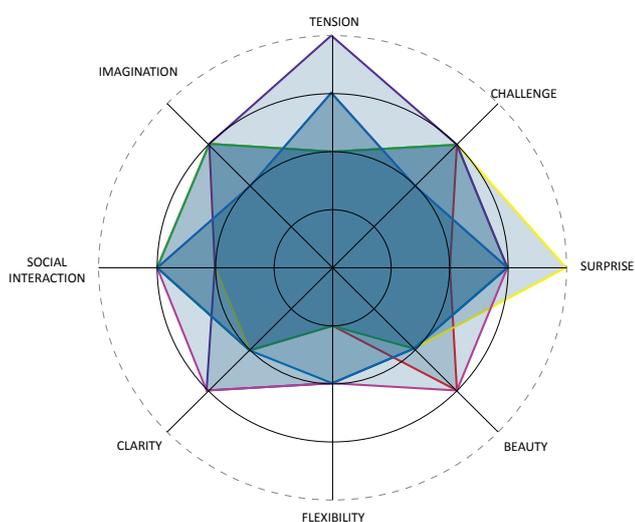
figure 5: game principle model of the boardgame Risk filled in by different persons after playing the game - every color stands for a different person

Because risk is not a landscape game we excluded the principle interaction with natural energies in these models. Since the model was still in progress the amount of concentric dividers was different than the final model. Four players gave, as you can see, the principle tension the degree of moderate, two the degree of high and one the degree of too high. This illustrates that how many tension players experience during a game differs per person. The more serious a person plays the game and the more he/she can lose space and time the more tension he/she will feel. This tension is also highly depending on the course of the game for example how many players remain in the running to win the game. Remember a game you have played many times. It will be a matter of course that the tension you experienced playing these games differed time after time. The other principles are personal and game depending as well. Beauty for example is really personal since not all people find the same beautiful and how beautiful for example the movement of pulling a tug in a Tug-of-War game is depends per game.

Although the degree of experience is personal and varies per moment that the game is being played some principles are more likely to be experienced in the one game than in the other game. Therefore, for every game a potential landscape game principle model could be filled in (see figure 6).

tension
uncertainty of reaching (intermediate) goals

challenge
ability of playing well and improving the required skills

surprise
unexpected things happening

beauty
aesthetic enjoyment of the game itself, of the act of being in play or the result of the game

flexibility
the possibility to make choices

clarity
understanding of how the game has to be played

social interaction
players act and react on each other

interaction with natural energies
players and natural energies act and react on each other

imagination
being in another world

0 = absent
1 = very low degree
2 = low degree
3= averge degree
4 = high degree
5 = very high degree

figure 6: potential game principle model

It has to be mentioned that filling in this model is subjective but it gives a good idea of which principles are important in what landscape game. This gives a good impression of what the character of the game is. This model can be used to analyse and to compare landscape game designs. In our game analysis we filled in this model for different games. Here we will show you the result of the analysis of the outside games Jumping Rope, Playing Marbles and Tug-of-War and the landscape games Pannenland (SleM, 2013) and Wadland (SleM, 2014). We chose to illustrate these examples because these type of games have the most similarities with the landscape games we will design.

As can be seen in the game principle models the character of the games Jumping Rope, Playing Marbles and Tug-of-War are quite similar to each other (see figure 7). All games have to be played by two or more persons. In the games Playing Marbles and Tug-of-War there is a real competition between the opponent teams and this makes the games. This is different in the game Jumping Rope since the goal of this game is not to win the game but to achieve a personal and team goal: staying as long as possible in the game by not jumping on the rope. Tension however does not have the lowest degree in Jumping Rope but in Playing Marbles since this game is played relatively slowly by which the players also less easily will have the feeling of losing space and time so the imagination also scores the lowest in this game. It is thinkable that this game sometimes will be experienced as being boring, this depends of course on who is in play. All the games are quite easy to understand which gives a high score on clarity and this probably declares why the games are played for many centuries by many people. Flexibility scores highest in Jumping Rope because in this game the players can choose if and how they insert different tricks while jumping (e.g. turning, jumping on one leg, jumping two times before the rope is down, etc.). This gives players the ability to be creative. Beauty plays in all games an important role, by Playing Marbles in the form of beautiful playing tools, the marbles, and in the other two games by the act of being in play, in different degrees the power, the rhythm and balance of the human body.
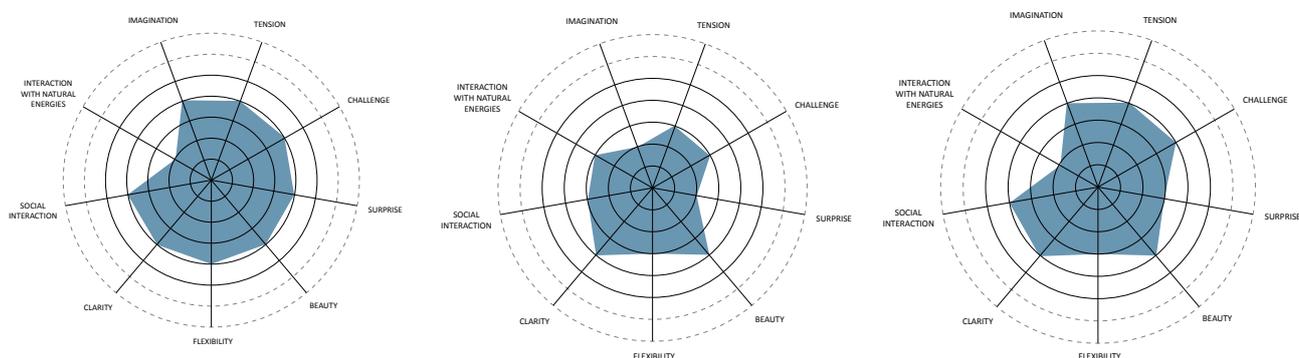
*figure 7: game potential principle models -
from left to right: jumping rope, playing marbles, tug-of-war*

In the springs of 2013 and 2014 we participated in the landscape games Wadland and Pannenland organized by a cooperation between landscape architect Bruno Doedens from SLeM and architect Machiel Spaan. By participating ourselves we were able to fill in for both games an experienced game principle model (see figure 8)

In comparison with the analysed outer games these landscape games score much higher on the interaction with natural energies. This is probably due to the fact the landscape games are designed with this as an aim in mind. In Pannenland this interaction mainly took place with the wind where in Wadland the interaction with the sea also was really important. We could only play this game when the water was low enough. According to us this interaction with natural energies provides a really unique experience which we would also like develop in our landscape designs. When participating the landscape games we both really had the feeling of being in another world. This can be linked to the fact that the games played out in another world outside our daily world, the island of Terschelling, but also to the fact that we both experienced a high degree of challenge and surprise. When we started playing the games we were really not sure if we would be able to reach the main game goal of building a framework wherein a new landscape could develop. The differences between the two games lays in our experience mainly in the clarity of and the flexibility within the game rules. Where in Pannenland the to use techniques were precisely determined in Waddenland there was more space to create and to use your own techniques. Therefore the flexibility in Waddenland gets a higher score which we experienced as being pleasant. Beauty plays in both games a really important role and especially the beauty of the end result where we had worked towards. According to us the goal of making something beautiful was an important reason to not give up the game while playing.
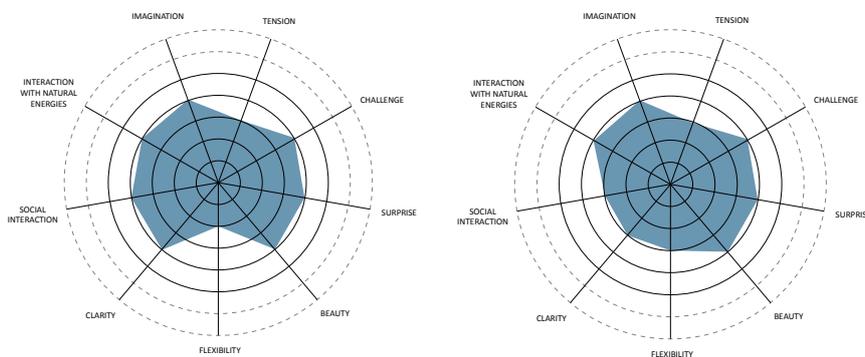
figure 8: game experienced principle models -
from left to right: Pannenland, Wadland

7. THE KOP VAN SCHOUWEN

In order to test if and how games can transform a landscape into a desirable direction we chose to make a design for a case area. The chosen site is the coastal dune landscape of the Kop van Schouwen which is located at the island Schouwen-Duiveland in the province of Zeeland. We chose this case area because the governmental organisations State Forestry Service and the Public Water Works Department have the desire to manage this landscape in a different way and therefore some substantial interventions have to be taken. Besides, we saw a high potential for using the social energies that are present at the island under the highly from each other differing tourists and inhabitants groups.
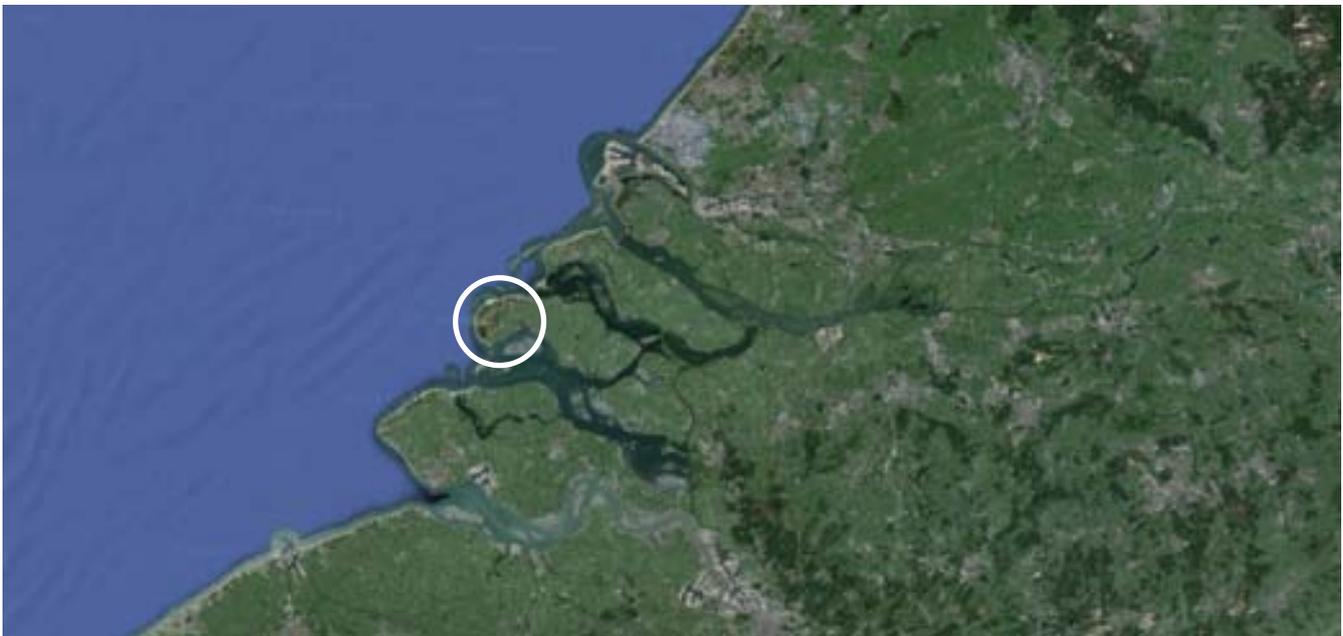
picture 10: location case area: Kop can Schouwe, Schouwen-Duiveland, Zeeland , the Netherlands

a short history: interplay of energies
The formation of the island started in the Holocene period, after the first ice age. In this first period of the development of the island the sea and the wind could play with the sands in freedom and by this the landscape formed (see map Schouwen-Duiveland 3000 BC). The wind played with the water and the sands and while the sea level stabilized the sea deposited a large amount of sand so that a beach plain and barrier were formed (see map Schouwen-Duiveland 600 BC) (Wesselingh, 2014). Behind the coastal barrier a shallow lagoon was formed in which the influence of the sea was limited. Peat got the chance to develop without interruptions of the sea and the wind. The declining influence of the sea, stimulated human occupation and cultivation of the peat landscape. However, the sea level started rising and together with the drainage of the peat landscape a subsidence of peat was taking place. Through this interplay the sea water could penetrate into the land (Beenhakker, 2007). With the help of a changing climate the sea and the wind got grip on the landscape and build the young dunes. Presumably there were heavy storms causing coastal erosion (see figure 9).

Once the weather conditions became calmer, a lot of sand was deposited on the land. There where the sea dropped the sand, the playing of the wind started and it blew the sands further land inwards where it formed small embryonic dunes. These were covered by beach grass and could in this way slowly evolve into high dunes. The predominant western wind moved the dunes further land inwards. Around 1600 the young dunes were more or less formed (Wesseling, 2014). Through time human influence on the land increased and decreased the influence of the dynamic wind and sea on the island. This became especially visible after the destructive storm of 1953, where except for the dune landscape, the whole island, including humans, were taken by the power of the sea. For this reason the Delta Works were designed to control the sea and to decrease her destructive power on the land. It was eventually for human safety that the power of the sea was put offside. The will to control the power of the sea and the wind increased in time. By human interventions the wind and sea can no longer play in freedom with the sand and they lose their forming influence on the island. The influence of human hand increased enormously (Province of Zeeland, 2014). By these measurements of human and control of the natural energies, the dune landscape is nowadays relatively static and densely vegetated with beach grasses, shrubs and trees. By this the gradual natural gradient which is so characteristic for the dune landscape slowly disappeared.

holoceen	600 BC	1400
1570	1953	nowadays
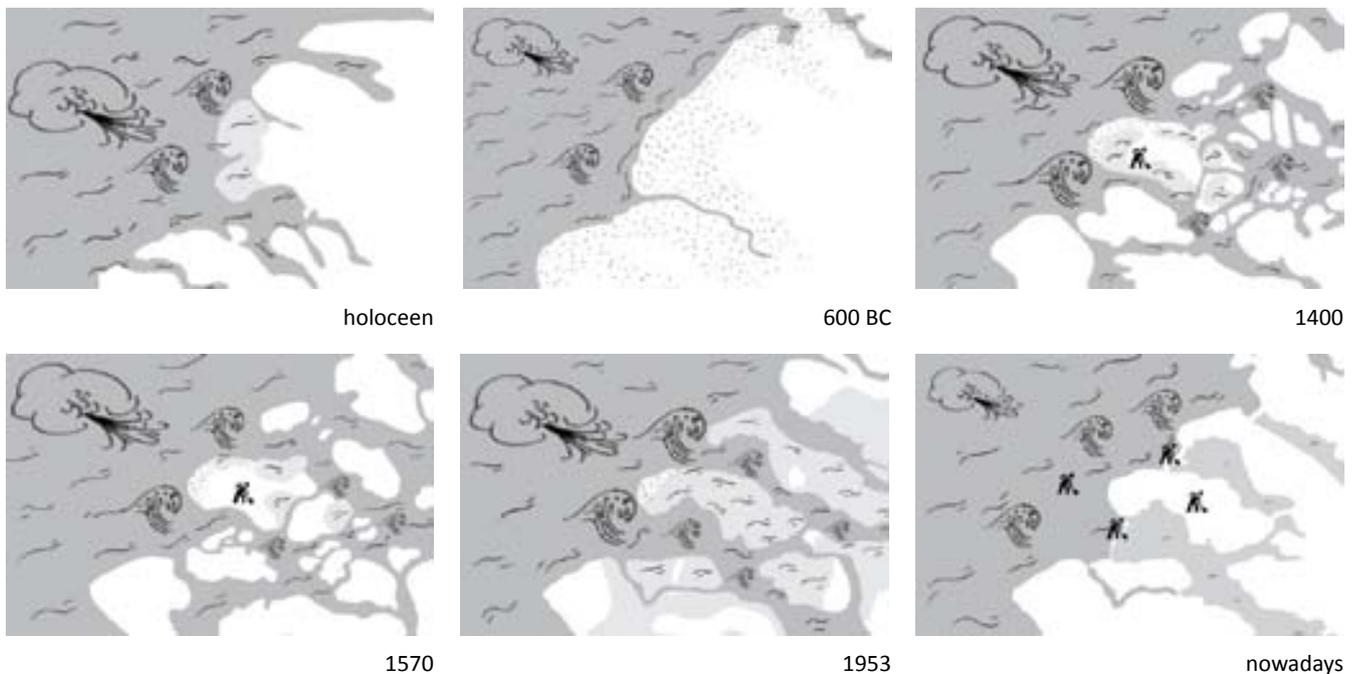
figure 9: development of the coastal landscape of Zeeland through history

pictures 11-13: fixed coastline and densely vegetated dunes

institutionalisation of the Kop van Schouwen
Almost the whole dune landscape of the Kop van Schouwen falls under the authority of the State Forestry Service. Except for the small nature reserve, the 'Zeepe Duinen' which belongs to the nature organisation 'Natuurmonumenten' and the beach and the first dune ridge which are in hands of the water board 'Dutch Water Works department' (Province of Zeeland, 2014). This means that the active operations and maintenance for the areas are implemented by these nature and governmental organisations. The management strategies for the coastal area are dependent of governmental visions. These visions are formulated according to the political issues at a national but also at European levels since many parts of the Kop van Schouwen are part of the Nature-2000 areas From a European perspective the naturally present ecology and natural gradients of the Kop van Schouwen are very unique and therefore important to preserve and strengthen(Ministerie van Economische Zaken, 2000). Once in the ten years or sometimes even once in the four years both national and European visions can change. From these visions management strategies are formed for the different nature and governmental managers of the area (Beijersbergen, 2014). However, it is almost impossible for these organisations to go along with the rapid political changes. Landscape development requires much more time to develop than only a few years. Therefore we can state that the shorter development time of politics is not in line with the long term processes of nature (Beijersbergen, 2014) (Hartman, 2007).

desired landscape transformation
Because the coastal landscape of Schouwen-Duiveland requires more than four years to transform into a desired direction a more long-term vision for the Kop van Schouwen has been developed. This vision entails a Regional Strategic Plan which covers a time period of about 30 years (PAS, 2014). As already stated above the dune landscape is nowadays a relatively static landscape and densely vegetated with beach grasses, shrubs and trees and the natural gradient of the dune landscape disappeared. According to the PAS (Programmatic Approach Nitrogen), is the current ecological stabilization of the dune landscape an enemy of the ecological and spatial diversity of the landscape Therefore is the desire of the RSP to 'transform the entire dune landscape into a more open and dynamic dune landscape' (PAS, 2014). In this plan the natural gradients that are so characteristic for the dune landscape will be rehabilitated. This entails that the gradual vegetation and landscape gradient from sea to the inland has to be strengthened (see section of natural dune landscape). Various reasons can be given towards the importance of this desired landscape transformation. The desired landscape transformation of the PAS meets with their strategy the European criteria as stated in the Nature-2000. At the Kop van Schouwen many nitrogen sensitive habitat types were originally present. However, the whole area, and thus all habitat types are nowadays negatively influenced by atmospheric deposition. This atmospheric deposition includes both acidification and eutrophication. In particular the grey or also called young dunes are sensitive to acidification by nitrogen deposition. These grey dunes lay between the by beach grass vegetated first dune ridge and the further inland situated low dynamic old dunes. The restoration of these habitat type of the grey dunes are of high importance for the national and European ecology (PAS, 2014). The desired landscape transformation of the PAS is also in line with the vision of the 'Dutch Water Works Department' (2014) in which they aspire a 'Dynamic Coastal Management'. The concept is seen as a sustainable strategy to increase the human safety and the natural values of the coast. The concept aims a management in which sea and wind have the space to move sand. Therefore the coastal base can grow with the rising sea level and create a more natural landscape with a greater diversity of habitats, flora and fauna (Rijkswaterstaat, 2014).

complications in the current execution

In order to transform the landscape into the desired direction, a lot of interventions have to be taken at different sites at the Kop van Schouwen. Because of their size it will cost a lot of time, energy and money to execute them (PAS, 2014). Since January 2014 there is no more funding available from the Dutch Economic Affairs. This means that the State Forestry Service is undergoing a time in which they concur financial difficulties. This could complicate a full realisation of the landscape transformation in the future (Beijersbergen, 2014., Berendsen, 2014). Besides this difficulty, there is also social resistance towards the maintenance of the landscape transformation. This became clear to us during an interview with one of the nature managers of the State Forestry Service. At the visitors centre of the Boswachterij Westerschouwen (Forestry Westerschouwen) there are regularly information sessions where recreants, visitors and stakeholders are informed about the strategies and management measures of the 'State Forestry Service'. Nevertheless, at the moment of executing the management measures there is little social support and even social resistance for the taken measures. The taken measures are currently executed by the managers themselves with the use of large machines. According to the main manager of the State Forestry Service Camiel Beijersbergen the beautiful influence of the management measures becomes visible after a period of time. It is remarkable that from this moment the managers receive social appreciation for the executed measures (Beijersbergen, 2014). According to us, this lack of social support could be formed due to externalisation of humans within the actual execution process. What we perceived during our excursion walk is that the machines who are executing the management measures are leaving often destructive and rough patterns in the landscape. We can imagine that this does not enhance the social support for the execution of these measures.

picture 14: patterns and destructive power of machines - tree logging maintenance at the Kop van Schouwen

potency of tourists and inhabitants

The island of Schouwen-Duiveland is not very densely populated, there are approximately 35000 inhabitants (Gemeente Schouwen-Duiveland, 2013). The Kop van Schouwen is at periodic base high densely populated since it is an attractive recreation area for Dutch, German and Belgium people (toeristisch trendrapport Zeeland, 2012). This means that at both periodic base and regular base there are social energies present at the Kop van Schouwen. The forest 'Boswachterij Westerschouwen' has every year approximately one million visitors that mostly come to hike and to cycle during the spring and autumn. During the summer many people are moving through this forest in order to go to the beach (Beijersbergen, 2014). All these visitors together bring a lot of social energy to the coastal dune landscape on both periodic and regular bases. The social energies are really strongly present and spatially very densely concentrated (see figure 10).

For this reason the think that the social energies that are passing through the Kop van Schouwen can together transform the landscape into a desired direction. The introduction of landscape games, in which there is an interplay between the existing social-and natural energies the landscape can gradually transform into a desired direction. By this we hope that the managers of the area will win social support for the landscape transformation processes.
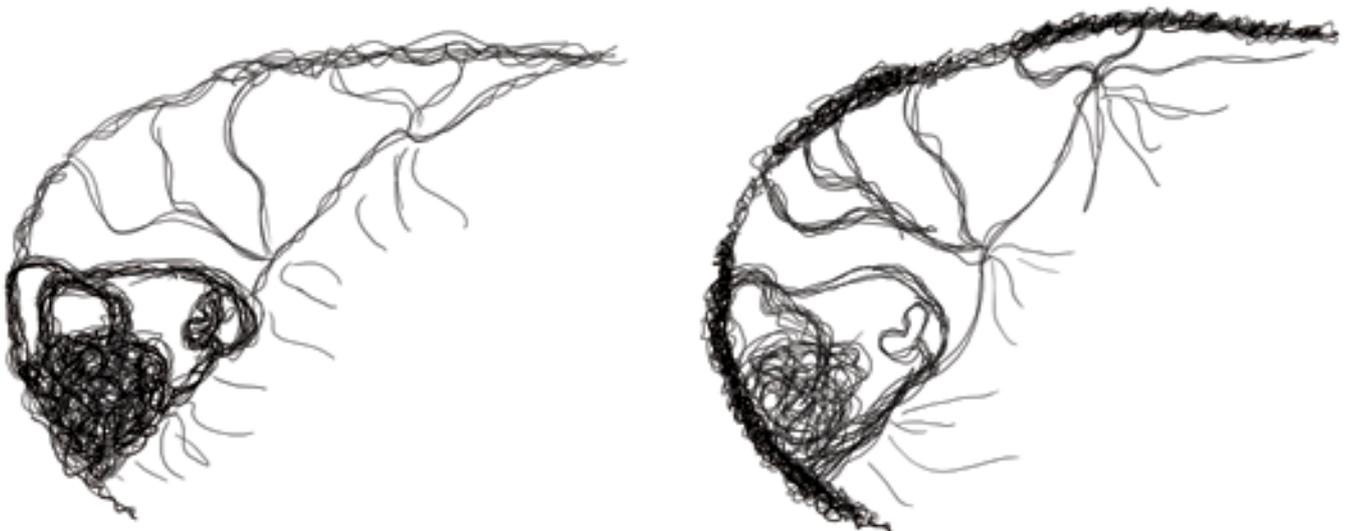
figure 10: presence of social energies throughout the year - left: spring and autumn, right: summer

presence of tourists throughout the year
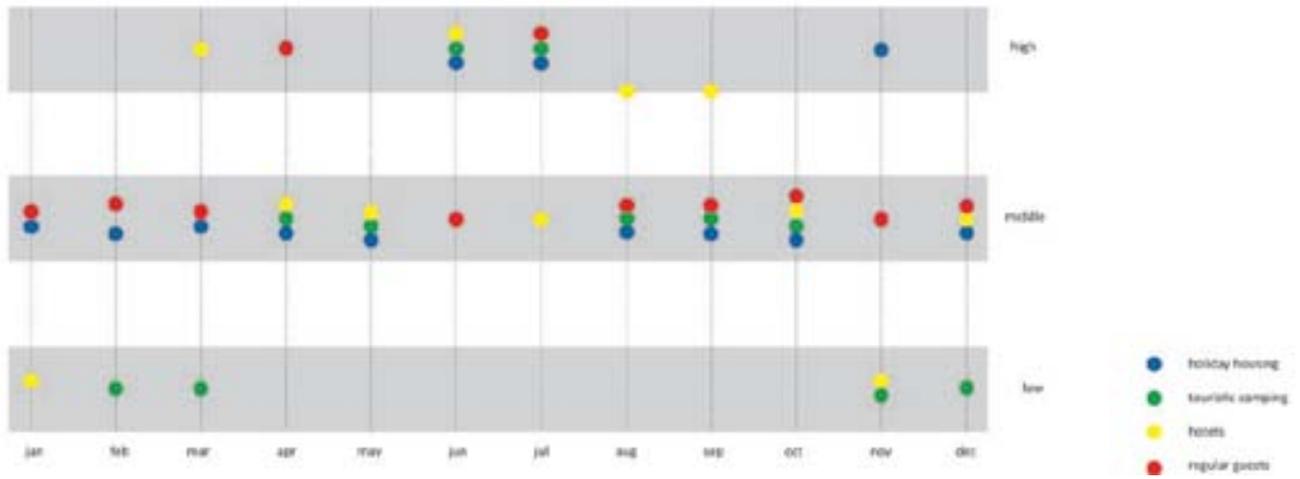
figure 11: presence of tourists throughout the year, based on (source: toeristisch trendrapport Zeeland, 2012)

pictures 15-17: machine patterns, social patterns and natural patterns in the dune landscape

8. LANDSCAPE ANALYSIS

The desired landscape transformation as proposed by the PAS measures (2014) of the Kop van Schouwen will be mainly focused on the coast, the first dune ridge and the grey dunes. What we discovered is that approximately one million individual social energies are moving through the dune landscape almost every year. Since we want to attach to the desired landscape transformation and we want to make use of the present social energies; we will focus us in our design research on the abovementioned landscapes. Here are the natural energies of the wind and sea also mostly present (Westhoff et al., 1970).

THE CURRENT LANDSCAPE GRADIENT

According to the PAS measures the natural gradient that is so characteristic for the dune landscape has to be rehabilitated (PAS, 2014). This indicates that the current landscape does not represent this natural landscape gradient. Therefore we will first analyse what the current landscape gradient is, subsequently we will define what landscape interventions have to be taken and what landscape criteria are important by executing this interventions in order to come closer to the desired landscape transformation.
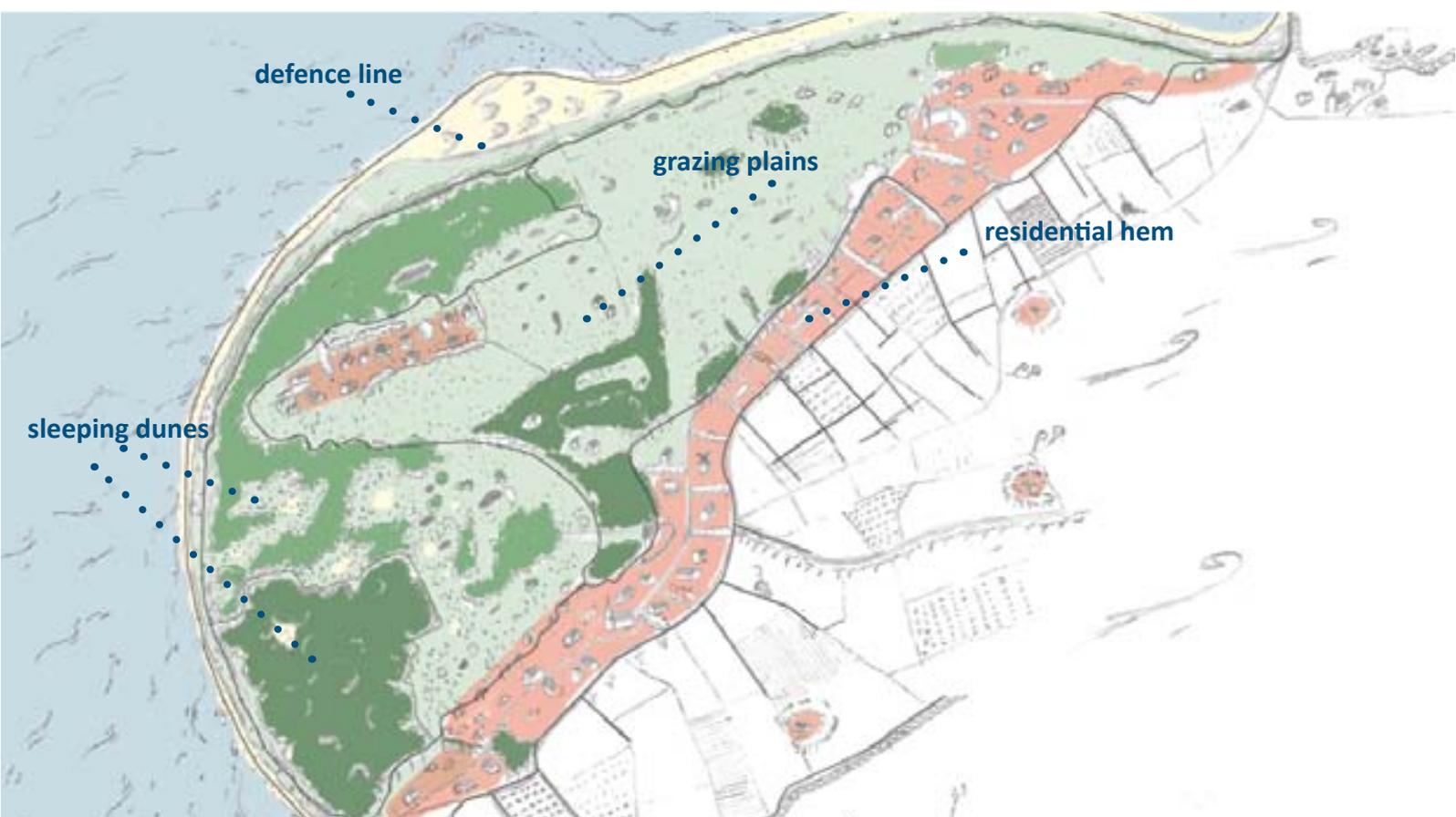
figure 12: landscape through the glasses of a landscape game: the landscape types

sands   beach grass   shrubs, wet dune valleys and trees

sea   beach with embryonic dunes   dune ridge   grey dunes and old dune massive
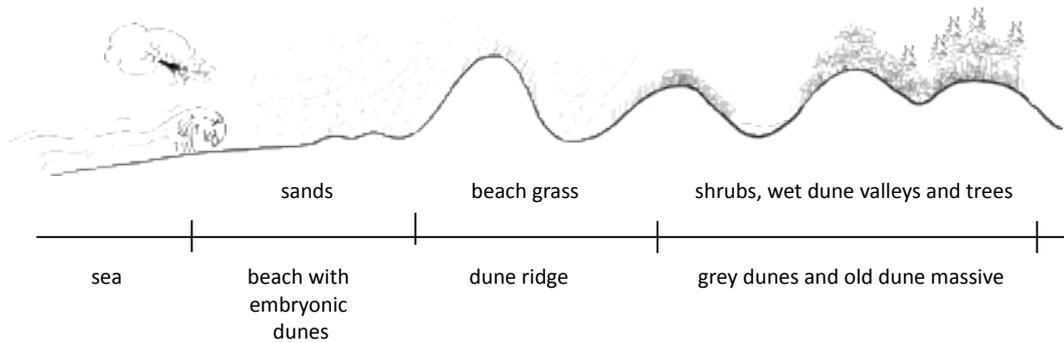
figure 13: section of natural dune landscape based on the literature of Westhoff et al. (1970)

	defence line	sleeping dunes
landscape characteristics and processes	• tide and waves of the sea • blowing of the wind • sandy beach • embryonal dunes • high primary dunes	• passive young sand drift landscape • grassy and shrubby hills • dune afforestation • partly already realized: active young sand drift landscape
social energies	INFLUENTIAL: • Dutch Public Works Department (Rijkswaterstaat) NON INFLUENTIAL: • Inhabitants and tourists	INFLUENTIAL: • State Forestry Service • Natuurmonumenten NON INFLUENTIAL: • inhabitants and tourists
natural energies	• sea • wind	• wind • sweat seapage water
landscape elements	natural elements: • sand • shells • beach grass *(Ammophila arenaria)* social elements: • cribs	natural elements: • beach grass • shrubs: sea-bucktorn *(Hippophae rhamnoides)*, creeping willow *(Salix repens)*, black cherry *(Prunus serotina)* • forest: Austrian pine *(Pinus nigra subsp. nigra)* and Corsican pine *(Pinus nigra supsp. laricio)* • cattle: shetland ponies social elements: • recreation paths
names of the areas (PAS-measurements)	• Verklikkerstrand • Duinen Westenschouwen • Duinen Renesse	• Meeuwenduinen • Boswachterij Westerschouwen • Zeepeduinen • Verklikkerduinen • Zouten en Zoeten Haard
soil type	• calcareous sandy soils	• calcarous sandy soils • chalck-free sandy soils
groundwater level	• III • VII • VIII	• III • VI • VII • VIII

figure 14: landscape through the glasses of a landscape game: the landscape types

picture 18: a new breakthrough at the Kop van Schouwen

picture 19: dune valley at the Kop van Schouwen

The Defence Line

This landscape type consists of the beach and the first dune ridge which forms the barrier between land and sea. It is the landscape zone which is characterized by the tides and waves of the sea, the blowing of the wind and the high amount of sand. The natural energies of the wind and sea build together the sandy dunes. These dunes were in the past more dynamic than that they are nowadays. Processes of accretion and erosion gave day to day form to the dunes (Westhoff et al.1970). Currently this landscape is in hands of the Dutch Water Works Department who are in charge of the management of the landscape. In time they planted beach grass in the dunes in order to stabilize the dunes. This disabled the wind to play with sand particles and to shift the sand further inland. The construction of cribs in the sea made the coastline more static. The government decided in 1990 to maintain the coastline with artificial sand replenishment. This used sand comes from the deep North Sea and is artificially replenished in the shallow sea in front of the coast. This surplus of sand prevents coastal erosion and keeps the sand stock of the coast stable (Rijkswaterstaat, 2014). It is therefore that the interplay between the natural energies of the wind and the sea together with the social energies of the Dutch Water Works Department are influencing the physical representation of the landscape. The non-influencing, but also present social energies are the energies of the recreants who are walking, running or swimming in this area. These are mostly present in summer time (toeristisch trendrapport Zeeland, 2012).

The Sleeping Dunes

This landscape type is a passive young sand drift landscape which is originally formed by the energies of wind and sea that were in play with the sand. A changing interplay between these natural energies resulted in a very relief rich landscape in which sand was shifted from place to place. This created a diverse landscape in which wet valleys and dry dune tops were characteristic. In time the role of the nature organisations increased in this landscape by planting grasses, shrubs and pine trees. Nowadays the results of these measures are still visible. The sleeping dunes are covered by a thick blanket of vegetation. This landscape was in the past less densely vegetated and the existing surfaces of bare sand were exposed to the influences of the wind. The current pine forest and shrubs are covering almost the whole dune landscape from the first dune ridge to the eastern border of the dune landscape. In a natural situation, these trees and shrubs would not be so highly present. This is mainly because the distance to the sea is indirectly influencing the vegetation development because it is roughly correlated with age of the sand dunes and thus the degree of decalcification, presence of wind and salt spray. The closer to the sea the higher the degree of calcification, wind and salt spray. These are all conditions that are not beneficial for the development of a forest (Westhoff et al., 1970). This pine forest was planted between 1920 and 1940 by the State Forestry Service under the order of the Germands in order to provide construction material. Nowadays the forest lost its producing function. The forest with mainly pine trees does not represent a high natural value. However the forest does represent a dense recreation network for several target groups; runners, horse riders, hikers. Mainly in the spring, summer and autumn a lot of visitors are passing through this forest without having a direct influence on the physical presentation of the landscape (Beijersbergen, 2014).

Conlusions from the landscape analysis

The total landscape gradient of the landscape is shown in the map and the section of the landscape types. This conceptual representation of the current landscape gradient is visualized by our own observations and findings. The coastline is very fixated by beach grasses and sand replenishment and forms a very small playing field of the natural energies of the wind and sea. Behind the dunes a densely vegetated shrub and pine tree landscape arises, this is according to Westhoff (1970) not in line with the natural gradient of a dune landscape. Beside this we also noticed that the management is in hands of the State Forestry Service and Dutch Water Works department and that the current present social energies of recreants are not being used.

dominant energies:

large contractors

ordinary people

pine forest

shrubs and grasses

grazers

wind

sea
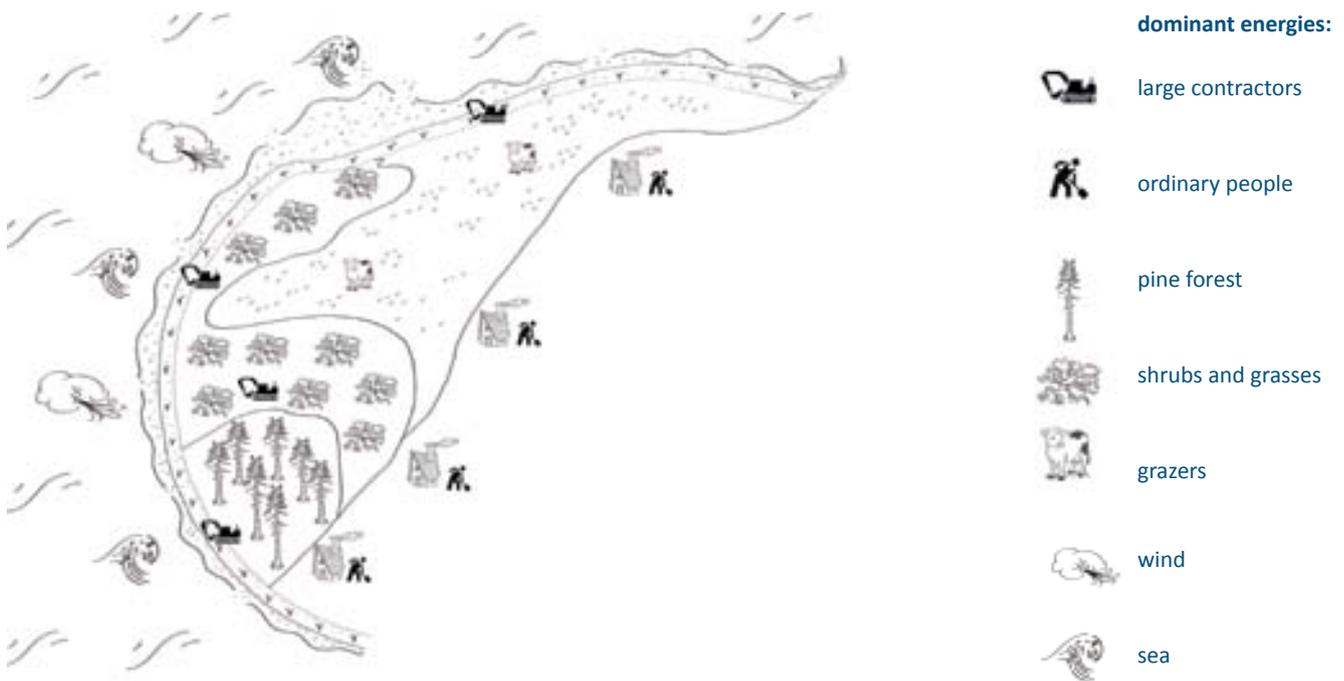
figure 16: conceptual representation of the current landscape: fixated coastline and dunes

TO A NATURAL LANDSCAPE GRADIENT

As stated by the PAS measures (2014) the recovering of a natural dune gradient with a restoration of the for the area characteristics habitat types is desired. Therefore a decrease of the nitrogen content of the soil and a functional recovery of the landscape system is required. A natural process which can provide this functional recovery and with that a decrease of the nitrogen content of the soil is the dynamic of shifting sand. Sand shifts under the power of the natural energies of wind and water and there is therefore a desire to strengthen their influences. When these natural energies have more space to move through the dune area they will bring sand and with that salt and calcareous material from the coast far into the dunes. With this the coastal dune landscape will transform from a static into a dynamic landscape (Province of Zeeland, 2014). As stated earlier a more gradual natural gradient of the dune landscape consists of a from west to east oriented sequence of sea, beach, sandy dunes with humid and arid parts, to grasslands, shrubs and eventually a forest (Westhoff et al. 1970).

In order to bring more dynamics in the coastal landscape the governmental organisations propose the following main interventions:

1.   stopping the sand replenishment in front of the coast;
2.   creating gaps in the first dune line;
3.   removing shrubs and trees at different places in the dunes.

The first intervention has already been implemented by the Public Works Department who started this as an experiment in order to stimulate coastal erosion and accretion and by which more sand will become available for sand shift. With our landscape games we would like to contribute to the other two interventions; creating breakthroughs and removing shrubs and trees. This dynamic will result in a greater diversity of habitats, flora and fauna and an increasing safety of human against the rising sea level (Province of Zeeland, 2014)(Rijkswaterstaat, 2013).

Because a lot of energy is required to realize this large landscape transformation we would like to make use of as much as possible social energies present at the Kop van Schouwen. Therefore we would like to involve both tourists as inhabitants in our landscape games.The playing field of both social as natural energies will be enlarged and together they will transform the landscape in the desired direction.

dominant energies:

- large contractors
- ordinary people
- pine forest
- shrubs and grasses
- grazers
- wind
- sea
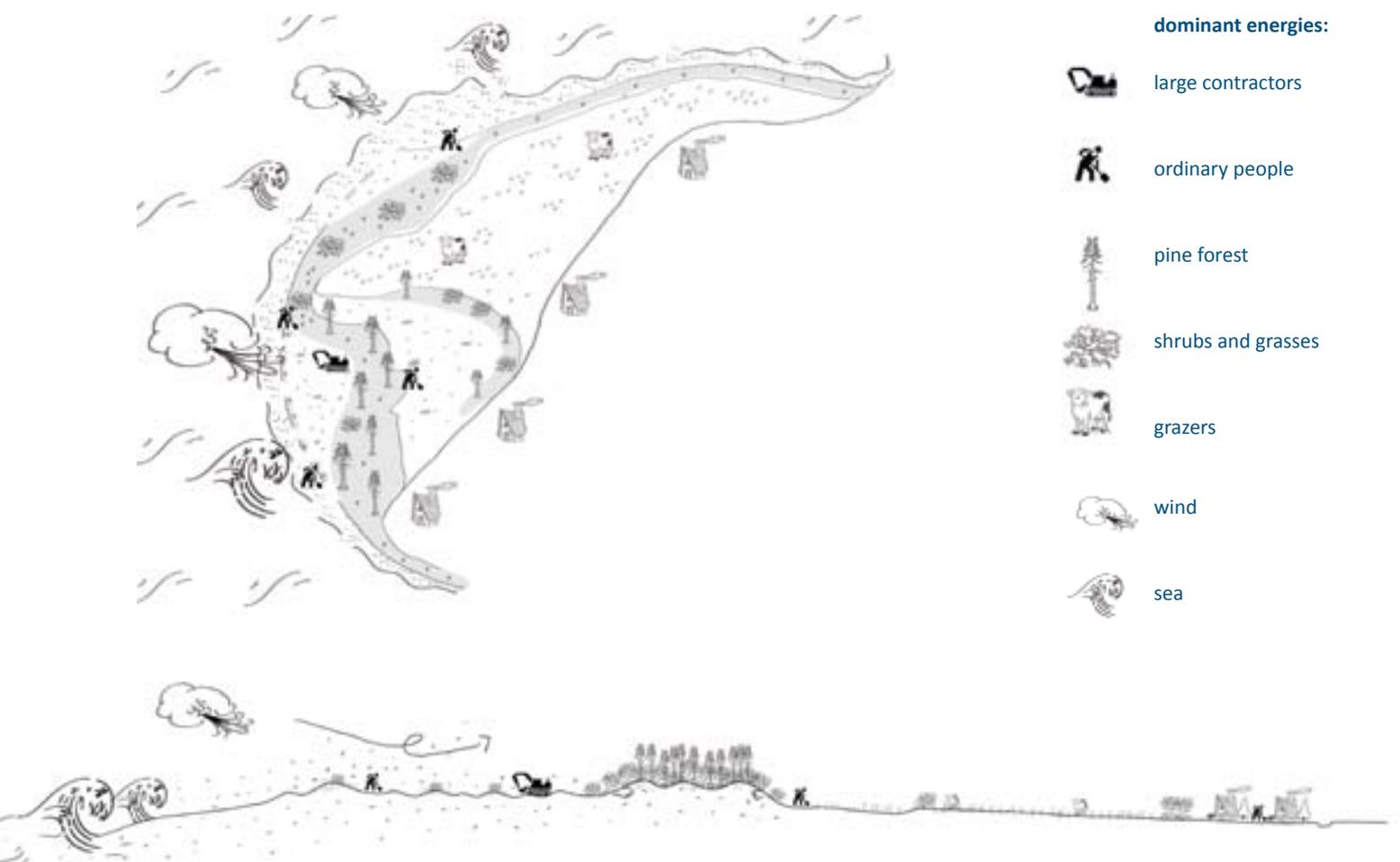
figure 17: conceptual representation of the desired landscape transformation increasing the influence of natural energies and ordinary people

LANDSCAPE INTERVENTIONS AND CRITERIA

To reach the desired landscape transformation interventions have to be taken at different sites of the landscape as shown in the intervention map (see figures 17-18). We will elaborate per landscape type the to be taken interventions and the proposed landscape criteria. These interventions are partly based on the PAS measures but also partly on our own vision which we formed doing our landscape map and field analysis. According to us it is important to enhance the landscape characteristics of the dune landscape in different ways in order to be able to create a more natural dune gradient. This will be the base for the proposed landscape criteria.

building a safety net

breaking through the defence line

waking up the dunes
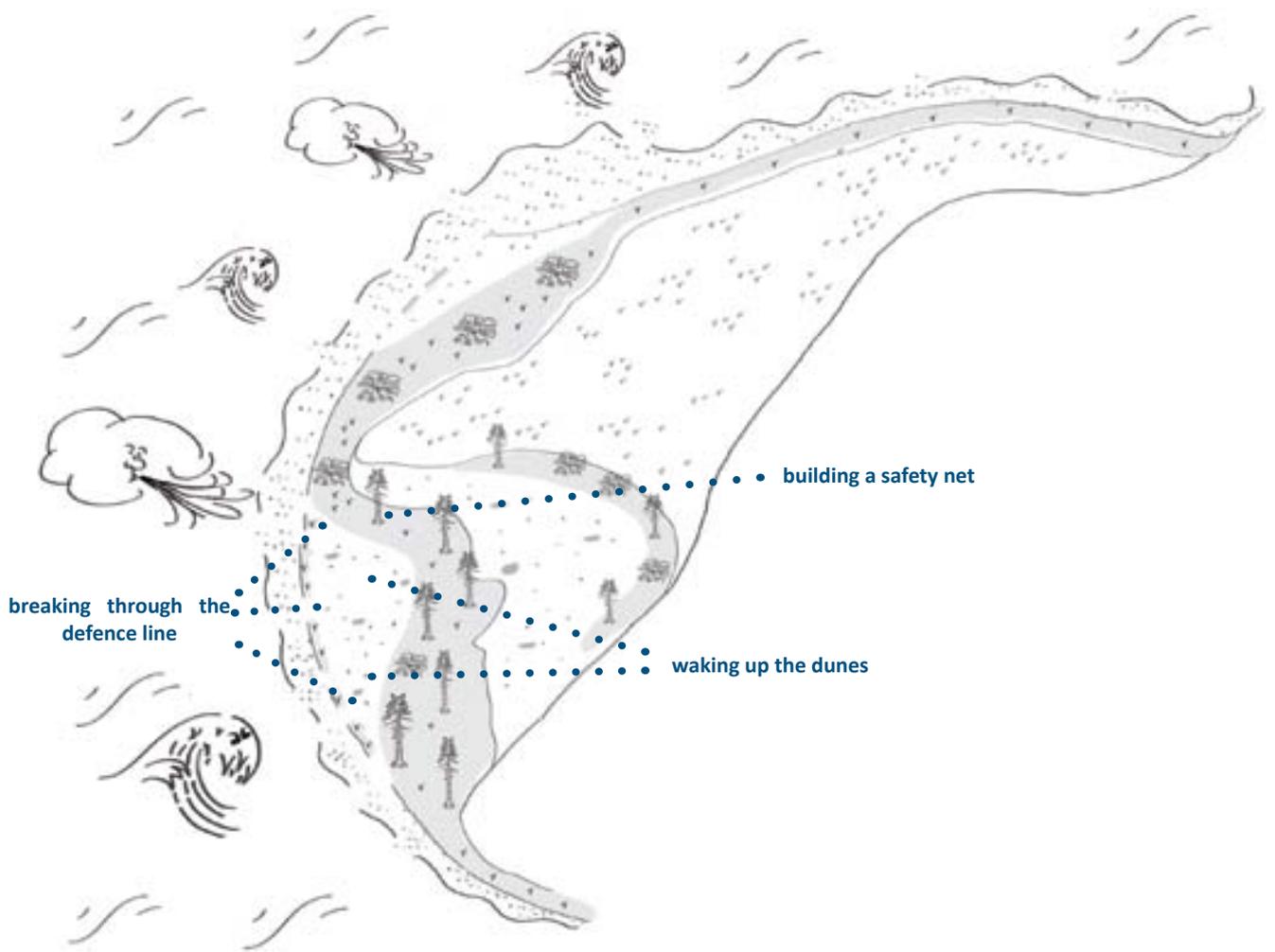
figure 18: locations of the interventions

BREAKING THROUGH THE DEFENCE LINE

As mentioned before one of the interventions that have to be taken is the creation of gaps in the first dune ridge. These gaps will increase the salt spray from the coast through the dunes and when arrived behind the first dune ridge the sand can, when the conditions are there, even be blown further land inward. We call these gaps the 'breakthroughs' of the defence line.

landscape criteria
The breakthroughs will be located at several places of the dune ridge. We recommend to locate the breakthroughs at places of the dune ridge which are currently already the lowest and/or the most narrow places. We expect that it will cost less energy to break through the dunes of these locations On the base of these criteria we analysed the dune ridge and propose ten suitable locations where a breakthrough can be created.

Subsequently we recommend on the base of the PAS measures (2014) that the breakthroughs itself should also meet some landscape criteria. The breakthroughs should, if possible, be south-west oriented since this is the main direction of the wind. By this the wind can easily get grip on the sand The minimum width of a breakthrough should be between thirty and seventy meters wide. This is required to enhance the influence of the wind on the inland. The breakthrough should have a minimum depth of 6m+ NAP, this will be deep enough to let the wind play with the sands and high enough to defence the inland against dangerous sea floods.

figure 19 rough indication of the locations of the breakthroughs

what?
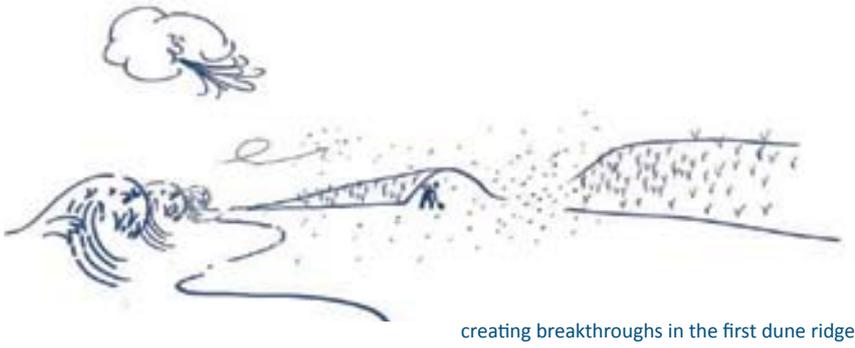
creating breakthroughs in the first dune ridge

they must be between 30-70 meter wide

have a depth to a minimal 6m+NAP

where?
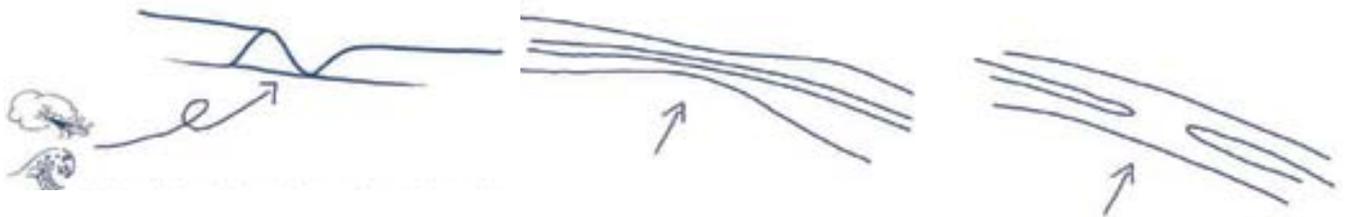
south-west oriented

where the dunes have a narrow width

where the dunes are low

figure 20: landscape criteria breaking through the defence line

WAKING UP THE DUNES

The sleeping dunes have to be woken up, since they are covered by a thick layer of vegetation. This vegetation consists of beach grass, shrubs and trees. Large parts of these vegetation have to be removed since they are not representing the natural gradient of the landscape. The most visible example of this is the forest Boswachterij Westerschouwen which is situated in the previously grey dunes very close to the sea (Beekman, 2008) (Westhoff, 1970). Vegetation has to be removed in order to expose the underlying sands to the dynamics of the wind, which will enable a further shifting of the sands. The removal of vegetation will also decrease the acidification, the nitrogen deposition of the dunes (Profince of Zeeland, 2014). The unique habitat types that are characteristic for the dune landscape will have benefit from the decrease in the amount of nitrogen, the processes of the wind and the calcification and salt spray of the sea. Eventually it will bring more ecological variation for the nature of the dune landscape (Province of Zeeland, 2014).

landscape criteria

The removal of grasses, shrubs and trees can be implemented at different locations in the landscape. We recommend to locate the removal of the vegetation in the dunes in the same line as the location of the breakthrough. By this the influence of the wind and sea in the dunes will be optimal. As described in the PAS measures the best places to remove grasses and shrubs in order to stimulate sand spray are the lower dune valleys and the south-west slopes. Besides we propose ourselves to log the forest at the lower laying dune spaces en keep the forest there where a high dune ridge is located. This will increase the area where grey dunes can develop and including the unique wet dune valleys. The remaining vegetation will then be located on the higher dunes which will visually enhance the differences in heights.

The State Forestry Service is currently already removing vegetation at different places in the dune area. The last years the amount of exposed sands already increased. We want to connect these already exposed areas with each other because in this way sand can be transformed over large distances and more habitats can profit from the sand spray (Province of Zeeland, 2014)

figure 21: rough indication of the locations of the to waken up dunes

what?

removing shrubs and grasses


removing trees

where?

in line of the created break-throughs

in the lower dune valleys
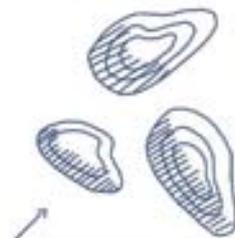
on the south-west oriented slopes
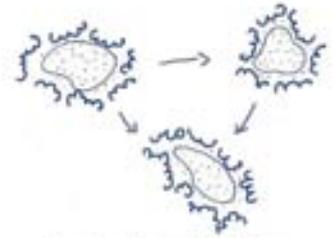
connecting current bare sands

figure 22: landscape criteria waking up the dunes

BUILDING A SAFETY NET

The aforementioned interventions content a large area of the dunes and if they will be successful they can stimulate a large amount of sand drift. In order to secure the further inland from large amount of sand we propose one more intervention that has to be taken; the development of a safety net. This safety net consists of a new forest which have to be located from south to north over the whole area.

An additional advantage will be, that the many recreants which make nowadays use of the current forest Boswachterij Westerschouwen get in this way a large part of their removed forest back. This safety net will also be important for the safety feeling of the inhabitant of Schouwen-Duiveland. During our field trips to the island we found out that the disastrous flooding of 1953 has still its marks in the souls of the inhabitants. As Duchhart (2007) and Koh (2013) state a landscape includes the human experiences of both former and current landscape processes. The creation of the breakthroughs in the first dune ridge will therefore might give people an anxious feeling. We think that this safety net can change this anxious feeling in a secure one.

landscape criteria
The safety net will be located at a former dune ridge of the young dunes which is located from south to north through the entire area. This former dune ridge forms a higher range of dunes in the young dunes. The development of the forest will enhance the heights of this ridge and together they can protect the inland against shifting sand.

figure 23: rough indication of the locations of the to build safety net

what?

planting trees to catch the sand spray

where?
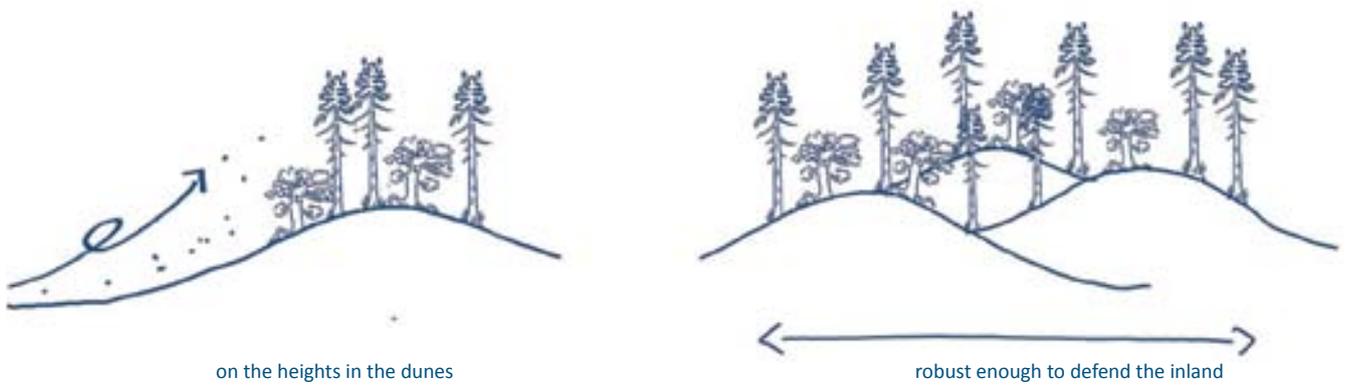
on the heights in the dunes

robust enough to defend the inland

figure 24: landscape criteria building a safety net

9. LANDSCAPE GAME STRATEGY

In the previous chapter we explained what the desired landscape transformation for the dune landscape of the Kop van Schouwen entails. Furthermore we clarified what landscape interventions have to be taken to achieve this transformation and in order to give structure to the taken interventions we formulated landscape criteria. The question remains how these interventions can be executed in a playful way structured by the framework of a game. By designing we discovered that a high variety of games can be designed in order to execute the required interventions, all with their own advantages and disadvantages. We brought these high variety of possibilities together in the 'Game Strategy Handbook' which can be found in this chapter. Here we will explain what the various games entail, how they vary from each other and how they can be inserted in order to transform the landscape. It should be mentioned that there will be thousands of more possibilities but within this thesis we let it by the examples we show here.

Game Strategy Handbook
We observed that the strategy of the landscape managers is strictly mapped and outlined in order to establish measures to proceed the desired physical result (PAS, 2014). We acknowledge the idea that a strategy is required in order to achieve a desired transformation. We solely put our remarks on the idea that it has to be an outlined and mapped strategy. We therefore designed a new strategy as can be found in the 'Game Strategy Handbook' for the directors. This strategy is, in contrary to the current strategy, a flexible strategy. It is a game strategy that gives the possibility to switch games in order to transform the landscape into the desired direction. In this 'Game strategy Handbook' we designed, per intervention, various landscape games which can all contribute to the transformation of a landscape in different ways (see pages 72-101).

Landscape Games and Landscape Counter Games
The games can be divided in 'Landscape Games' and 'Landscape Counter Games'. The Landscape Games can be inserted to execute the interventions 'Breaking through the defence line', 'Waking up the dunes' and 'Building a safety net'.

But what happens if the games are such a success that the shifting sands damage vegetation and will even reach the residential areas? What if the safety net cannot provide enough safety? What if because of the success of the games the ecological value of the dune area will decrease and/or the safety of the inhabitants of the Kop van Schouwen will be in danger? To include the possibility to react on this unpredictability we designed the so called 'Landscape Counter Games'. These games have the common aim to decrease the shifting of sands and influence of wind and sea on the inland. Because these games counteract the sand shift we call them the 'Landscape Counter Games'. These counter games are designed to execute the intervention of closing the breakthroughs of the first dune ridge.

A HIGH VARIETY OF GAMES

landscape game characters
In the 'Game Strategy Handbook' per game a short description, the landscape game characteristics and a potential landscape game principle model are given. We are aware that, although based on the characteristics of the games, the game principles models are subjective and since we have not played the landscape games for real the result is also disputable. However, we think that the potential game principle models give a good impression in what way the landscape games could differ from each other in the sense of their game principles and thus their game character. It is advisable to choose within the entire landscape transformation, so within the to be taken interventions, for landscape games which are complementary to each other in the composition of their game character. Some landscape games are for example highly social interactive while in other games the players get the chance to be really in play with nature. In some games beauty plays an important role where in other games the individual challenge is dominant. Since people have different tastes and it is desirable to reach a broad group of people it is wisely to choose a wide variety of landscape games.

game scores
We also gave the different landscape games potential scores for the landscape transformation, the safety and the social and technical feasibility. The scores are potential since we do not know for sure what the scores will be, practice must show this. The landscape transformation scores gives an indication of how likely it is that the landscape game contribute to the for the landscape transformation required intervention. When a game has a low score this often means that the game has to be played many times before the intervention is completed or that, for example, preparation interventions have to be taken before the real game can start. Games in which mechanical tools and professional nature managers have an important role score often high on the landscape transformation. However they often have a low score for the social feasibility. This social feasibility illustrates how likely it is that the games will be social a success which means that people like to play the game and that the game can be played by a wide range of the society. The safety score gives an idea of how likely it is that the game will be safe to play. The final game score is the technical feasibility score which illustrates in what degree new technical interventions have to be developed for example in order to develop new games tools.

When it is really important that the intervention will be executed in a short time it is advisable to choose for a game with a high landscape transformation score but when it is important that a large group of people will be involved it is wise to choose for a game with a high social feasibility score. When there is little budget to execute the landscape transformation it is advisable to choose preliminary landscape games that do not require expensive new technical innovations. It seems to be logical to only choose for safe games but this is discussible. Some people like to play dangerous games such as tree climbing or horse riding, which are although safety measurements are taken, always dangerous in a certain degree. According to us this does not mean that these kind of game should be excluded. We think that dangerous playing can trigger people and can even have an important role in the education of people. This is why in the booklet also some games with a relatively low safety score are included. It is obvious that for these games always certain safety measurements have to be taken. Just like a complementary composition of game characters it is also advisable to choose within the entire landscape transformation for games that vary in their game scores.

role of the director
The 'directors', which are the managers of the State Forestry Service and the managers of the Dutch Water Works department can choose, in close corporation with the landscape architect which games, how often and at what moments will be played in order to transform the landscape. They will have to keep together an eye on the continuity and quality of the landscape processes. This entails that they will get the responsibility to monitor the transformation of the landscape and if necessary adapt the 'Game Strategy'.

The directors can switch between different games within one interventions or they can decide when necessary to insert a counter game. Their choices will be based on what is needed at a specific moment. Because human and nature are both unpredictable the outcome and result of a game is in a sense also unpredictable. In our proposed strategy the directors will embrace this unpredictability since they can play with the different games in their strategy. For example if a game seems to be socially unsuccessful the directors can choose to insert another game which is already more embedded in the society. Or, if after a huge storm surge a large amount of water flows into the dunes the directors can choose to insert a counter game.

Besides choosing what games will be played the directors can also choose to adapt or change the game itself. This can be done by changing certain game characteristics for example the playing field, the game rules or the game goal. How this 'game rule adaptation' works will be explained in the next chapter.

The switch between games and counter games means that there are many different possibilities to transform the landscape. The wide range of possible strategies, as we assume, also lead to different physical representations of the landscape since we never know how the games are being played.

HANDBOOK FOR THE DIRECTORS

BREAKING THROUGH THE DEFENCE LINE

WHEELBARROW RACE, PINECONE CONTEST, TUG-OF-WAR

The games Wheelbarrow race, The Pinecone Contest and Tug-of-War are games in which openings are created in the first dune ridge. Although the games all aim to increase the influence of the wind on the inland, in every game the openings are created in different ways. Will the openings be created by a multiple sequence of individual play like the Wheelbarrow race, by a collective force game in the Tug- of- War game or will a giant tool be the main player in the game Pinecone contest?
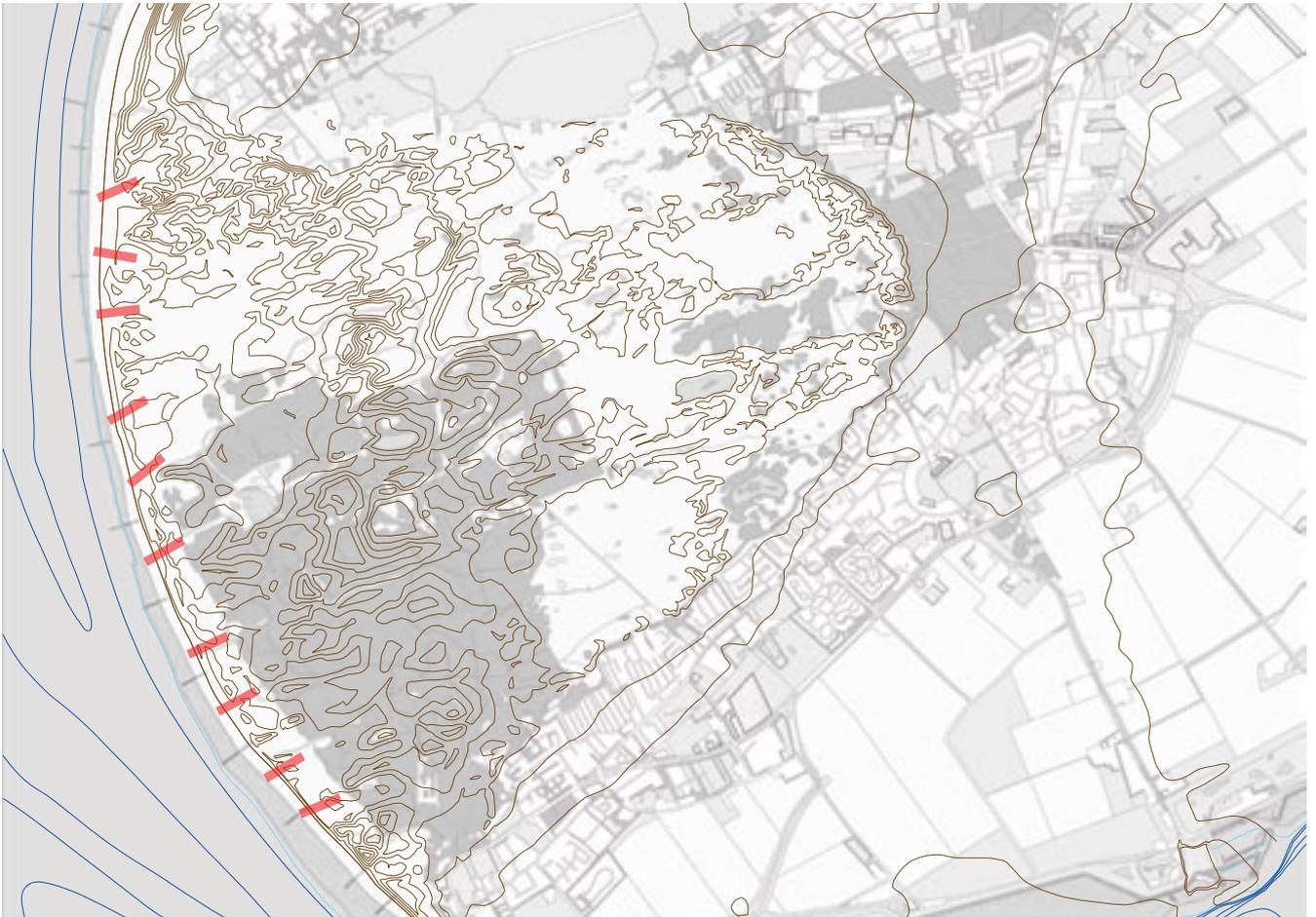
figure 25: location of the breakthrouhs

THE GAMES

WHEELBARROW RACE

PINECONE CONTEST

TUG-OF-WAR

the game | Wheelbarrow is a racing contest between different teams. The wheelbarrows stand ready at the top of the dunes in the first dune ridge. An x amount of team members have to fill the wheelbarrow with sand from the dune top with the use of shovels. When the wheelbarrow is full one team member runs as fast as possible with the wheelbarrow to the seaside and empties the wheelbarrow at a therefore indicated location on the beach. When the runner returns the team members are allowed to switch roles. The games stops when the referee gives the end signal. The team who brings the most sand to the beach wins the game.

players | teams consisting of an x amount of players

goal | bringing the most possible sand from the dune top to the beach in a fixed amount of time

equipment | wheelbarrows, shovels

the game | The Pinecone Contest is a game in which different shaped giant pinecones are contesting each other. The audience of the contest can bet on which of the pinecones will be the best in spading and pulling out the sand of the dunes. The action starts when the pinecones are all towed away at the same moment by large tractors. The pinecone that spades and pulls out the most sand wins the game. The persons from the audience who betted on the right pinecone win the game.

players | tractor drivers and an audience

goal | bet the right pinecone

equipment | giant pine-cones which differ in shape and surface but are equal in size and material

the game | Tug-of-war is a power game between two competing teams. A giant rope made of many small ropes lays at the top of a dune. One team holds one end of the rope at the seaside and the other team holds the other end of the rope at the landside of the dune. Both teams have to try to pull the middle knot of the rope as fast as possible over the playing line of their playfield.

goal | pull the rope as fast as possible over the playing line of your own playfield

players | two teams of the same amount of pullers and an audience

equipment | a giant rope made of many long ropes, gloves

GAME CHARACTERS AND SUCCESS SCORES

WHEELBARROW RACE

game character | Tug-of-War will probably have a high degree on most of the game principles. Social interaction takes place within and between the contesting teams and since you can win or lose this game there is a relatively high challenge present. Because the players really transform the lands by moving sand with their 'bare hands' with their head in the wind in the coastal landscape the interaction with natural energies is relatively high.

landscape transformation score | The game scores relatively high in reaching the desired landscape transformation since the sand and eventually some beach grass will be excavated by the shovels and brought away by the wheelchairs. However reaching the desired transformation is dependent of the social success of the game. Multiple games will be needed to reach the goal.

safety score | There are little risks by doing this game. However, it is possible that someone will fall and will be hurt.

social feasibility score | The potential feasibility score is not so high since we are not sure if people would like to play this game. However it is thinkable that groups of youth for example would like to contest each other in this game.

technical feasibility score | Because shovels and wheelbarrows already exist this game is technical feasible

PINECONE CONTEST

game character | In this game people are not really playing but they have a spectating role and therefore the game will probably not be experienced as a real game. Challenge and flexibility will have a low score. However, the contest might be beautiful, exciting and surprisingly to watch and it will probably be clear for the audience how the bet game works.

landscape transformation score | The pinecones contest scores pretty high on reaching the desired landscape transformations. There is a lot of power and energy required to create a notch in the dunes. Tractors have this power and energy and can create the notch quite easily.

safety score | Because the measurements are realized by the machines, there is little risk for injury or dangerous situations.

social feasibility score | The humans are less actively involved than in the other games. They are preliminary audience and less player. The way the measurements are taken in this game are rather similar to the current way of doing.

technical feasibility score | It will be complicated and expensive to create giant pinecones which can spade and pull out sand from the dunes therefore the score on the feasibility is not so high.

TUG-OF-WAR

game elements score | Tug-of-war will probably have a high degree on most game principles. The traditional tug-of-war has already proven itself in many cultures for many years. Especially tension and imagination scores a high degree since the players have to be focused during the whole game otherwise the opponent team can easily beat. Tug-of-War is a beautiful game to watch because of the movement and power of the human bodies in play.

landscape transformation score | The game scores relatively high in reaching the desired landscape transformation since the sand and grasses can be removed by the back and forth movement of the robe and knot. However reaching the desired transformation is dependent of the social success of the game. Multiple games will be needed to reach the goal.

safety score| There are little risks by doing this game. However, it is possible that someone will fall and will be hurt.

social feasibility score | Since the traditional type of the tug-of-war game has already proven itself in many cultures for many years, there is a reasonable chance that people will like to play this game.

technical feasibility score | This game is technical feasible because it is probably possible to make this giant rope. A huge tug-of-war event with an enormous tug-of-war tope has taken place on a festival in Japan.

game character
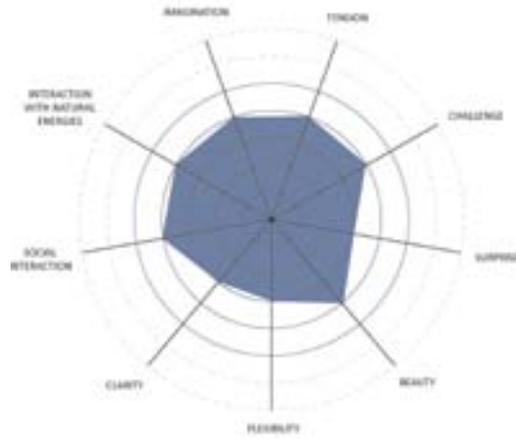
landscape transformation score

⭐⭐☆

safety score

⭐⭐☆

social feasibility score

⭐☆☆

technical feasibility score

⭐⭐⭐

game character

landscape transformation score

⭐⭐⭐

safety score

⭐⭐☆

social feasibility score

⭐☆☆

technical feasibility score

⭐☆☆

game character

landscape transformation score

⭐⭐☆

safety score

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social feasibility score

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technical feasibility score

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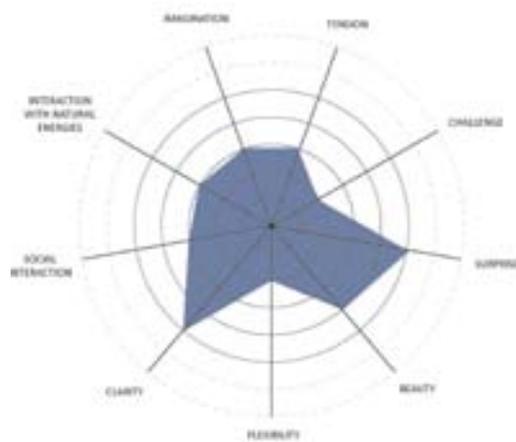
WAKING UP THE DUNES
removing shrubs and grasses

CLIMBLOG, SCHOUWSPEL, MIDSUMMER NIGHT FESTIVAL

The games Climblog, Schouwspel and Midsummer Night Festival are games by which the trees of the forest Boswachterij Westerschouwen will be removed. This will create a more open forest in which the shifting of sands is stimulated. The open spaces will be located in a line from sea to the inland.

Because tree cutting is a dangerous and tough activity and usually done by professional tree cutters with the help of machines. How should the trees be cut down and can this be done by ordinary people? The game Climblog, Schouwspel and Midsummer Night Festival will show different ways to cut down the trees in a playful way. Climblog, Schouwspel and Midsummer Night Festival are the final alternative landscape games we came up with.
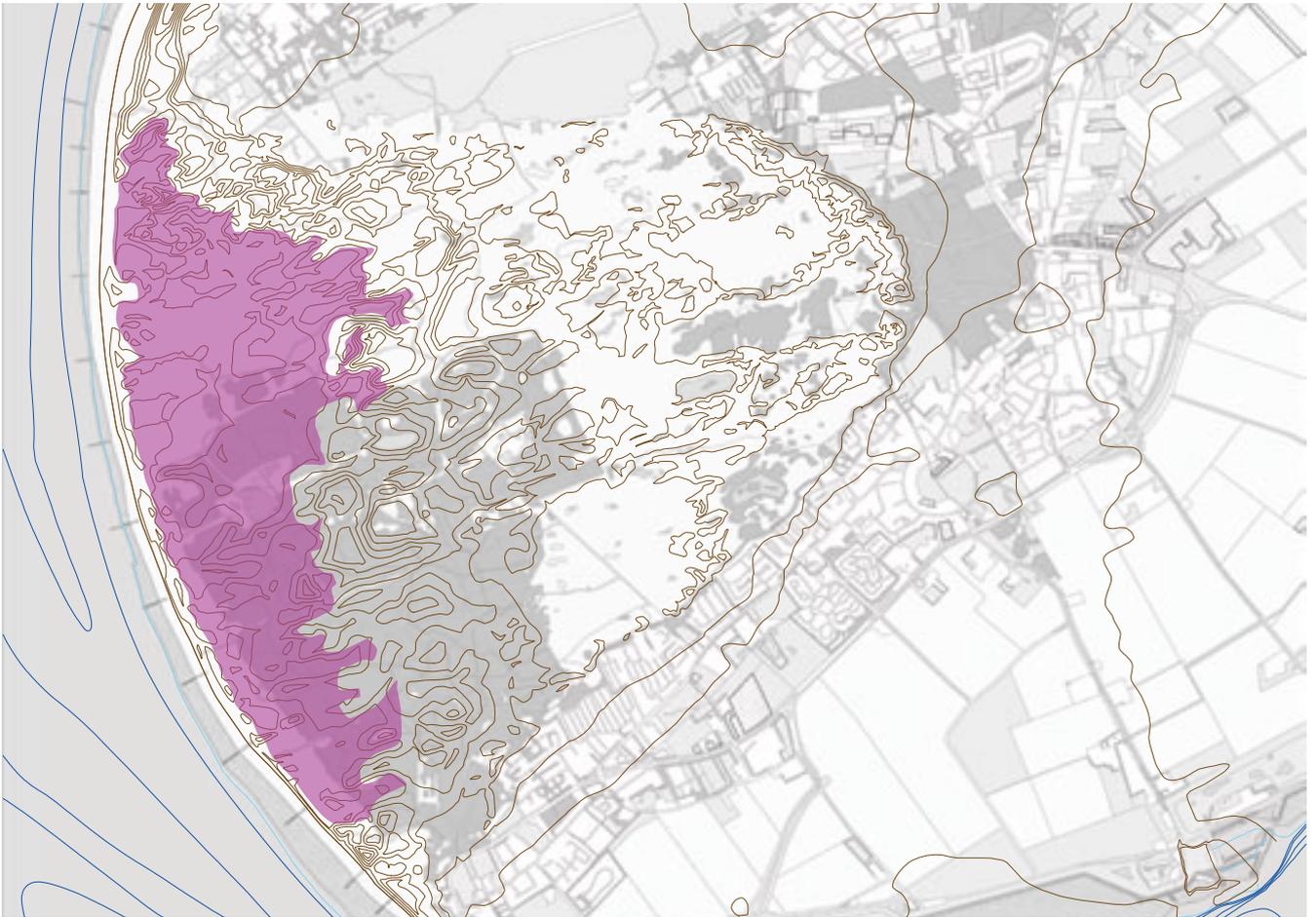
figure 26: location of waking up the dunes: removing shrubs and grasses

THE GAMES

HORSE-FORCE

SJOGGING

QUAD RACE

the game | Horse-force is a race competition between horse riders and their horses, forming different teams. The game takes place at a by forehand outlined trail. At this trail different obstacles are placed which the horse and its driver have to pass and overcome. If they fail they lose time and points. The team that crosses as fastest the finish line wins the game.

players | different teams existing of one horse driver and his/her horse, an audience

goal | be the fastest team that runs the trail and pass and overcomes the different obstacles

equipment | flags to align the trail, obstacles, special hoof shoes with attributes that will damage the vegetation on the trail

the game | Sjogging is a running game. There will be three different outlined trails with different distances. You can choose your distance and thus in which lap round you will compete with your fellow runners. The terrain is pretty tough. The different lap rounds will start all at the same place and all the participants will run the first part of the trail. The longer the lap round, the less people participating so the less intensive this part of the trail will be used. The terrain will therefore become tougher and tougher to run with an increase of the running distance.

players | runners

goal | be the fastest of your lap round or reach your own time goal

equipment | signs to mark the trail, special running shoes with attributes that will damage the vegetation on the trail

the game | As the name already says this game is a race between different quad drivers. In this game the trail is not totally outlined. However, at particular spots in the landscape pawns are placed which the quad drivers all have to pass within a game lap. The race will consist of different game laps and therefore the drivers are able to change and adapt their driving strategy. The quad driver that passes all the pawns in the landscape and finishes as first is the winner of the race. Additional points can be scored when the drivers make beautiful jumps.

players | teams existing of an equal number of quad drivers and an audience

goal | passing all the pawns in the landscape and being the first finisher, and or making beautiful jumps

equipment | for the game designed electric quads with tires which can damage vegetation

GAME CHARACTERS AND SUCCESS SCORES

HORSE-FORCE

game character | Horce-Force will be a really challenging game since it asks for both physical skills as strategic thinking. The drivers have to be focused all the time and will therefore have the feeling of being in another world. Since the horse drivers are in a continues interaction with their horses the interaction between social and natural energies is really high in this game.

landscape transformation score | Horses will probably evade running on large grasses and shrubs and it is therefore quite conceivable that those plants will not be damaged during the game. However, the smaller grasses and upcoming shrubs will probably be damaged and in this way this game could probably be inserted in order to keep trails open.

safety score | This game has no high safety score. Because the terrain is pretty rough horses can easily stumble or break their legs. It is therefore obvious that there have to be taken some pre-measurements. Before the game starts the large grasses and bushes on the trail should be removed and dangerous holes should be filled with sand.

social feasibility score | There are many horse riding schools at the Kop van Schouwen. In a conversation with a horse rider who lives at the Schouwen-Duiveland we made up that many horse riders are looking for more horse tracks in the dune area. This could be an indication that the Horse Force game can become socially a success.

technical feasibility score | The equipment for a jumping circuit are currently already made, therefore the technical feasibility score is pretty high.

SJOGGING

game character | This game has a high potential to be challenging, exciting and that the players lose for a the daily life. Since the players can choose which trail they will run and how they will actually do this this game has a scores high on the flexibility as well. The players will not really compete each other and most of them will primarily have an individual goal the social interaction does not have such a high score.

landscape transformation score | It is conceivable that most people will evade large grasses or bushes on the trail. In this way these plants will probably not be removed by the game. However, when the game is a success and many people will participate in this game the smaller and upcoming vegetation will be damaged. This game could therefore be used to keep the trail open.

safety score | It can be rather dangerous since the terrain itself is full with potholes and bumps. It is therefore obvious that there have to be taken some pre-measurements. Before the game starts the trail should be equalized.

social feasibility score | This game could be a success since nowadays many running competitions are taking place everywhere in the Netherlands. To give more attention to the game this game could also be linked to a fundraiser for a charity. Another reason for people joining this running race could be that the location is very unique.

technical feasibility score | The only equipment that is required are robust running shoes and these are already on the market.

QUAD RACE

game character | Their will be a lot of social interactivity in this game since the quad drivers are divided into teams, the different teams are competing each other and there will be an audience present. Because of the competition element and the required physical skills and strategic way of thinking the challenge is high as well. The game has a high potential to experience tension and to have the feeling of being in another world because of this challenge. The flexibility is quite high because the quad drivers can decide themselves how they will drive exactly.

landscape transformation score | The routing is not fixed so it might be that there are not enough quads taking the same route. This could have as result that open spaces will not be developed. However the quads have enough power and profiled tires to damage vegetation and probably the teams will follow each other's routing, namely the way of the least resistance.

safety score | The terrain is rough and the quads and the speed is high. Therefore safety measurements have to be taken to let this game being safe.

social feasibility score | There are currently already some quad driver renters located at the Kop van Schouwen. This is an indication that there are tourists and or inhabitants interested in participating in the quad race. Especially youth might be interested in this rough and fast game. The quad driver renters could play an important role in facilitating this game.

technical feasibility score | To make the quad racing safe enough, the quad has to be extended with some attributes. Therefore this game scores less high on the technical feasibility than the other games.

game character
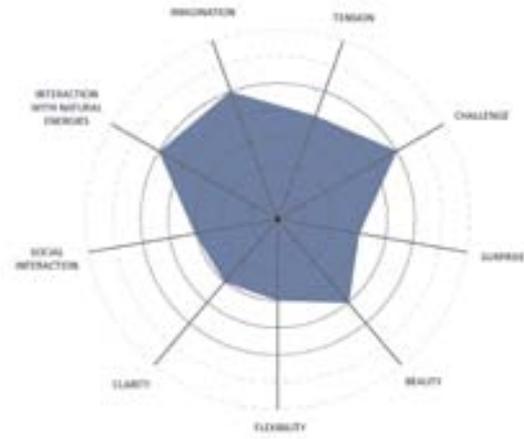
transformation score

⭐ ☆ ☆

safety score

⭐ ☆ ☆

social feasibility score

⭐ ⭐ ☆

technical feasibility score

⭐ ☆ ☆

game character

transformation score

⭐ ☆ ☆

safety score

⭐ ⭐ ☆

social feasibility score

⭐ ⭐ ⭐

technical feasibility score

⭐ ⭐ ☆

game character

transformation score

⭐ ⭐ ⭐

safety score

⭐ ☆ ☆

social feasibility score

⭐ ⭐ ☆

technical feasibility score

⭐ ☆ ☆
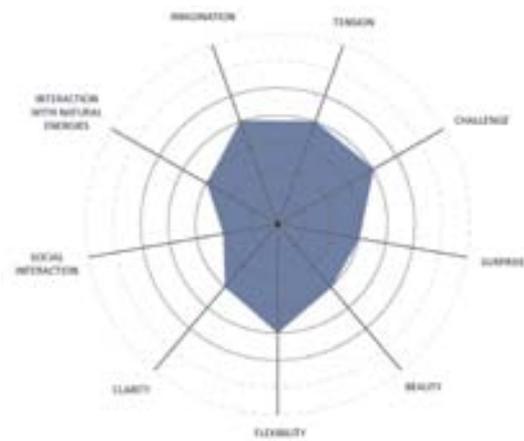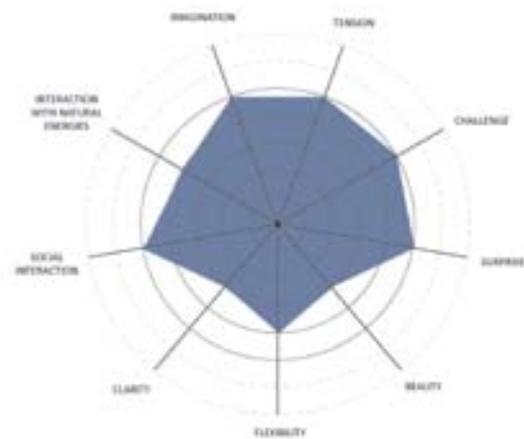
WAKING UP THE DUNES
cutting trees

HORSE-FORCE, SJOGGING, QUAD-RACE

The games Horse-Force, Sjogging and Quad-Race are games by which low-growing plants as grasses and shrubs will be removed. By this open spaces at the grassy and shrubby hills of the outer dunes will be created and shifting of sands stimulated. One of the preconditions of the open spaces is that they should form altogether different transects from sea to inland. We came already quite fast with the idea that a trail could be a suitable shape of a playing field to create such a transect. The following games do therefore all uses a trail as their playing field. Will the landscape be transformed by a multiple sequence of individual footsteps in the Sjogging race, will horses run and jump through the field in the Horse-Force game or will the mechanical quads be the main player of the landscape game?

figure 27: location of waking up the dunes: cutting trees

THE GAMES

CLIMBLOG

SCHOUWSPEL AND THE BOLUS CONSUMPTION

MIDSUMMER NIGHT FESTIVAL

the game | Climblog is a contest of climbing in and logging a tree from top to down. The participants have to be skilled in doing this. Each tree will be cut down by the power of one man. Every player has to climb as fast as possible into the tree and logs as fast as possible the tree from up to down. An audience will be surrounding the playing field so that supporters can support their favourite sportsman or woman.

players | and x amount of players and an audience

goal | be the fastest that climb and logs the tree

equipment | climbing material, safety helmet and an axe

the game | Schouwspel is not really a game in the traditional sense but rather a theatre play in which the story of the landscape transformation of the Kop van Schouwen will be told. Central in this story is that because of ecological reasons the large parts of the forest have to be cut down by the State Forestry Service. Before the theatre play starts, the inhabitants and tourists will be involved in an interactive way in the story. The 'bolus', a local product of the province of Zeeland in which Schouwen Duiveland is located, is nowadays consumed by many tourists and inhabitants and every local bakery sells this pastry. At this moment no actions or consequences are linked to the consumption of a bolus but with the 'Bolus Game' this will change. From now on the amount of sold bolussen will determine how many trees will be cut down by the State Forestry Service. On digital sign boards in the local villages the amount of consumed bolussen will be presented. By adapting the consuming behaviour of buying bolussen people can either boycott or stimulate the cutting down process. By buying a family bag consisting of five bolussen people will get a free ticket to the theatre show as well. The inhabitants are all invited to spectate this spectacular show in which machines and artists be in play with natural energies.

players | Schouwspel: State Forestry Service, artists and an audience, Bolus Game: bakeries, tourists and inhabitants

goal | Schouwspel: understanding the story behind tree logging, Bolus Game: boycotting or stimulating the tree logging

equipment | Schouwspel: lights, a script, a stage and stand, costumes, attributes to cut down the trees, Bolus Game:

the game | Festival Terrain Building is a building contest between different groups of youth. At the longest night of the summer a festival called the midsummer night festival will take place in the Boswachterij Westerschouwen. In the weeks before the festival starts groups of youth will be the temporary owners of the therefore designated parts of the forest. Here every group can build under the guidance of the State Forestry Service a part of the festival terrain. Trees can be cut down and the wood can be used to construct temporary stages and stands. The group that builds the most beautiful and useful part of the festival terrain wins the contest. The festival will be an event where tourists and inhabitants are celebrating the landscape transformation.

players | groups of youth, leaders from the State Forestry Service

goal | building the most beautiful and useful festival terrain, being together

equipment | building and logging equipment

GAME CHARACTERS AND SUCCESS SCORES

CLIMBLOG

game character | In this game the players are really in interaction with although not with the growth of trees. This is why this game gets a high but not a really high score at the principle interaction with natural energies. This game is really challenging and thrilling since the players need to be professional tree climbers and loggers. The social interaction has a moderate score since the players cannot really influence each other's results.

landscape transformation score | It will take a long time to log all the to be cut trees by this game because one player can only cut down one tree during a game. However, when this game will be a success many players together could cut down many trees. Otherwise this game could be additional to a game in which more trees at the same time will be cut down.

safety score | Climblog can become dangerous if there are no required safety measurements taken. A safety net and safety attributes have to be used.

social feasibility score | Currently climbing trees is an upcoming trend in the Netherlands, in recent years many climbing forests are popping up. This could be an indication that the game might be a success. However, climbing a tree and logging a tree asks for specific skills. This makes this game not accessible for a large part of the society. Climblog is however, a game that already exists in certain parts of the world. This game could start at Schouwen-Duiveland as a local competition and, when proven being a success, end up as a national or even international competition.

technical feasibility score | The equipment for the game is already on the market therefore the technical feasibility score high. However if the game has to become accessible for a larger group than some safety measures have to be taken which asks for specific technical attributes.

SCHOUWSPEL AND THE BOLUS CONSUMPTION

game character | The most characteristic to Schouwsspel is that beauty and imagination plays a very important role. Supported with beautiful costumes, lights and music the artist will explain the story of the importance of the logging of trees in a dramatic and imaginative way. The challenge of the Bolus Game is relatively low since there are no skills required to consume bolussen. The amount of luck or randomness is high because people are highly depending on the consuming behaviour of others.

landscape transformation score | The amount of trees that will be cut down is depending on the consuming behaviour of the inhabitants and tourists and this is strongly linked to the social support for logging. It is conceivable that the first time the theatre show takes place a little amount of bolussen is sold but that with time and an increasing amount of games played a growing awareness of the importance of the interventions and thereby a growing consumption of bolussen will take place. In the theatre play machines will be used to cut down trees so during one show it must possible to cut down many trees and therefore the landscape transformation score is high.

safety score | During the theatre show the combination of machines, artists and spectators makes that safety measures have to be taken. Distances and positioning of the logging is very important.

social feasibility score | The bolus is a popular and traditional pastry of Schouwen-Duiveland, therefore this game could be socially a success. By increasing the influence people have on the process might enhance the social support of inhabitants for the intervention. The theatre show can trigger the social support of the inhabitants as well.

technical feasibility score | Currently used techniques of logging trees can be used so no new technical interventions have to be done.

MIDSUMMER NIGHT FESTIVAL

game character | It can be said that a high flexibility is really characteristics to this game. The youth building the festival terrain can choose together how they will build up their part of the festival terrain. This makes that in contradiction the clarity of the game is not so high. The goal is to make this part beautiful so beauty is a really important game principle as well. The social interactivity scores high as well because within the groups collaboration plays an important role.

landscape transformation score | When many youth groups are joining the contest many trees can be cut down.

safety score | For safety reasons there should be leaders of the State Forestry service and of the holiday camp organisation present. In this way logging can be practiced and the building constructions assisted.

social feasibility score | Different types of holiday camps could take place in this area, from school camps to artistic or survival holiday camps. In our society these kind of festivals have an increasing importance so this is why this event seems to be social feasible. The youth could stay over at the youth camping's that are in financial problems at the moment. However this festival terrain building and the Midsummer Night Festival needs a lot of preparation and organization time. Therefore there should be an organization that sees advantage in taking this role and since we are not sure of this we gave a resulting score of moderate to the social feasibility.

technical feasibility score | In the Netherlands there are already some festivals organized in coastal landscapes such as the festival of Oerol on the island of Terschelling so this must technically be possible.

game character
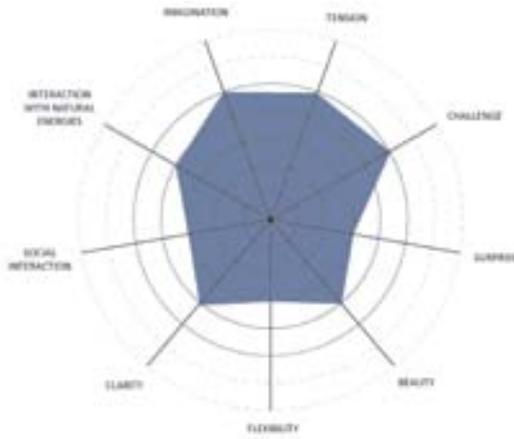
transformation score

⭐⭐☆

safety score

⭐☆☆

social feasibility score

⭐☆☆

technical feasibility score

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game character

transformation score

⭐⭐⭐

safety score

⭐⭐☆

social feasibility score

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technical feasibility score

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game character

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social feasibility score

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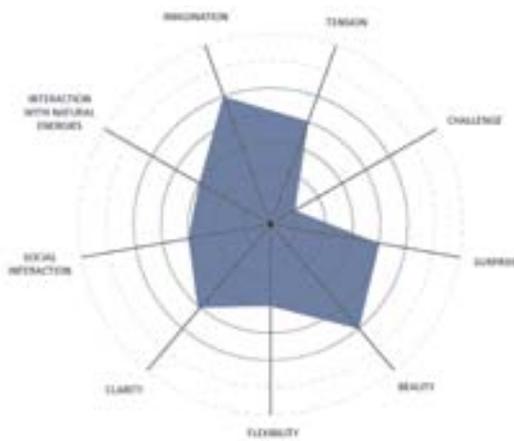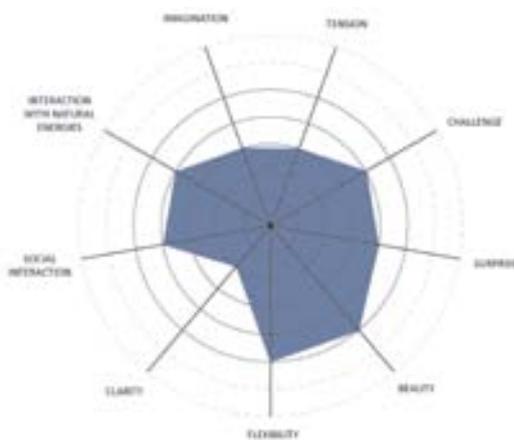
technical feasibility score

⭐☆☆

BUILDING A SAFETY NET

NEW YEAR WISHES, CELEBTREE, BALLSEYE

The games of 'Breaking through the defence line' and 'waking up the dunes' made it possible to transport the sands far to the inland. No dangerous situations are present but just to ensure a safe feeling for the inhabitants a new defence line has to be developed in order to catch the shifting of sands. It can be that it is only to compensate the removal of the former forest like in the game of New Year Wishes. In this case the location of the forest is not important. It can also be that the location is important, in this case the other games Celebtree and Ballseye are games that can contribute to the landscape transformation.
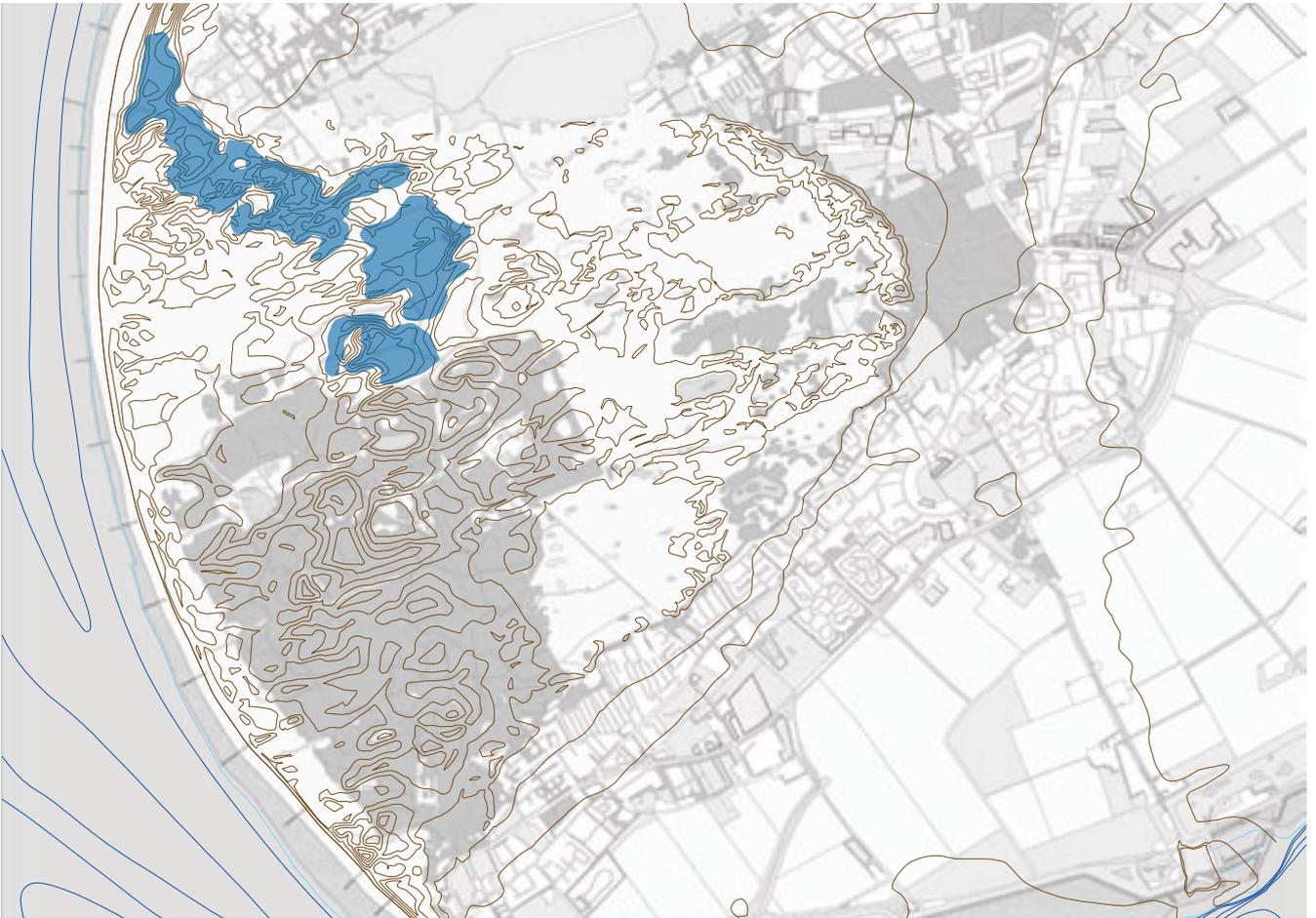
figure 28: location of building a safety net

THE GAMES

NEW YEAR WISHES

CELEBTREE

BA(U)LLS EYE

the game | It will be a new cultural tradition to celebrate the start of a new year with a wishing balloon filled with seeds. At midnight you release the balloon into the sky surrounding you. You can wish for a healthy, beautiful and happy new year or whatever else you wish. The wishing balloon will carry your wish far away into the sky. The direction of the wind will determine the direction of the balloon. Eventually the balloon will descend and land on a random spot on the ground, where it, when found, can be picked up by someone else. This person scans the code and plants the tree on a spot that he/she prefers. The scanning of the code is send as confirmation to the initial owner, the wisher. The wishing balloon that comes the furthest gets a gift.

players | wishers and receivers

goal | wishers: let your balloon float the largest distance, receiver: finding a good spot to plant the seeds

equipment | wishing balloon with seeds and a social application with a personal code

the game | A friends birthday, a marriage or the birth of a child? These are all perfect celebrations to give a 'CelebTree' as present. You give the CelebTree in the form of a gift voucher. The receiver can hand in this voucher at the local tree nursery and will get in return a to planted tree and a 'Treesure map and a GPS application. The Treesure map consists of different GPS codes which illustrated the routing you have to take to find the location where you have to plant the tree. When you reach the in between GPS locations you get more and more information about your tree. When you planted the tree at the final spot this tree will be your tree which means that you can take the responsibility and care for the tree as long as it will life. You may even decide when you would like to fell the tree and use the wood for personal purposes.

players | the giver and receiver of the gift card, local tree nurseries

goal | plant your tree successful

equipment | a gift card, GPS

the game | Throughout the whole year many recreants are visiting the Kop van Schouwen and a large amount of them cycle or walk through the dune landscape. In the B(a)ulls Eye game recreants can pick up at the entrance of the Boswachterij Westerschouwen in the recreation shed of the 'State Forestry Service' a ball with little seeds. These balls can be thrown away at spots along the recreational paths. It will ask for some insight to point and throw the ball at the therefore intended places, the 'B(a)ulls Eye. When this is the case the recreant can plant the seeds into the soil. If the ball is thrown right you 'score' and you will hear nice sounds of bees, birds and cicadas. This will refer to the kind of habitat you are contributing to. A digital board in the zone will present the amount of balls that are thrown correctly. By this people can see in which zone a little amount of balls are thrown correctly and this can stimulate people to try to throw their ball in the spots where no seeds are present.

players | throwers

goal | score your ball in the 'B(a)ulls Eye'

equipment | balls with seeds, a digital board and a music installation

GAME CHARACTERS AND SUCCESS SCORES

NEW YEAR WISH

game character | This game has a really high score on the interaction of the natural energies because the place where the balloon ends is almost fully depending on the natural forces present at midnight of the new year. This randomness makes that surprise is highly present as well. The beauty of the act and the symbolic meaning of releasing a wish and so the imagination are fully present as well.

landscape transformation score | It is a game in which you have little influence on the final destination and the growth of the seeds. Therefore it can only contribute to a desired landscape transformation if it does not matter where the trees are planted. This can be the case when the logging and felling of shrubs and trees only have to be compensated in order to meet specific environmental targets. In return for the removal of the trees, new plants will be added on random locations.

safety score | If the climatological conditions are very dry there might be a fire risk. Under these conditions it must be forbidden to release your wishing balloon into the sky and when possible, the balloons could be lifted up the next morning.

social feasibility score | In some families lifting off a wishing balloon is already a tradition at new year's eve. Therefore it makes it easy to make it this a cultural tradition.

technical feasibility score | The only thing that has to be developed is a social application to follow your 'wishing balloon'.

CELEBTREE

game character | the game principles that are the most present in this game are surprise and the interaction with natural energies. It is already a surprise that you can join the game since this decision lays in the hand of the present giver. Next to that you really do not know beforehand which type of tree you get and where you have to plant it so there are many surprises along the route. Planting a tree with your bare hands in soil will be a strong experience of being in interaction with nature. Because you have to follow the GPS codes the flexibility in this game is not so and the clarity is high.

landscape transformation score | In this game the final destination of the trees is determined by the directors. It is therefore advisable to choose this game when at a specific location an expansion of the forest is required. For example, when the sand spray reaches too far land inward and the safety of the inhabitants will be decreased. Since people like to take care of their personal properties (Saito, 2007) it is thinkable that the result of this game will indeed means a growth of the forest. However, it has to be mentioned that it will take a while to let the trees grow and a real new forest is formed.

safety score | the game is not dangerous at all

social feasibility score| It might be conceivable that people like to give a celbree as a present since this is a really original present. This present can be a way to give for example your child a life tree which he/she will have for his/her whole life.
technical feasibility score | It is not a very complicated game. The only thing which has to be developed is a social application and a very dens GPS network. The current GPS network is very inexact, this will asks for some serious improvements.

BA(U)LLS EYE

game character | It is quite complicated to throw the ball with seeds in the b(a)ulls eye, that is why the challenge plays an important role in this game. When you manage to throw the ball at the right spot you will hear nice sounds which makes this game surprisingly. Since this game will be played individually and there is no real competition between the individuals the social interactivity is not so high.

landscape transformation score | This game will probably contribute to the landscape transformation. Because the seeds will be thrown at the by the director beforehand chosen places and the seeds will be planted by the recreants there probably will be enough seeds which will grow out in trees.

safety score | the game is safe, no safety measurements have to be taken

social feasibility score | It is very accessible for people to attend in this game. There are no responsibilities or caretaking required to join this game. Recreants are already taking these routes so this game might be just a nice a nice and small interruption of the route you take.

technical feasibility score | For this game a digital board and a music installation have to be temporary be placed in the area and it is thinkable that for this some technical interventions have to be done and this will probably cost some money. Because of this the game does not score so high on the technical feasibility.

game character
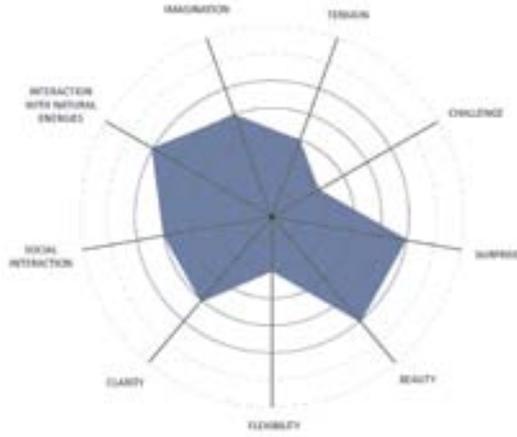
transformation score

★ ☆ ☆

safety score

★ ★ ☆

social feasibility score

★ ☆ ☆

technical feasibility score

★ ☆ ☆

game character

transformation score

★ ★ ★

safety score

★ ★ ☆

social feasibility score

★ ★ ★

technical feasibility score

★ ☆ ☆

game character

transformation score

★ ★ ☆

safety score

★ ★ ☆

social feasibility score

★ ★ ☆
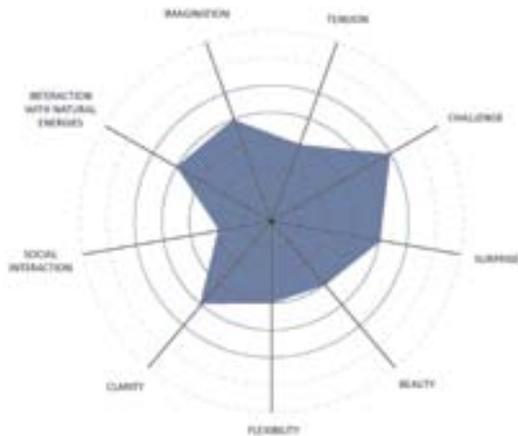
technical feasibility score

★ ☆ ☆

THE COUNTERGAMES : CLOSING THE BREAKTHROUGHS

SANDNET, TETRIS WALL AND WILLOW (DE)FENCE

The games of 'breaking through the defence line' were a huge success. All the inhabitants were font of the game which resulted in a lot of breakthroughs. After this successful social playing, the wind and sea continued playing with the landscape. The sea and wind are playing so wild that it might become dangerous for the inhabitants of the island. Something has to be done, the breakthroughs has to be closed. Will a Sand net be enough to catch the sands, a more rigid Willow Fence or will a defensive Tetris Wall be required to build a new defence line?

Shifting of sands is too successful
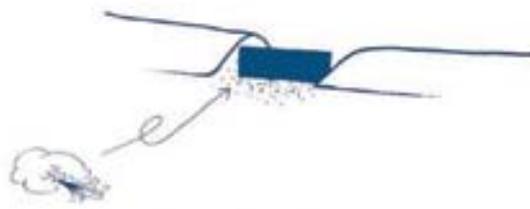
Close the breakthrough with a barrier
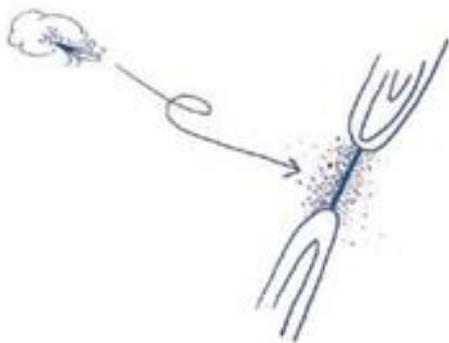
The wind will deposit sands in front of and behind the barrier

figure 29: landscape criteria closing the breakthroughs

THE GAMES

SANDNET

TETRISWALL

WILLOW (DE)FENCE
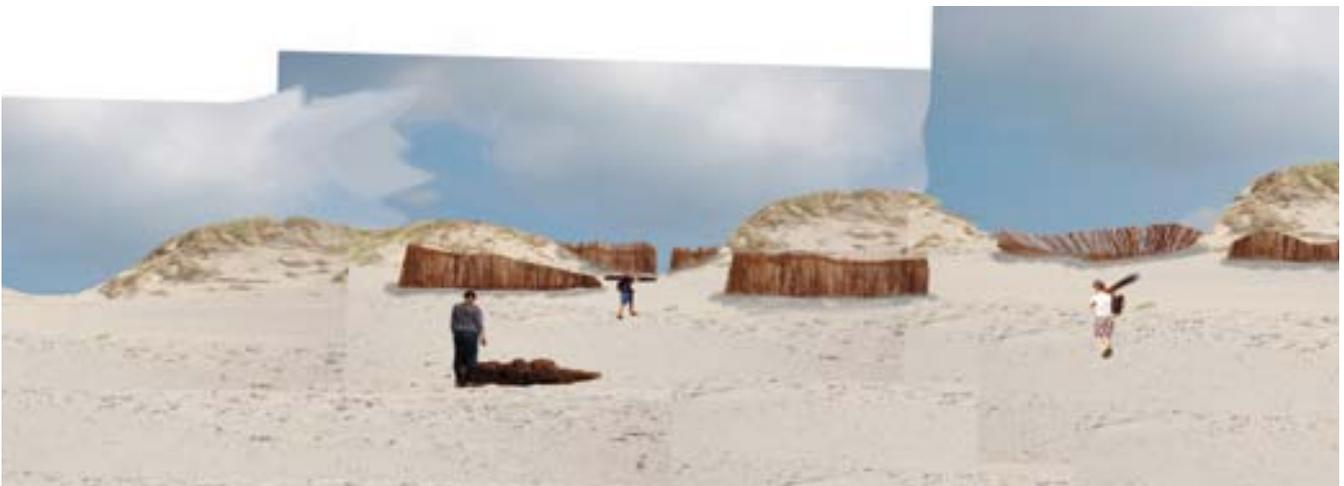
the game | 'Sandnet' is a game in which huge nets will be knotted which can, when necessary, be placed in the breakthroughs of the dunes. The different villages of Schouwen-Duiveland can knot their own nets in order to defend themselves against the shifting of the sands. Every village will be challenged to knot the most beautiful and best working net of the island. Different types of ropes and pieces of fabric can be used for knotting. Once the nets are placed in the breakthroughs of the dunes the natural forces are taking over the game. The wind blows sand particles in the net and by this the breakthroughs of the dunes will be slowly closed by sand. A panel of judges will choose which sand net is the most beautiful and works the best.

players | various teams representing the different villages

goal | knot the most beautiful and best working sand net

equipment | different ropes and pieces of fabric

the game | A friends birthday, a marriage or the birth of a child? These are all perfect celebrations to give a 'CelebTree' as present. You give the CelebTree in the form of a gift voucher. The receiver can hand in this voucher at the local tree nursery and will get in return a to planted tree and a 'Treesure map and a GPS application. The Treesure map consists of different GPS codes which illustrated the routing you have to take to find the location where you have to plant the tree. When you reach the in between GPS locations you get more and more information about your tree. When you planted the tree at the final spot this tree will be your tree which means that you can take the responsibility and care for the tree as long as it will life. You may even decide when you would like to fell the tree and use the wood for personal purposes.

players | the giver and receiver of the gift card, local tree nurseries

goal | plant your tree successful

equipment | a gift card, GPS

the game | During the Schouwse Willow day in the polder of Schouwen Duiveland many willow twigs will be collected. These willow twigs can be used to construct different brushwood fences and structures in the breakthroughs of the dune ridge. Every team playing this game gets a certain amount of willow twigs. With these twigs the teams have to build the most beautiful and strong construction as possible. When the fences are build the fences will catch sand that will be blown by the wind and after a while the breakthrough will be closed entirely. A panel of judges will choose which brushwood fence is the most beautiful and works the best.

players | different teams

goal | built a strong and beautiful brushwood fence

equipment | many willow twigs coming from the polder

GAME CHARACTERS AND SUCCESS SCORES

SANDNET

game character | In this game it will be really exciting (high tension) for the different teams who will win the game. This result is not only depending on which team will knot the best net but also on how strongly and in what direction the wind will blow. Therefore the degree of surprise is really high in this game. The players can decide themselves how and with what materials they will knot the rope and that is why the flexibility of this game is relatively high and the clarity relatively low. Characteristic to this game as well is that there is a lot of social interaction, both within as between the teams.

landscape transformation score | The sand nets will catch blowing sand from the coast and thereby the breakthroughs will close slowly. The functioning of the nets depends on how strongly and dense the nets are knotted and this depends on the work of the players. A price for the best working net will probably stimulate the players to create a strong net.

safety score | this game is a safe game

social feasibility score | In the Netherlands but also in many other countries many villages which are located closely like to contest each other. An example of this is the contest of who builds the most beautiful flower parade which takes place between different villages. What we discovered during our field study is that there is for example a strong rivalry between the villages Burgh and Haamstede. It is thinkable that these villages would like to contest each other in the Sandnet game and that this would become a 'before the huge storms comes' event.

technical feasibility score | The game does not recommend any specific technical interventions or purchases.

TETRISWALL

game character | Characteristic to this game is that the interaction with natural energies is really high because every block that will be placed, moved or removed will have a direct influence on the deposition of sand. Competition between the teams is not so important in this game. It will be more important to achieve the individual or team goal of building a good functioning wall. Therefore the tension is moderate but the challenge is high. Beauty plays an important role in this game as well since the building-blocks will become a piece of land-art.

landscape transformation score | When the wall is constructed well and high the wall can catch a lot of sand. The wall will be a rigid and hard barrier which can collect in a short time relatively a lot of sand. This game scores therefore high on the landscape transformation score.

safety score | It is a safe game to play since there are no dangerous or destructive machines involved. However, it might be possible to fall from the wall when you try to make wall really high.

social feasibility score | This game is a really collaborative game. People might like to play this game as a teambuilding activity which is nowadays really popular in the Netherlands. But the energy from people passing by can also be used really well. Therefore the social feasibility score is really high.

technical feasibility score | The game requires live-sized Tetris blocks which have to be developed. This might be expansive but it must be possible.

WILLOW (DE)FENCE

game character | The willow (de)fence game can be characterized most by the interaction with natural energies. Every willow twig that will be placed into the sand will have an influence on the sand deposition. The players have to think strategic in order to design a good functioning brushwood structure. Since this is quite complicated the challenge in this game is relatively high. Because this game can be played individually as in teams the score for social interaction is moderate. Since the brushwood fences will be constructed quite slowly surprise does not have such an important role in this game.

landscape transformation score | It is a very old tradition to build brushwood structures in the dunes that will catch sand in order to strengthen the dune ridge and protect the inland. From history we know that this techniques works pretty well so the landscape transformation score is really high. However it will take a while before the opening of the dune is fully closed.

safety score | there are no really safety risks by playing this game

social feasibility score | since the technique of braiding willow branches is a very old technique which is part of the culture of Schouwen Duiveland it might be socially a successful game for the inhabitants of Schouwen-Duiveland

technical feasibility score | no new techniques have to be invented to build the brushwood structures

game character
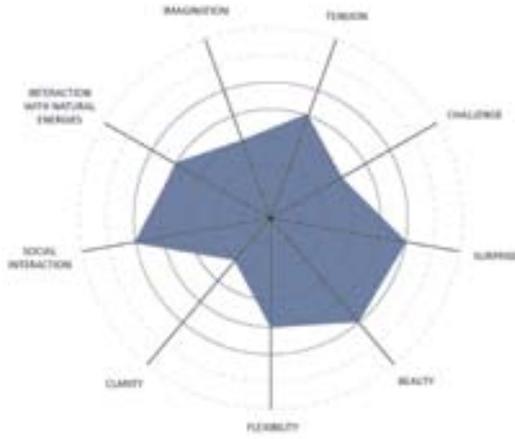
transformation score

⭐ ⭐ ☆

safety score

⭐ ⭐ ⭐

social feasibility score

⭐ ⭐ ☆

technical feasibility score

⭐ ⭐ ☆

game character

transformation score

⭐ ⭐ ⭐

safety score

⭐ ⭐ ☆

social feasibility score

⭐ ⭐ ☆

technical feasibility score

⭐ ☆ ☆

game character

transformation score

⭐ ⭐ ☆

safety score

⭐ ⭐ ⭐

social feasibility score

⭐ ⭐ ☆
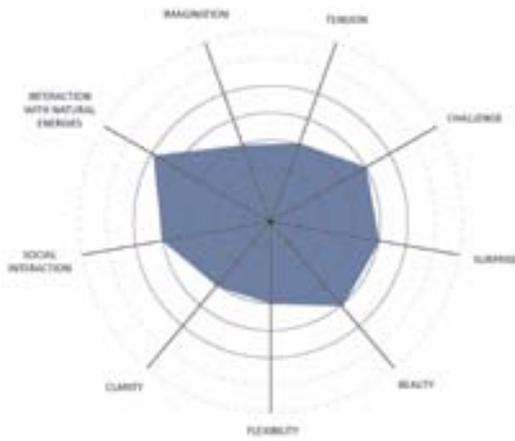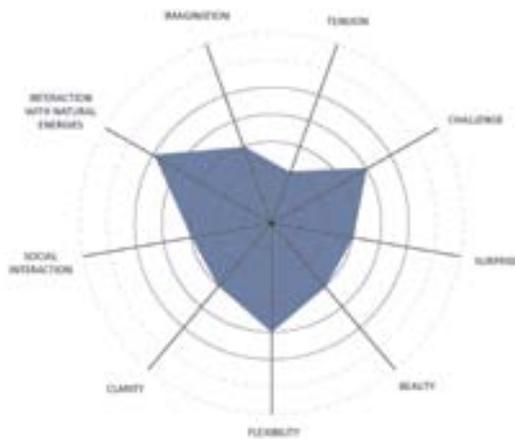
technical feasibility score

⭐ ⭐ ⭐

10. A PLAYFUL DUNE LANDSCAPE

The previous chapter gives an overview of a wide variety of landscape games. The directors of the dune area can use this overview to build up a game strategy which they can adapt to the unpredictability of human and nature.

Now the question arises how a combination of the various games can be implemented in and how they actually will transform the landscape. To test this we took the role of the directors upon ourselves by building an imaginary game strategy. We chose from the 'Game Strategy Handbook' a possible combination and subsequence of to be implemented landscape games. We landed these games in the landscape and together they will illustrate a possible scenario of the landscape transformation. In this chapter we also illustrate how social and natural energies can be in interplay with each other and how the game characteristics can be adapted according to unpredictable movements of these social and natural energies.

It has to be emphasized that these results shows a possible scenario but that the actually choice of games and the eventually adjustments of the game characteristics have to be made at different times during the landscape transformation processes according to the course and the results of the games.

TUG OF WAR

In order to break through the first dune ridge we choose for the game Tug of War. In this game a competition between different teams will be organized. During several stays at the island we noticed a certain degree of rivalry present between the villages of Burgh and Haamstede. We saw this rivalry as a potential social energy which can be used in a game. The game tug of war, as we created it, is based on the idea that these villages are battling against each other.

let the game begin...
Tug of War game is a unique variant of the traditional form of Tug of War and inspired on a Tug of War game which is hold on a festival in Japan in which thousands of people were playing at the same time.

In our Tug-of-War game the two villages of Burgh and Haamstede are both dared to show their maximum power, strength and cooperation qualities. The game is designed in such a way that hundreds of people can battle. Both villages will gather their strongest man and women to defeat the opponent village. An outline playing field is created by de director on the first dune ridge and a giant rope is their playing tool. Before the game starts a large knot in the middle of the rope lays at the top of the dunes. Both of the villages have to pull as fast and hard as possible in order to pull the knot of the rope over the boundary line of their own playing field which is one half of the game located at the sea- and the other half of the game at the land-side of the dunes. It is a very exciting game since you do not see your opponent team by the dune ridge that is located in between. The Tug-of-War game rules booklet will explain the course of the game as we designed it (see pages 106-107).

picture 18: our inspiration: a huge tug-of-war event on a festival in Japan

time table: interplay of natural and social energies

If we want to make use of natural energies and social energies which will be in interplay with each other we have to determine when both energies will be present the landscape transformation processes. Tug of War is most easy to play when the sands are relatively dry and therefore the spring and summer seems the most suitable seasons. As we observed during our visits and by findings in the research 'toeristisch trend onderzoek Zeeland' (2012) the most tourists are present at the island during spring, summer and autumn. Since a lot of energies or a multiple sequence of social energies are required to break through the dunes, the spring and summer will be the moment in the year that the game is being played by social energies. As we found during our research are the strengths of the natural energies like wind and sea most powerful during the autumn and winter (Wieringa and Tijdoort,1983). We therefore propose to let the natural energies play with the sands during autumn and winter (see figure 30).
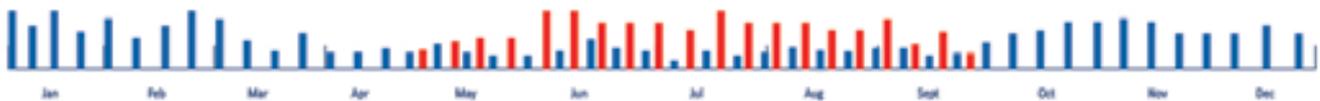
figure 30: time table
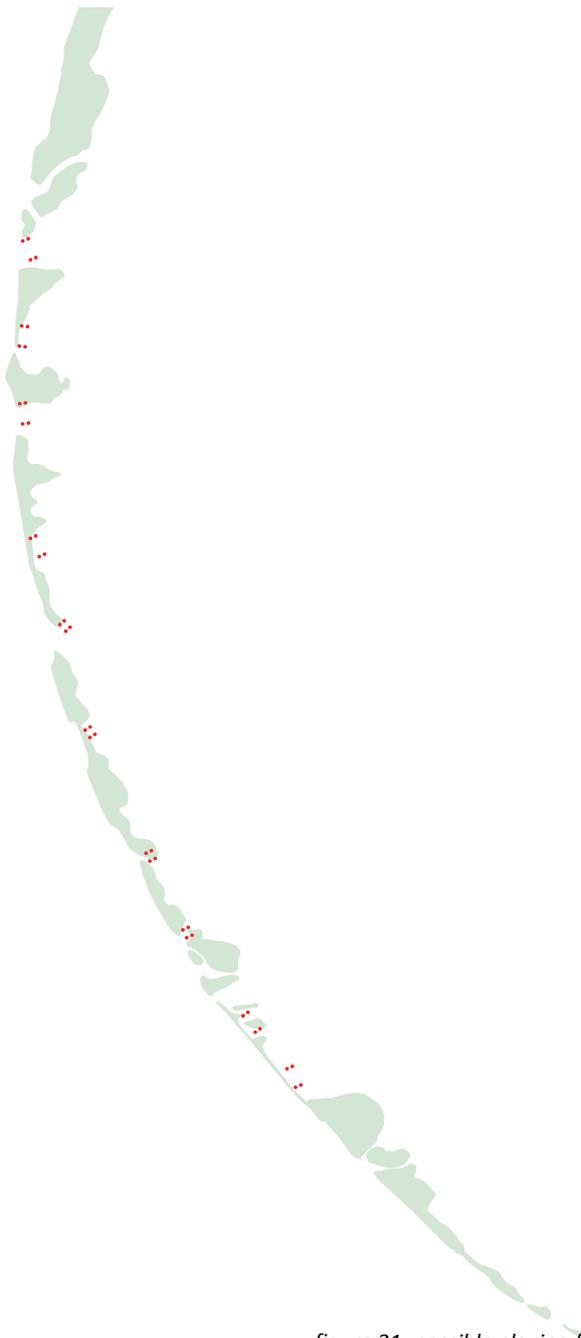
figure 31: possible playing field Tug-of-War

TUG-OF-WAR

BRIEF IDEA OF THE GAME

In Tug-of-War you and your team can show that you have more strength and cooperation qualities as the other team. With the first dune ridge as playing field and a giant rope as playing tool this is a unique variant on the traditional tug-of-war game. Before the game starts a large knot in the middle of the rope lays at the top of the dunes. Your team has to pull as fast as possible the middle knot over the boundary line of your own playing field which is one half of the game located at the sea- and the other half of the game at the land-side of the dunes.

goal
• be the fastest team that pulls the middle of the rope over the playing line of your own playing field

GAME PARTICIPANTS

teams
• two teams of the same amount of pullers

game leaders
• one referee
• two linesman
• one time man

spectators
• bring your supporters with you!
• independent spectators are welcome to watch the contest as well

GAME SETTING

equipment
• a giant rope made of many small ropes
• team flags
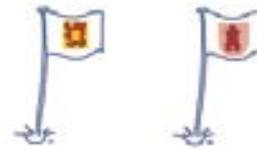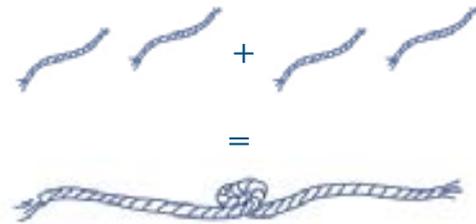
playing field
• two playing sides: one land- and one sea-side
• two boundary lines
• a centre point
• stands

bare sand

shrubs

grasses

heights with pawns

possible racing routes
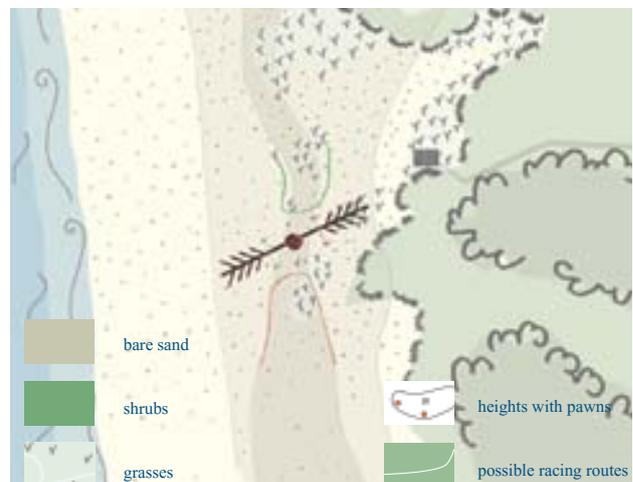
GAME RULES

THE GAME

before the game starts...

• 'tossing a coin' which is organized by the referee will decide which team will start sea- and which team will start land-side

seaside   **landside**

how to play

• after 'tossing a coin' the teams have to stand ready at their playing side
• the game starts when the referee gives the starting signal

• after the starting signal both teams have to pull as hard as possible
• when the middle knot crosses the land or sea line the associated lineman gives an ending signal which means the end of the first half
• after the first half the two teams switch playing sides and the second half can start

pulling as hard as possible

winning the game

• The team which wins two rounds or one round as fastest is the winner of the game. The times man measures the times between the starting and ending signals. The referee checks whether there is fair play.
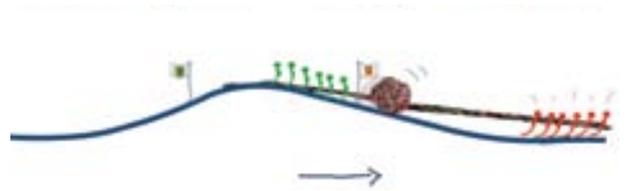
when the middle knot crosses your team flag you are the winner of one round

adaptation of the game characteristics

The directors can as already described decide to adjust the game characteristics. We will illustrate this by giving two examples of this within the game of Tug of War. First we will show how the game differs when played on a fixed or an open playing field. Secondly, we will show how the game changes by changing the shape and material of the playing tool, the rope, of this game. We will also give an idea how these differences can possible influences the experiences of the game.

In the first possibility the game will be played at a fixed playing field in which a multiple sequence of competitions will find place at the same location until the breakthrough meets the landscape criteria. What happens if we change this playing field changes from a fixed to an open one? What happens if the players can choose themselves where the game will be played?

The directors can also decide to let the playing field completely open for the players and see what kind of patterns the social energies give to the dunes. Will the play itself or the physical result become more beautiful than when a fixed playing field is used? When after a while it becomes visible that some parts of the dunes still have to be broken through the director can choose to determine specific places where the game has to be played. We assume that the difference between fixed and an open playing field will leave a different physical pattern in the landscape. Subsequently, this pattern also influences the way that the natural energies like the wind plays with it .

The directors can also decide to adjust the playing tools, in this case the tug of war rope (figure 32). When the rope for example does not move enough sand than another, more rough material, could be chosen. For example a huge ball with pins on all sides could be processed into the huge rope. However it could also be the case that the amount of participants is so high that a less destructive but larger tool has to be introduced in the game. In such a case a huge drag-net can be processed into the rope. Just like changing the playing field from fixed to open the adjustment of the game tool can also change the resulting physical patterns in the landscape and the way the wind plays with the sand (figure 33 and figure 47).

a huge drag-net which can be holded by hundreds of people at the same time
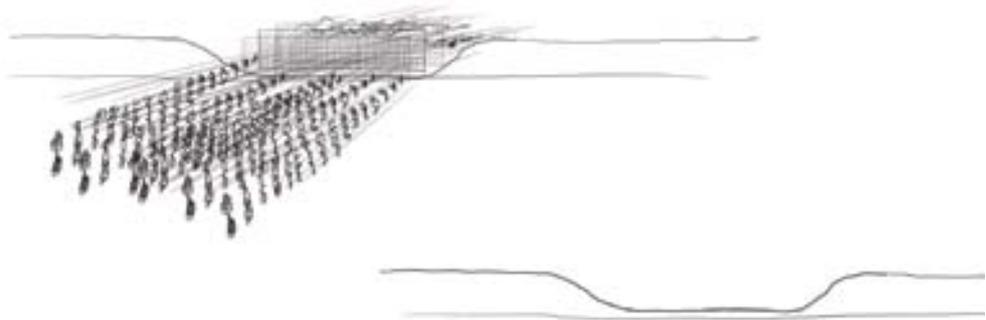
a huge tug-of-war rope made of many tiny ropes and with a hugh knot in the middle of the rope

huge ball with pins on all side which is processed in the rope

figure 32: adapting the game tool - left: game tool, right: possible physical result

possible course of a sequence of played tug of war games in a fixed playing field - directors decide where the game takes place


**social energies:
people playing tug of war**

possible course of a sequence of played tug of war games in a open playing field - players can decide themselves where the game takes place

physical result

natural energies taking
the game over: blowing
of the wind
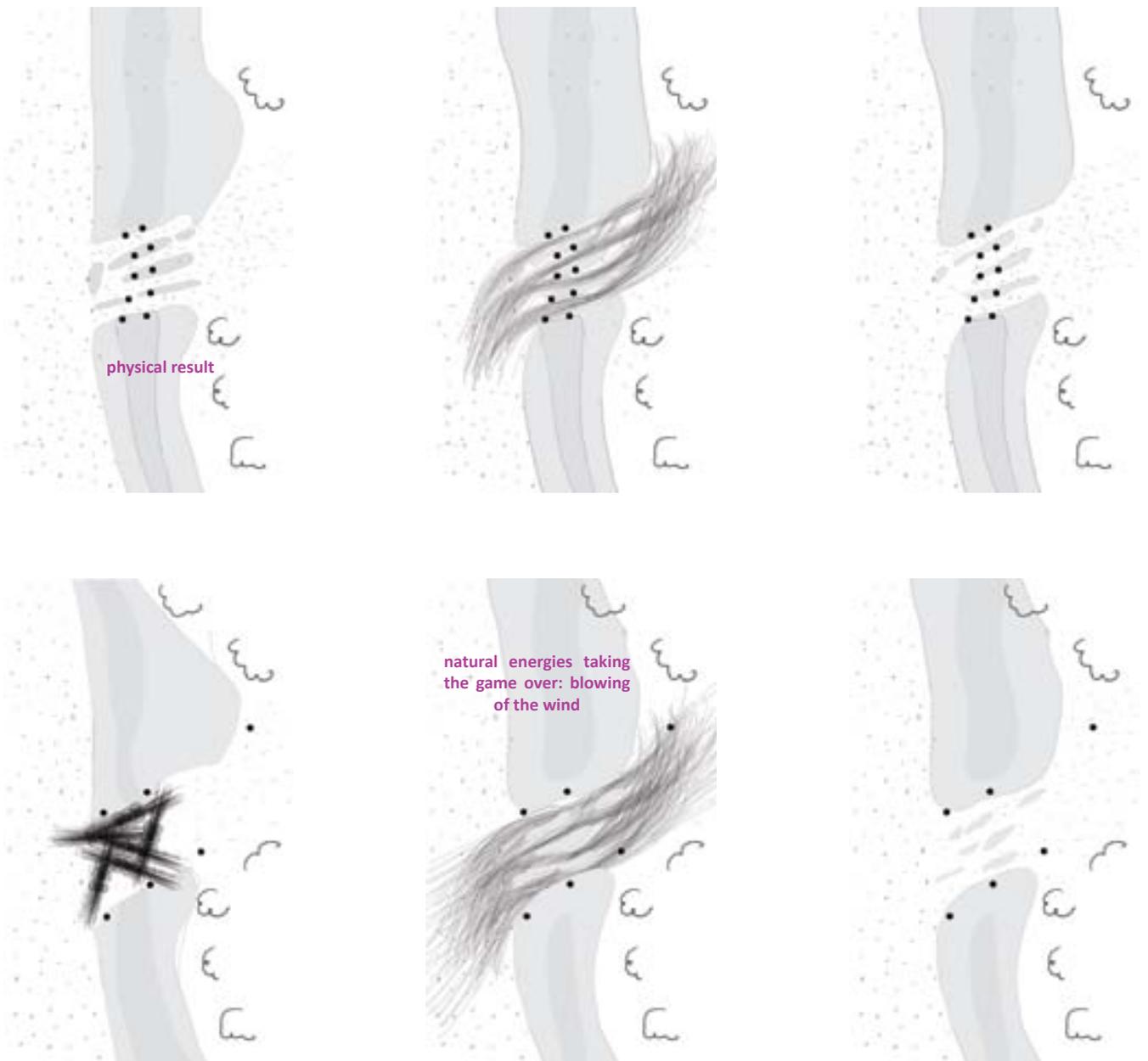
figure 33: adapting the playing field: from fixed to open

changing game character and game scores

As concluded in the game analysis, changing or adapting the characteristics of a game will also influences the game principles and the way people experience the game.

We will illustrate this by giving the difference between a fixed and open playing field. Changing the rules within the fixedness of the playing field will probably have the largest influence on the game principles of clarity, flexibility and tension. According to our interpretations, a fixed playing field will have a higher degree of clarity since the playing field is determined. It will have a lower degree of flexibility since people cannot choose where they play the game. Furthermore we assume that by a fixed playing field the game will be played more serious and therefore the competition and thereby between the opponent players will be higher than in open playing field where the game will tend to have more a character of free playing, of trying out.

Changing the game characteristics will probably also change the by us described game scores. An example of this is that in a fixed playing field the directors have more influence on the landscape transformation success.

open playing field - players can decide where the game takes place

game principles model

landscape transformation score

⭐⭐☆

safety score

⭐⭐☆

social feasibility score

⭐⭐☆

technical feasibility score

⭐⭐⭐

fixed playing field - director decides where the game takes place

game principles model

landscape transformation score

⭐☆☆

safety score

⭐⭐☆

social feasibility score

⭐⭐☆

technical feasibility score

⭐⭐⭐

QUAD RACE

To wake up the sleeping dunes we choose to introduce the Quad Race. Although the other games are also races we chose for the game in which a mechanical tool of a quad is introduced. The mechanical tool makes it easier to transform the landscape and during our visits on the island we saw a lot of youth and also elderly driving on a quad through the dune landscape. Since the energy of driving a quad is currently already present in the landscape we assumed that this kind of a race will have potential to be a success in the local society. However currently it is only allowed to drive on the paths, but this will change by introducing our quad race!

let the game begin...
Quads already exist for a long time and are used in multiple ways within our society. However such a Quad Race as we introduce here is a very unique one. Our landscape game gives the opportunity to race completely off road through the sandy dune landscape the Kop van Schouwen. It will become a spectacular event where teams of friends, families or colleagues will battle against each other. You will start and finish at the land side of the first dune ridge, and in front of you an open playing field of sandy dunes and shrubs is visible. As a team you can define your racing strategy in order to gain the highest amount of points by passing the pawns which are located in the landscape. The different pawns stand for different points, so be smart and use your brains! A stated time is given to a lap round, and every lap round you can adapt your strategy to gain more points, to win the game! Construct a smart strategy and become win the Racing Cup of the year. The Quad Race game rules booklet will explain the course of the game as we designed it (see pages 118-119)

picture 19: quad race in the dunes

time table: interplay of natural and social energies

If we want to make use of natural energies and social energies which will be in interplay with each other we have to determine when both energies will be present the landscape transformation processes. Tug of War is most easy to play when the sands are relatively dry and therefore the spring and summer seems the most suitable seasons. As we observed during our visits and by findings in the research 'toeristisch trend onderzoek Zeeland' (2012) the most tourists are present at the island during spring, summer and autumn. Since a lot of energies or a multiple sequence of social energies are required to break through the dunes, the spring and summer will be the moment in the year that the game is being played by social energies. As we found during our research are the strengths of the natural energies like wind and sea most powerful during the autumn and winter (Wieringa and Tijdoort,1983). We therefore propose to let the natural energies play with the sands during autumn and winter (figure 34)

figure 34: time table quad race

figure 35: possible playing field Quad Race

QUAD RACE

BRIEF IDEA OF THE GAME

This is your chance to join a quad race through the sandy dune landscape of Schouwen-Duiveland. It will be a spectacular race event where you can form a team with your friends, family or colleagues and defeat the other teams. There is no fixed racing field, you will have to find your own way through the dunes and gain points by passing pawns. The goal is to find a strategy that will bring you the highest amount of scores. The different pawns stand for different points, so be smart! As a team you can construct your own strategy to win the race and every lap you can adapt this strategy. Be the team that gains the highest points and become the race team of the year!

goal
• gain the highest amount of points by passing different pawns

GAME PARTICIPANTS

teams
• every team may consist of six individual players

vs.

game leaders
• one time man
• a referee
• two judges at the start and finish point

spectators
• bring your supporters with you!
• independent spectators are welcome to watch the contest as well

GAME SETTING

equipment
• electric quads with profiled tires

playing field
• starting place
• there is no fixed playing field or playing border
• different pawns spread over the dunes
• stands

bare sand	
shrubs	heights with pawns
grasses	possible racing routes
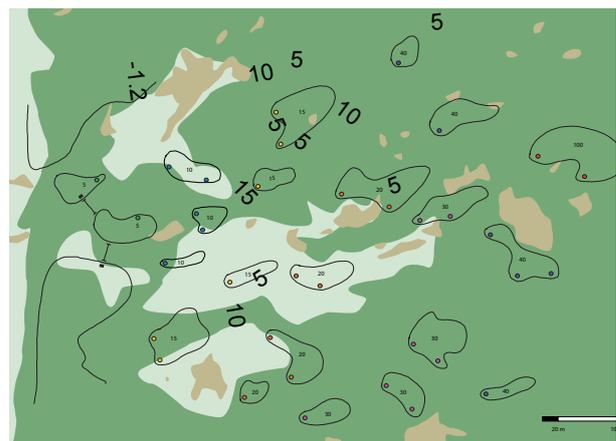
GAME RULES

before the game starts...
- the time man will announce how long a race lap lasts race laps
- every game consists of six race laps, every team member will represent his/her team for at least one race lap (depending on the amount of team members)

how to play
- two teams have to stand ready at the starting place, one player of each team will be representing his/her team by driving the quad
- when the referee gives a starting signal the first race lap starts

- as a driver you are free in where in the landscape you are driving
- you gain points by passing the pawns which are spread in the landscape

- when the time man gives the end signal the lap is over and the drivers have to drive back to the starting place
- now another race lap starts and of both teams another player will be representing his/her team
- when the end signal of the last race laps sounds the game is over

winning the game
- the pawns close to the starting place are worth less points than the pawns that are located further away in the playing field

- as a team you win the game when you gain the highest amount of points within the set time

adaptation of the game characteristics

However, what happens if the director finds out that the dune landscape, in its current state of being is not suitable for a quad race? And what happens if the breakthrough of the Tug of War game has to be deeper than expected? In such a case the director can decide to mow the shrubs in the dunes in order to create a more suitable terrain for the quad race (see figure 36 and figure 48). By this gradually a kind of playing field emerges without fixed boundaries. In order to deepen out the breakthroughs the start and finish of the Quad Race can be relocated to the beach. The quads will race through the breakthroughs into the dune landscape. All the teams can race free through the terrain, there are no points to gain and no fixed time is given. The racing creates deeper breakthrough, the wind will get more influence on the exposed sands in the dune landscape. However, it could be that dunes close to the sea are preliminary exposed with the quads. The dunes further in the landscape are not being exposed enough in order to let the sand shift and to create a natural landscape gradient. Can the director adapt the game rules of the Quad Race in order to reach the landscape transformation? Yes he can, by locating pawns in the landscape with higher points further to the inland the racers will be stimulated to race further to the inland and drive along the pawns. By this the sands are more exposed and the wind can shift the sands. If the director monitors that the break through is deep enough to shift the sands to the inland, the start and finish location of the quad race can be relocated to the inner site of the dunes. A further relocation of the pawns within the dune landscape can enhance the exposure of sands at specific parts of the landscape. This relocation of pawns can continue until the landscape is transformed, which give different physical patterns in the landscape. If after a while the landscape is transformed into the desired direction, the director can decide to introduce another game for the further maintenance of the landscape. By introducing the games Horse Force or the Sjogging the openness of the landscape can be maintained. These are more subtle energies than the quad race and can therefore be introduced for the maintenance.

By adding points and a time limit the patterns in the landscape probably change. It suddenly becomes a competition in which a prize is given to the winner. We also assume that the influence of the wind on the sands will be stronger close to the sea and decreases further into the inland. The energy of the wind will therefore have also more influence on the forms and physical patterns in the landscape closer to the sea. We think that in this way a natural landscape gradient will automatically be developed.

The above described adaptation of game rules purely illustrate a possibility, many other game rules adaptations are thinkable.
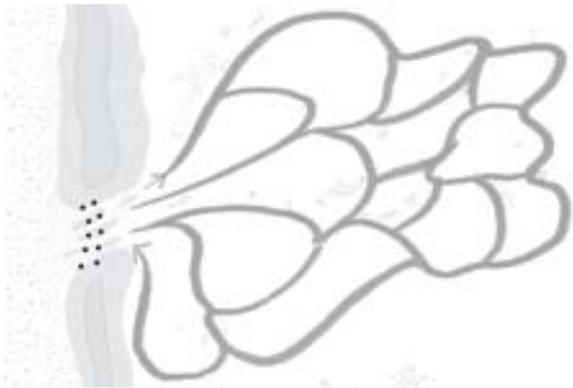
the directors mow the grass to open up a trail
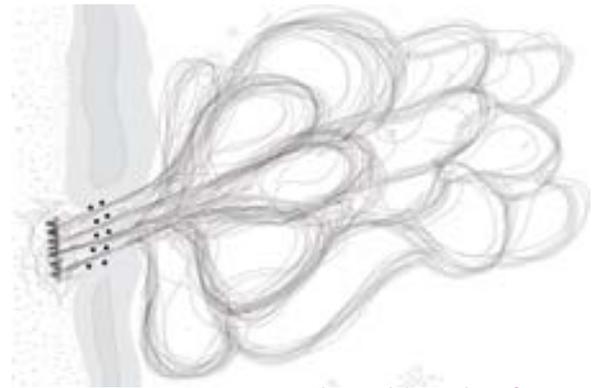

the quad drivers have free race
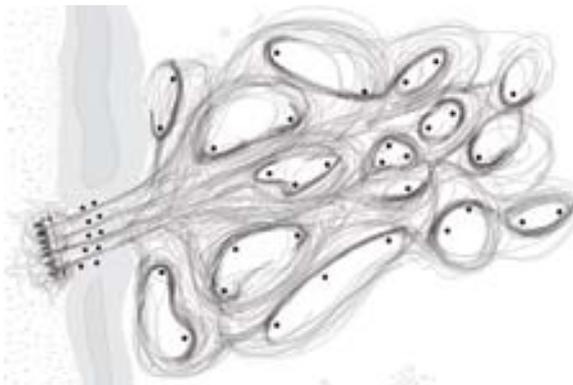
the directors place pawns to steer the race: start at the beach
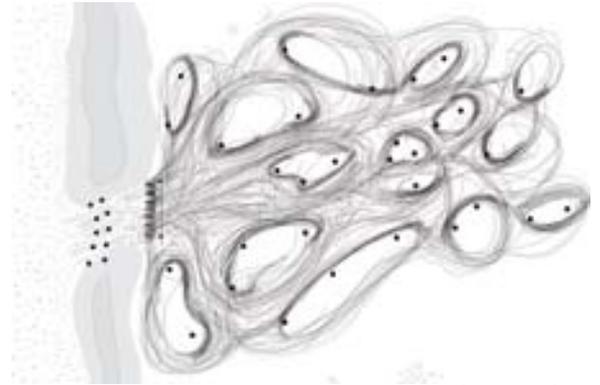
start in the first dune ridge
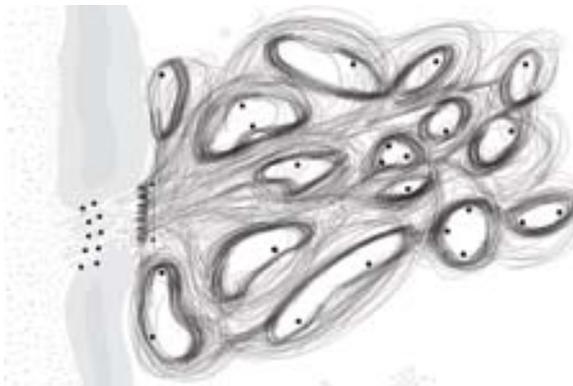
directors relocate the pawns where required
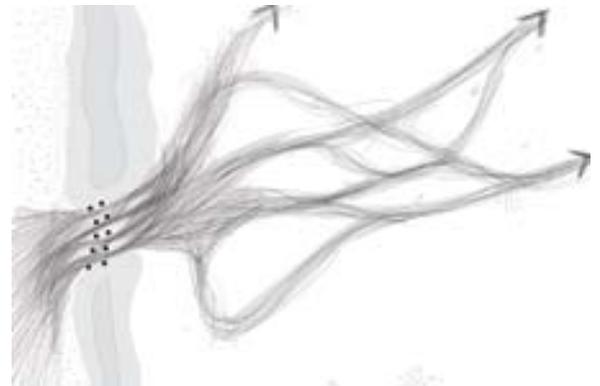
natural energies are taking the game over: blowing of the wind

physical result: small vegetated hills on a sandy dune

figure 36: possible course of a sequence of place with in between adapations of the game characteristics from free race to winning a fixed amount of points

changing principles and experiences

Changing or adapting the characteristics of a game will just as in the Tug of War game probably influence the game principles and the way people experience the game. We will illustrate this for the Quad Race by giving the difference between having a race in which points and a time limit are included (competition) and a race in which these game characteristics are absent, where there is a free game. According to our interpretations a quad race competition has a higher degree of imagination, tension challenge, social interaction and clarity by adding points and a time limit to the game. As a team you will try to think out the best strategy to gain the   game the success of another game, or in this case the success of Tug of War and the landscape transformation, the conditions and processes in the landscape, where important factors for the adaptation of game rules.

free race

game character
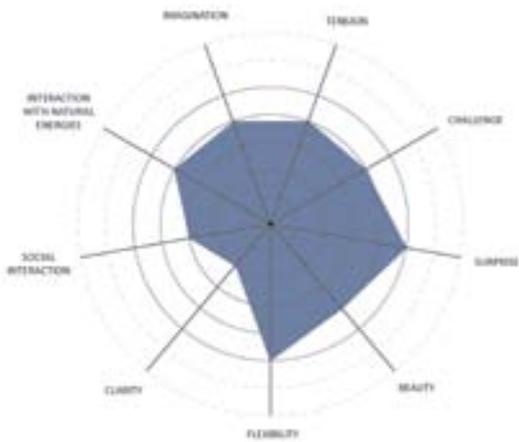
*transformation score*

⭐⭐⭐

safety score

⭐☆☆

social feasibility score

⭐⭐☆

technical feasibility score

⭐☆☆

winning the highest amount of points

game character
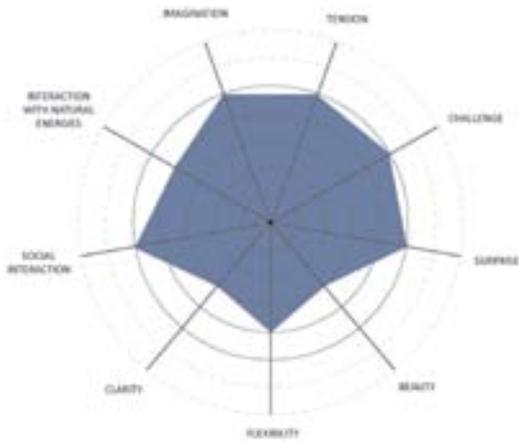
transformation score

⭐⭐⭐

safety score

⭐☆☆

social feasibility score

⭐⭐☆

technical feasibility score

⭐☆☆

SCHOUWSPEL and THE BOLUS CONSUMPTION

To wake up the sleeping dunes we also have to cut down trees in the forest. For this intervention we choose to introduce the game 'Schouwspel'. This is not really a game in the traditional sense but rather a theatre play in which the story of the landscape transformation of the Kop van Schouwen will be told. Central in this story is that because of ecological reasons the large parts of the forest have to be cut down by the State Forestry Service. Since this game is more integrated in the daily lives and routines of the inhabitants of Schouwen-Duiveland and the game does not really a competition, we call this a 'cultural game'. During our stay at the island we interviewed the forester of the State Forestry Service, Camiel Beijersbergen. In this interview it became clear to us that most inhabitants of de Kop van Schouwen are not supportive when the foresters are cutting down trees of the Forest Westerschouwen. After a period of time the beautiful side of the management measures become visible, from this moment the foresters receive social appreciation for the executed measures. For this reason we thought of how we could make the measures for cutting down the trees more beautiful and how the inhabitants can be actively involved in this process.

Let the game begin...
Before the theatre play starts, the inhabitants and tourists will be involved in an interactive way in the story. The 'bolus', a local product of the province of Zeeland in which Schouwen Duiveland is located, is nowadays consumed by many tourists and inhabitants and every local bakery sells this pastry. At this moment no actions or consequences are linked to the consumption of a bolus but with the 'Bolus Game' this will change. From now on the amount of sold bolussen will determine how many trees will be cut down by the State Forestry Service. On digital sign boards in the local villages the amount of consumed bolussen will be presented. By adapting the consuming behaviour of buying bolussen people can either boycott or stimulate the cutting down process. By buying a family bag consisting of five bolussen people will get a free ticket to the theatre show as well. The inhabitants are all invited to spectate this spectacular show in which machines and artists will cut down trees in a playful way.

adaptation of the game rules
In this game the inhabitants can decide whether they want to support or boycott the measure of the State Forestry Service by consuming more or less bolussen. So, in this game the inhabitants determine indirectly the amount of trees that will be cut down in the theatre show. However, what happens if the inhabitants do not consume enough bolussen so that the desired landscape transformation is not reached? The director can than adapt the rules of the game in order to achieve the desired transformation. We will shortly illustrate this by giving two possible adaptation strategies.

If the game is not very successful, the director can decide that the consumption of one bolus represents ten trees that will be cut down in the theatre show. In this way the logging processes can be fastened. It could also be that the director finds out that the bolussen are not as popular as they expected it to be. In this case the director can decide to link the consumption of another product to the cutting down show of trees. It is advisable that the director choses in such a case a product that is consumed on a more daily basis than the bolussen, maybe the consumption of bread, milk or toilet paper.

SCHOUWSPEL
and the bolus consumption

inhabitants and tourists go to the bakery...

every sold bolus stands for one to cut down tree, every family bolus bag stands for one free ticket for the theatre show SchouwSpel

On digital sign boards in the local villages the amount of consumed bolussen will be presented

ShouwSpel: a spectacular show in which machines and artists will cut down trees in a playful way

the directors can adapt the game rules when not enough bolussen are sold: changing amount of to be cut down trees or the product

figure 37: Storyline Schouwspel and the Bolus Consumption

125

time schedule

This game is more interwoven within the daily lives and routines of the inhabitants of Schouwen-Duiveland. In this way we tried to make the cutting down of trees also more part of the daily lives of the inhabitants. We assume that during the spring, summer and autumn the tourists of Schouwen Duiveland will consume also bolussen, it is especially in the spring and summer that the social and natural energies play together during the theatre show (figure 38).

figure 38: possible time table Schouwspel and the Bolus Consumption
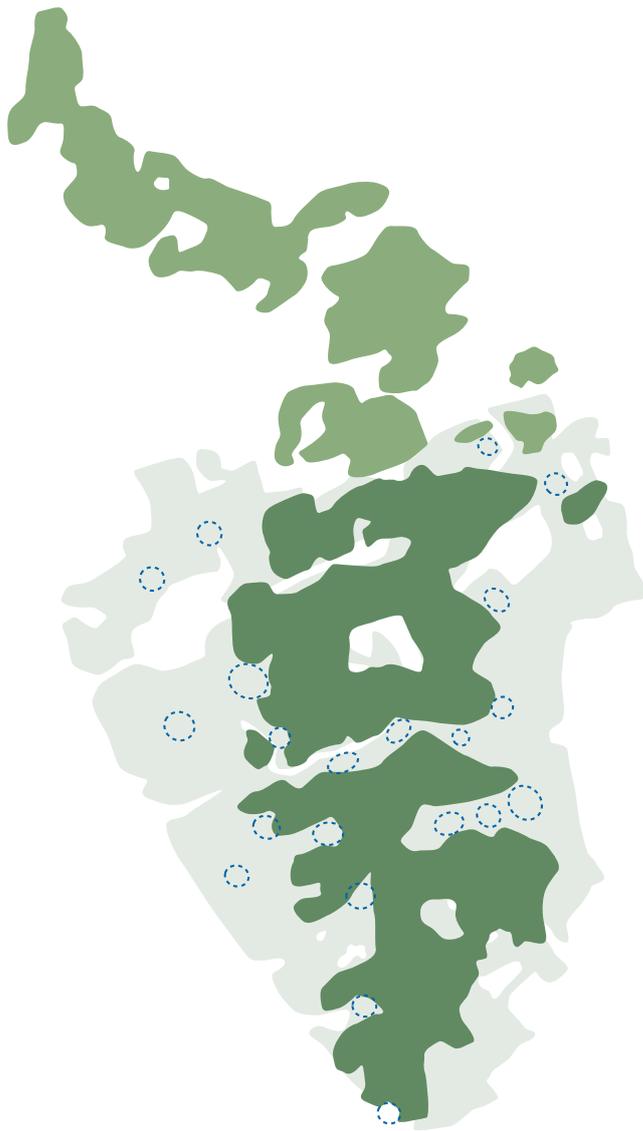
figure 39: possible playing field SchouwSpel and the Bolus Consumption

CELEBTREE and B(A)ULLSEYE

To build a 'Safety net' trees have to be planted on the higher dunes in the inland. During our stays throughout the year, we observed that there are a lot of recreants moving through the dune landscape. The recreation paths of the area are mainly following the higher parts of the dune landscape and makes the landscape accessible for recreants. We wanted to make use of these moving energies through the landscapes and to enhance these higher parts in our safety net. Therefore for this game the recreational paths were leading in order to plant the trees for the safety net.

For executing this intervention we choose to introduce the games 'Celebtree' and 'B(a)ullseye'. These two games differ from each other in some ways. The 'Celebtree' game is linked to cultural events in people's daily lives such as a marriage, the birth of a child or a birthday party. Since in this game the routines of people's daily live are leading and in this game the aspect of competition is absent, we call this game also a 'cultural game'.

The game 'B(a)ullseye' also not consists of competition elements and is also based on the daily routines of recreants in the region, therefore this is game is also called a 'cultural game'. Both games will their own particular way contribute to the development of a safety net. The Celebtree will be a game in which people can plant individually a young tree at 'open and accessible' area's along the recreation paths. However some parts of the area are located further away from the path or are because of shrubs inaccessible, at these locations we will introduce B(a)ullseye.

let the games begin...
A friends birthday, a marriage or the birth of a child? These are all perfect celebrations to give a 'CelebTree' as present. You give the CelebTree in the form of a gift voucher. The receiver can hand in this voucher at the local tree nursery and will get in return a to planted tree and a 'Treesure map and a GPS application. The Treesure map consists of different GPS codes which illustrated the routing you have to take to find the location where you have to plant the tree. When you reach the in between GPS locations you get more and more information about your tree. When you planted the tree at the final spot this tree will be your tree which means that you can take the responsibility and care for the tree as long as it will life. You may even decide when you would like to fell the tree and use the wood for personal purposes.

As stated earlier, some locations where trees have to be planted are not very well accessible. For these locations we introduce the 'B(a)ulseye' game: Throughout the whole year many recreants are visiting the Kop van Schouwen and a large amount of them cycle or walk through the dune landscape. In the B(a)ullseye game recreants can pick up at the entrance of the Boswachterij Westerschouwen in the recreation shed of the 'State Forestry Service' a ball with little seeds. These balls can be thrown away at spots along the recreational paths. It will ask for some insight to point and throw the ball at the therefore intended places, the 'B(a)ullseye. When this is the case the recreant can plant the seeds into the soil. If the ball is thrown right you 'score' and you will hear nice sounds of

bees, birds and cicadas. This will refer to the kind of habitat you are contributing to. A digital board in the zone will present the amount of balls that are thrown correctly. By this people can see in which zone a little amount of balls are thrown correctly and this can stimulate people to try to throw their ball in the spots where no seeds are present.

adaptation of the game characteristics
In these games the inhabitants can actively be involved in the development of their safety net. However it could be that the games are not sufficiently contributing to the development of a safety net. Is that problematic? We don't think so, in such a case the director can adapt the game characteristics. We will give one example per game of how the adaptation of the game characteristics can be realised in order to develop a safety net. If the 'Celebtree' is not a successful present to give amongst the inhabitants of Schouwen Duiveland, the director can decide to adapt the game characteristics. The director can decide, in accordance with the municipality, that just married couples get as symbol for their marriage a Celebtree that they can plant on one of the locations in the safety net. If some locations, of the B(a)ullseye game, are too far from the path to throw the balls or not accessible, the director can decide to introduce a tool to throw the balls further into the field.

CELEBTREE

a birth or birthday celebration?

buy as present a 'Celeb Tree' gift card.....

the receiver goes with the card to the local tree nursery...

he/she receives his/her tree with a treesure map and GPS coordinater..

what kind of tree will I have...?

When you reach the in between GPS locations you get more and more information about your tree...

When you planted the tree at the final spot this tree will be your tree which means that you can take the responsibility and care for the tree as long as it will life. You may even decide when you would like to fell the tree and use the wood for personal purposes

figure 40: Storyline Schouwspel and the Bolus Consumption

B(A)ULLSEYE

recreants of the Boswachterij Westerschouwen can pick up at the entrance a ball with little seeds

when they reach the b(a)ullseye spots they can try to throw the ball into the b(a)ullseye zone

If the ball is thrown right you 'score' and you will hear nice sounds of bees, birds and cicadas. The ball will explode and the seeds will fall on the ground where they might develop into trees.

figure 41: Storyline B(a)ullseye

time schedule

The Celebtree game will be linked to cultural events of the inhabitants of Schouwen Duiveland, such as a birthday. We assume that these events are rather equally divided over the year and that therefore the plantation of trees in the area is also rather equally divided throughout the year. However we do think that most people will give a celebtree in spring, since the symbolism of 'new life' is linked to this period of the year. After the plantation opf trees, the natural energies of growing of trees and the playing of wind with the sands will take over (figure 42). The B(a)ullseye game is more related to the amount of recreants in the area. As stated earlier, especially during the spring, summer and autumn there are a lot of recreants passing through the area. We therefore think that this game is especially successful in these periods of the year. Throughout these moments of the year the scoail and natural energies like the growing of trees are in interplay with each other.
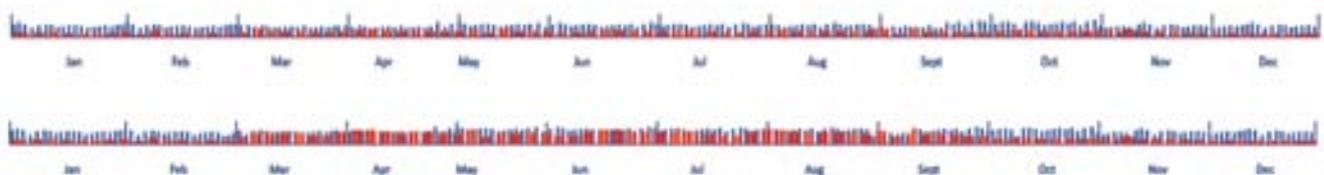
figure 42: possible time tables - up: Celebtree, down: B(a)ullseye
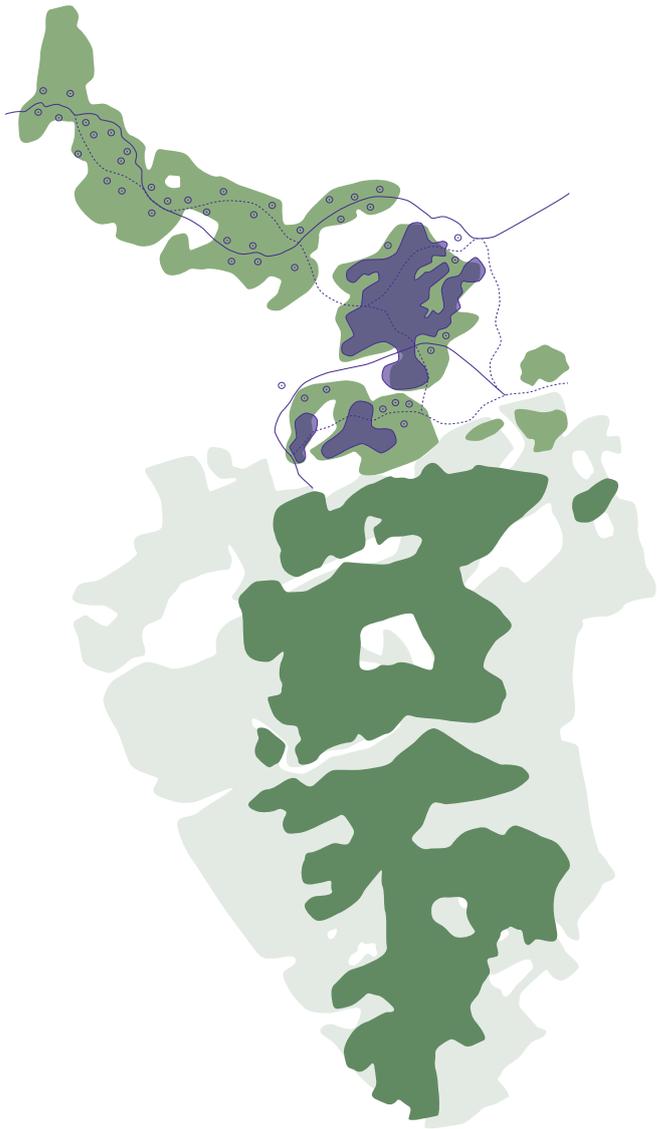
figure 43: possible playing field Celebtree and B(a)ullseye

11. A DYNAMIC DUNE LANDSCAPE

The above described games Tug-of-War, Quad-Race, Schouwspel, Celebtree and B(a)ullseye all will be played at different times through the year and at different locations in the landscape. In every game the interplay between social and natural energies is present but at different locations and at different moments. These games give result to changes on the scale of the game that is being played in the landscape. However, together the individual games create changes in the landscape on a larger scale, the landscape scale. In the following chapter we will describe and illustrate how the games , the alternation of social and natural energies in time and space, can together transform the landscape into a desired direction. We will do that by showing different phases in time.

ROUND 1 - THE KICK OFF

social game - quad race, schouwspel, celebtree and B(a)ulseye
The first phase of the game season will be introduced by several Quad Races in the northern part of the dunes. The Quad Races will be organized during the period between July and October, outside the breeding season of the birds. Tourists and inhabitants will be invited to participate in the quad racing. Throughout this whole year the bolus consumption of the inhabitants and tourists of Schouwen- Duiveland is being monitored. This results in several 'cutting down shows' during the spring and summertime. During the periods between the shows the cutting continues but then without a performance. The part of the forest that is located closest to the sea will be first removed, since this parts does not correspond with the idea of a natural landscape gradient. During the whole year the games of Celebtree and B(a)ulseye are being played in order to build a safety net. The director determines the first locations where these games can be played (see figur 44).

natural game - smooth blowing of the wind, first shifting of sands, growing of young trees
In the period after October the wind will continue playing in the field. The exposed sands of the quad race will be the playing field for the wind. The strength of the wind is not most powerful since the dune ridge is still closed. The first sand shifts become visible in the landscape. Further to the inland the first young trees are growing and catching some sands that are shifted by the wind. In the landscape the first patterns of the quad race, blowing of the wind and of the safety net are becoming visible.

social energies

natural energies

 Tug of War

 wind

 ShouwSpel and the Bolus Consumption

 growth of young trees

 Celebtree and B(a)ulls eye

 single trees develop into a forest

 Quad Race

figure 44: maps round 1: the kick off

ROUND 2 - THE BREAKTHROUGH

social game- tug-of-war, quad racing, celebtree and b(a)ulseye
In the northern part of the dunes the first match of Tug-of-War will be played. The game will be played during the dry seasons, from May until August. In this time period the most tourists are at the island visiting the beach and enjoying the coolness of the sea, these social energies will be all invited to participate in this game. At the place where the forest was located, a rough terrain becomes visible. This is a fantastic parcour for the Quad Race. New locations on the safety net are given free as a playing field for the games Celebtree and B(a)ulseye. The cutting down show is not being played, since we first want to give the time to the Safety net to develop a bigger forest (figure 45).

natural game-heavy winds enter the land, sand is shifted, the safety net is growing
At the locations where the dunes are opened the wind has free access and shifts the exposed sands further to the inland. At the place where the Quad Race took place they wind started to play with the sands, creating smooth forms to the flexible sandy dunes. The forest of the safety net is growing and catches now more and more sands. Slowly the first new forms in the landscape are being formed and the first idea of the natural gradient becomes visible.

social energies

natural energies

Tug of War

wind

Celebtree and B(a)ulls eye

growth of young trees

Quad Race

figure 45: maps round 2: the breakthrough

ROUND 3 – ALL TOGETHER

social game- tug-of-war, quad racing, schouwspel, celebtree and b(a)ulseye
During this round 3 all the social games are being played in the landscape. In the southern part of the dune ridge the Tug-of-War game is taking place, creating openings in the dunes. The Quad Race is only additionally being played at locations where the sand is not enough exposed and the wind cannot shift the sands. New locations in the safety net, for plantation of the forest, are given free for the game s of Celebtree and B(a)ulseye. It gives already a slight indication of the form of the new forest. Since the safety net is becoming more robust, the second and even final part of the forest can be cut down in the theatre shows (figure 46).

natural game- heavy winds are giving form, shifting sands are playing and existence of a robust safety net
After a period in which all the social games have taken place, it is time for the social energies to show their power. The wind is heavily blowing and since the back side of the forest is removed, the wind blows through the openings of the forest and can also reach the dune landscape behind the forest. A large part of the front zone of the dune landscape is released of the fixating vegetation. This results in a landscape in which the sand are shifting from place to place.

social energies
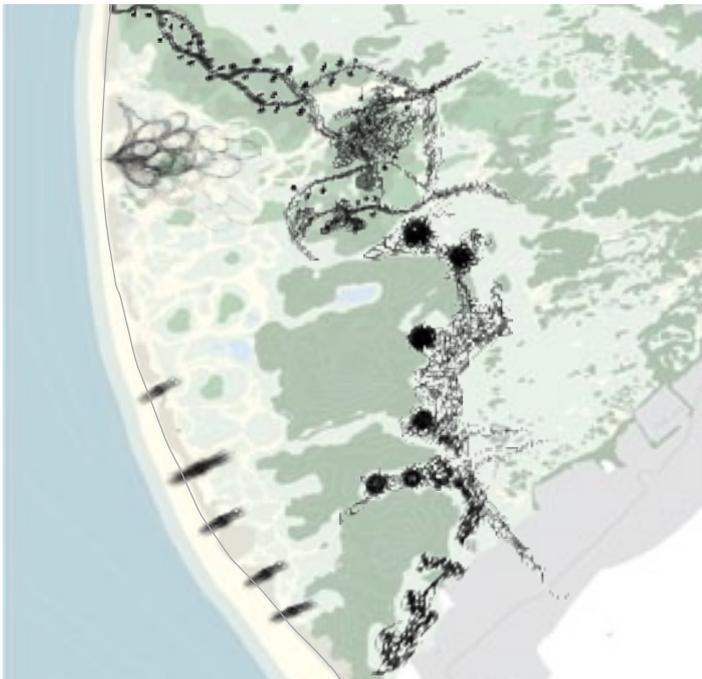
natural energies
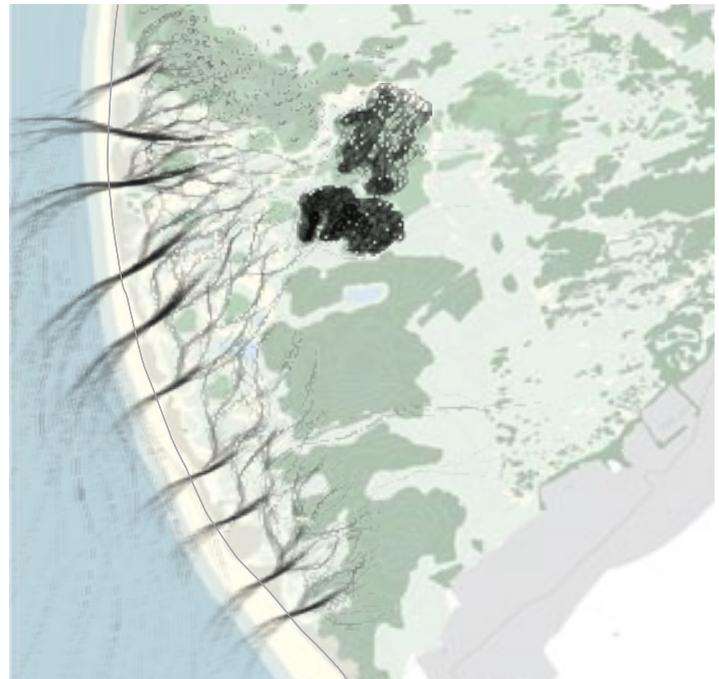
 Tug of War

 ShouwSpel and the Bolus Consumption

 Celebtree and B(a)ulls eye

 Quad Race

 wind

 growth of young trees

 single trees develop into a forest

figure 46: maps round 3: all together

figure 48: possible course of the interplay between social and natural energies in the Quad Race Game

GAME OVER....

?

**never ending interplay through time**
Most of the social games are being played during the spring and summertime. This is the season in which the most social energies are present in the landscape and it is also the most pleasurable time of the year to spend time outside. At the time that the social games stop, from October until April, the natural energies can play in the playing field of the games. During this time period the natural energy of the wind is most powerful. By this alternation in time of social and natural playing we make use of the present energies and when they consist of the most movement or power. What becomes visible by comparing the social energy maps and the natural energy maps is that in the first phase especially the social energies are in play in the landscape, but through time the natural energies like the wind and growing of trees are taking the playing field over. The social and natural energies are influencing each other's patterns, they are giving form to smooth patterns in the landscape (figure 49)

We do think that by introducing these landscape games the desired landscape transformation can be realized. However we designed a process in which uncertainties and unpredictability's have a large role, no numbers and end specific results can be guaranteed. The above described scenario is purely a possible way of how the landscape can represent an interplay between social and natural energies by introducing games. The physical representations of these interplays are also possible representations and have a temporal character. The specific time in which the social games find place, and the time that has to be given to the natural energies, are very uncertain and we therefore don't give a time claim. According to us, the landscape will be like a never ending game between social and natural energies in which, dependent of the landscape processes, a continuous repeating of social and natural games can be performed in the landscape. It is this interplay of social and natural energies that really shows the dynamics of the landscape. The landscape will never come to an end result but will be in an ever changing interplay. It will be a Landscape game with an open ending.....

social energies
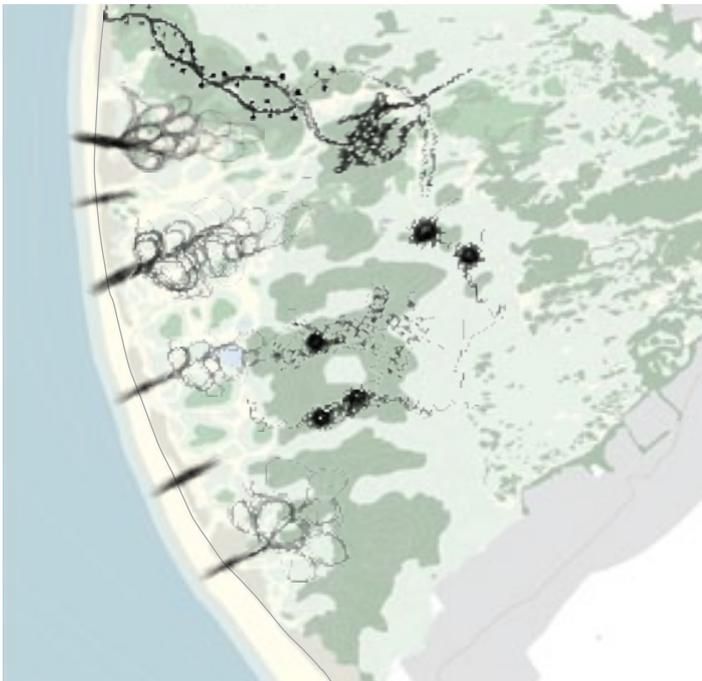
natural energies
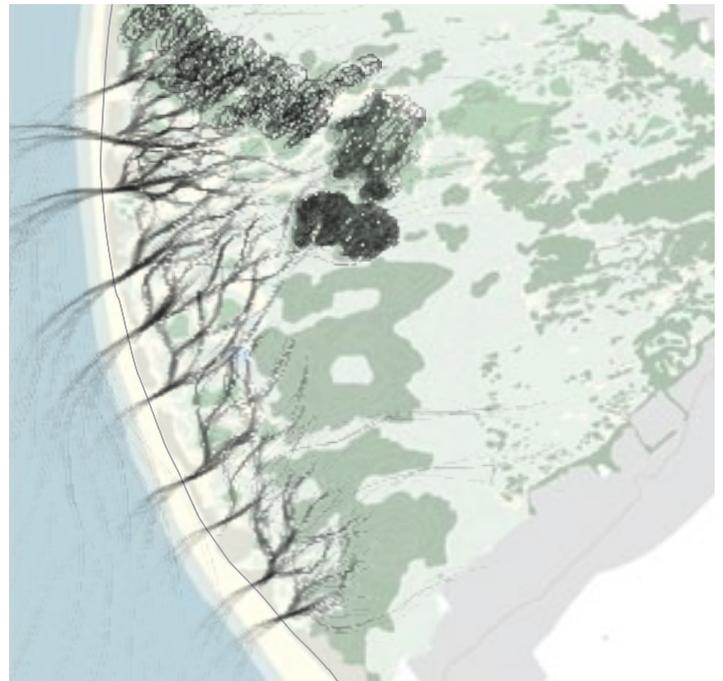
Tug of War

wind

ShouwSpel and the Bolus Consumption

growth of young trees

Celebtree and B(a)ulls eye

single trees develop into a forest

Quad Race

figure 49: never ending interplay

11. THE DEBRIEFING

CONCLUSION

This research was set up around the following research question which we will try to answer in this chapter:

In what way can games between natural and social energies playfully transform the Kop van Schouwen into a more dynamic dune landscape?

The art of designing landscape games is to find the right balance between giving structure and giving freedom. Structure comes from the vision about the desired landscape transformation, the corresponding required interventions and the landscape characteristics. From here game characteristics such as a playing field, the game rules and game goals have to be designed. Within these characteristics always a certain degree of flexibility should be present. Without flexibility a game is not a game and both social as natural energies cannot play in freedom, which is so characteristic of playing. Uncertainty, coincidence and unpredictability are part of playing and this space can be given by providing sufficient flexibility. The landscape managers should have the possibility to react on this unpredictability which is present in both human as nature by composing their game strategy. In this game strategy they can decide which games or counter games, at what moment and how often have to be played. They can adapt this strategy whenever needed during the process. At a smaller scale in the field, the game characteristics can be adapted as well at the moment this is required. In this way the landscape managers can react on the physical result of the games. The physical result of already played games can namely have an influence on a larger scale and thereby on the connected or proceeding landscape games. The landscape games should therefore not be designed as individual games but as games that are in close connection with each other. Because of the unpredictability of the interplay between social and natural energies, the landscape games give form to different structures and patterns within the landscape than the machines of the contractors would do. The social and natural patterns are less predictable and rectilinear than the mechanical patterns.

This way of dealing with landscape transformation processes requires subsequently other roles of both landscape architects as landscape managers. Landscape games provide the opportunity for thinking and acting in the line of processes and movements and less in thinking in fixed end-results, images and functions. Landscape architects and managers will be in collaboration, and together they will be the directors of the process by which they will purely guard the continuity and quality of the process. An in-between monitoring of the process provides the possibility to, when needed, adapt the game strategy or game characteristics. With landscape games a quality of the transformation process can be pursued, not that of an end result. The landscape is continuous interplay of social and natural energies in both time as space. Therefore, this landscape will never be finished and an end result will never be reached. This landscape transformation process will be a continuous process.

This research was set up on the grounds to see how social energies can be used to transform a landscape in a desired direction. Games and playing can be a way to structure these energies. We chose for games because playing is in the nature of human and because playing can make activities more fun. There might be various other ways to do this but this was not the focus of our research. We expect that, since people can learn by playing, people will get a better understanding why landscape interventions have to be taken and by this the social support for the desired landscape transformation will grow. Besides, playing increases the social bonding between the different players as the bonding between people and their environment. According to us this are really important effects of playing.

We believe that our thesis illustrates that by inserting a multiplicity of landscape games between social and natural energies the landscape can slowly be transformed into a desired direction. By using games natural and social energies are allowed to surprise and what is more beautiful than this? According to us this is really valuable. The playfulness of both human as nature will make the coastal management dynamic in both an ecological as a social way. The landscape than really becomes dynamic.

DISCUSSION

In this chapter we will discuss the value and shortcomings of our master thesis. We believe that our thesis provides potential ways in which social and natural energies can playfully transform the Kop van Schouwen into a more dynamic dune landscape. These ways are potential since we did not test the games in practice. We are aware we therefore cannot be completely sure if and in what degree the various landscape games can be both socially as naturally successful in transforming the landscape into a desired direction. To cover this as much as possible we tested the potential landscape games on several criteria coming from both our landscape as our game analysis. This testing is mainly done by logical thinking and based on experiences from the past. To be sure how and in what way the games can be used to transform the landscape; prototypes should be made and ideally they should even be tested in practice. Within this thesis we had unfortunately no time to do this.

Because human and nature are both in a certain degree unpredictable we made the decision to design a wide variety of landscape games which illustrates rather the richness and potential of possibilities than a in detailed designed landscape. We are aware that most of the ideas we give should be thought out more in detail before they can be tested in practice but this is something we recommend for further research.

The basis of the game principles model is formed by analysing several games, by playing ourselves and by observing people playing. During our design research the content of model has been adapted by reading literature about games and playing. Further in our design research we used the model in order to test our landscape games. By designing these landscape games we gained new knowledge and insights and have therefore adapted the model for several times.

During our design research we found out that game design is a complicated field of expertise. Even professional game designers cannot exactly predict what will and what will not work in a game and what people will experience during playing the game. Designing new games requires therefore a lot of time. We learned that the best way to design games, and also landscape games, is to play the games yourself. For this reason we played a lot of games. Unfortunately during our research we did not have the time to develop a completely new game, therefore are most of our games based on games which already exist such as tug-of-war and the quad race.

Coastal management and nature management are another field of profession. Since we are no hydrologists or ecologists we tried to work as much as possible with the available knowledge around these professions. To increase the place specific knowledge around these subjects we took the possibility to interview and visit the case area for several times with one of the main nature managers of the area. We are aware that more in-depth research should be done in order to be sure that the ecological and water safety measurements will not be in danger by implementing the landscape games. We would really like to discuss our findings in the nearby future with the managers of the area to give the ideas a stronger foundation.

This research is not finished, we only provide some first new insights to introduce games in the field of landscape architecture. In our design research we had more emphasis on the play of social energies and less on the natural energies. Further research with more emphasize on the natural energies and the interplay between social and natural energies can therefore be supplemental to our design research.

We solely designed landscape games in order to transform the landscape in to a desired direction. Further research could be done on designing landscape games in order to maintain the landscapes.

We think that games can be inserted in both similar landscape transformation and management processes of other coastal landscapes as in different landscape transformation and management processes of other landscapes but this this asks for further research.

In our research we learned that analysing and playing existing games are helpful in order to design a landscape game. By looking back at our design research we also would have liked to gain some knowledge of real game designers. If 'The Landscape Games' become a new field within landscape architecture, and we think that it has potential, we advise to include a close collaboration with game designers to apply and make optimal use of professional knowledge from the game industry.

For us, the design research of our thesis has been an absolute added value within our educational program at the Wageningen University. It stimulated our personal creativity and enhanced our ability to think in and design with processes and by this to embrace uncertainties, coincidences and unpredictability's within the landscape. For this reason we think that within the educational program of the study Landscape Architecture, more emphasis on the process site of landscape architecture can be a valuable addition to the program.

In the beginning of our design research we initially gave ourselves the goal to bring 'culture' and 'nature' closer together in the Dutch landscape. During the research we tried to find out what culture and nature separates, we asked ourselves 'what is culture and what is nature'? During the investigation we found out that it is almost impossible to find an answer on this question, and that answering such a question should not be the purpose of our research. We continued and found out that there is something that binds nature and culture; playing and games. Beforehand we never imagined that we would integrate playing and games in landscape architecture. Our thesis has been an exciting journey in which we have always kept our routing open, out of curiosity and eagerness to learn. This open routing gave us the possibility to adapt to changing insights and new possibilities. As a result of this open routing we developed ourselves within the development of our research. We were aware of the fact that our routing required a lot of time, but it was absolute worth everything. And now, unfortunately we are infected by the game-virus. Our thesis was not like fulfilling a game, we just passed the first level and we are curious what the next level will bring us .... to be continued!

REFERENCES

Literature

- Antrop, M. (1998). Landscape change: plan or chaos? Landscape and urban planning, 41

- Barendse, S. Baas, H.G., Harde de, M.J. Renes, J. Stol, Triest van J.C. Vries de , R.J. Woudenberg, F.J. (2000), Het Nederlandse landschap door historisch geografisch perspectief, uitgerverij Matrijs, Utrecht

- Beekman,F. (2007), De Kop van Schouwen onder het zand, duizend jaar duinvorming en duingebruik op een Zeeuws eiland, uitgeverij Matrijs

- Beenhakker, A. (2007). Zee, Wind, Veen en Land; Kustvorming in de Lage Landen.

- Buytendijk, F.J.J. (1932), Het spel van mensch en dier, als openbaring van levensdriften, uitgevers-maatschappij 'kosmos', Amsterdam

- Corner, J. (1999), Recovering landscape, essays in contemporary landscape architecture, New York, US

- Creswell, J.W., (2009). Research Design: Qualitative, Quantitative and Mixed Methods Approaches. University of nebraska-nicoln. SAGE Punlications, Inc.

- Dam, v. R. et al (2008) . Burgers en landschap deel 2: trends en theorieën over betrokkenheid van burgers. Wageningen: Alterra

- Deming. M.E, Swaffield, S. (2011), Landscape architecture research, inquiry, strategy, design, John Wiley &Sons, Inc., Hobokon, New Jersey

- Devane, T. & Holman, P., (1999), The Change Handbook: group methods for shaping the future, San Francisco: Berret-Koehler publishers, Inc

- Dijkum van, C. Tombe de, D. (1992), Gamma Chaos, onzekerheid en orde in de menswetenschappen, uitgeverij Aramith, Bloemendaal

- Doedens, B. (SLeM). et al. (2009). Tijdelijke Landschappen, Amsterdam

- Duchhart, I. (2007). Designing Sustainable landscapes from experience to theory; A process of reflective learning from case study projects in Kenya, Wageningen University

- Elias, G.S., Garfield, R. Gutschera, K.R., (2012) characteristics of games, the MIT Press, London

- E.O. Wijers Stichting (2009) , Prijsvraagronde 2008, rapport van de vakjury. Bennekom: Modern

- Folke, C., Jansson, Å., Rockström, J., Olsson, P., Carpenter, S., Chapin, F., Crépin, A.-S., Daily, G., Danell, K., Ebbesson, J., Elmqvist, T., Galaz, V., Moberg, F., Nilsson, M., Österblom, H., Ostrom, E., Persson, Å., Peterson, G., Polasky, S., Steffen, W., Walker, B. and Westley, F. (2011) 'Reconnecting to the Biosphere', AMBIO: A Journal of the Human Environment, 40(7).

- Hartman, W. (2007), De vloeibare stad, Architecture & NaturaPers, Amsterdam

- Huizinga, J. (1938) her uitgave 2010. Prove eener bepaling van het spel-element der cultuur, Amsterdam university press

- Jonge, de J. (2009). Landscape Architecture between Politics and Science: An integrative perspective on landscape planning and design in the network society

- Kerkstra, K., & Vrijlandt, P. (1988). Het landschap van de zandgebieden, probleemverkenning en oplossingsrichting, studiereeks bouwen aan een levend landschap. Bos en landschapsbouw

- Knight et al., (2010). Serious gaming technology in major incident triage training: A pragmatic controlled trial, Elsevier, volume 81, Issue 9

- Koh, J. (2013). On a Landscape Approach to Design; an eco-poetic interpretation of landscape, Landscape Architecture Group, Wageningen University

- Lenzholzer, S. Duchhart, I. and Koh, J., (2013) Chair Group Landscape Architecture. 'Research through designing' in landscape architecture. Wageningen University, The Netherlands. Journal. Elsevier, Landscape and Urban Planning

- Lippard, L.R., (1997) The lure of the local, senses of place in a multicentred society, The new press, New York

- MA (2005) Ecosystems and human well-being: Current states and trends, The Millennium Ecosystem Assessment Series, Washington, D.C.: Island Press

- McHarg, I. (1969) Design with nature. The National History Press: New York

- Roncken, P. A., Stremke, S. and Paulissen, M. P. C. P. (2011) 'Landscape machines: productive nature and the future sublime', Jola : Journal of Landscape Architecture, 6(1), 6-19.

- Saito, Y. (2007), Everyday aesthetics, Oxford University Press

- Salen. K, Zimmerman. E, (2004), Rules of play: game design fundamentals

- SLeM, (2009), Tijdelijke landschappen, Essays, Thieme Art bv, Deventer

- Turnhout, E. Van Bommel, S. and Aarts, N. (2010), How participation creates citizens: participatory governance as performative practice, Ecology and Society, 15

- Westhoff. V, Held A J,. (1970) Plantengemeenschappen in Nederland, gepubliceerd door Thieme, Zutphen

Policy documents:

- Ministerie van Economische zaken, (2000), Natura 2000-gebied 116 - Kop van Schouwen

- PAS (2014), Herstelstragieën voor Kop van Schouwen. update 31-01-1014

- Provincie Zeeland, (2014)(update 31-01-2014). PAS-analyse Herstelstragieën voor Kop van Schouwen.

- Toeristisch trendrapport Zeeland (2012), toeristische trendrapportage 2011-2012 Zeeland in cijfers, kenniscentrum kusttoerisme, provincie Zeeland

Interviews:

- Beijersbergen, C. (2014) excursions and interviews, main nature manager of 'State forestry Service' of Kop van Schouwen

- Berendsen, M (2014), interview with tourist and nature expert of State Forestry Service

- Doedens (Bruno), 2014

Websites:

- Gemeente Schouwen-Duiveland (2013) http://www.schouwen-duiveland.nl/

- SLeM, (2014). www.slem.org

- Wesselingh. F, (2014) Naturalis. Dune landscape. http://www.geologievannederland.nl/landschap/landschappen/duinlandschap

- Rijkswaterstaat, (2014) Dynamisch kustbeheer. http://www.dynamischkustbeheer.nl/

Documentaries:

- Nusbaum, M. (2014) ik speel dus ik ben, NPO documentary

- Roovers, D. (2014) ik speel dus ik ben, NPO documentary

ILLUSTRATION REFERENCES

picture 1
Pannenland Zand lab @ Gerrit Bart Volgers
http://www.slem.org/projecten/pannenland/galerie/luchtfotos/

picture 3
http://flickrhivemind.net/Tags/langevelderslag/Recent

picture 4
https://www.flickr.com/photos/61494580@N07/7297173324/in/photolist-c7PVpb-egTcm9-9tLRsb-n51nmj-dwk3Bv-dwk5ke-dwqA7U-dwk3cV-oZGK67-oKeXxd-dwqDyN-n4YDhH-dwqAoq-dwk3Jz-ncmAbQ-c6L3pj-dwqzYS-dwk6f4-dwk3h8-dwqBES-dwk3ak-dwqAt3-dwqAyy-dwqzJo-dwqAqG-dwk3zv-dZe5cP-c7PXSy-oKfn8Y-p2t8ki-dwqAx3-dwqDUu-dwk3bt-oiDCHL-9tLG1u-egM1ux-dwk3MH-dwk6BM-nRvAmg-dwqCFq-dwqDAj-dwk5gi-dwqALS-dwqBhu-dwk3qB

picture 5
http://www.gopixpic.com/500/the-hague-netherlands-2-10/http:%7C%7Cfarm5*staticflickr*com%7C4002%7C4537909375_55c2f46d8f_z*jpg/

picture 7
an innitiative of Volkswagen (2009) http://www.thefuntheory.com/

picture 8
http://www.marinethaitsma.nl/archives/3146

picture 9
jeppe hein: http://www.jeppehein.net/pages/project_id.php?path=publics&id=162

picture 14
https://boswachtersaanzee.wordpress.com/2014/01/25/houtoogst-boswachterij-westerschouwen-bijna-gereed/

picture 15-16

picture 18
http://www.itop-forum.org/data/webzinecontent/1/508dde5fba944.jpg

picture 19
Tom Viggars
https://www.flickr.com/people/38200792@N05/

picture 2, picture 6, pictures 10-13, pictures 17
own pictures