Chapter 8
Swarming Landscapes

Rob Roggema

Contents

Abstract The Swarm Planning Theory and Methodology, as outlined in Chaps. 6 and 7 have been used in several design projects in the recent past. Swarm Planning can be applied in different ways. It can be used to formulate a spatial strategy, as the examples of Strategic interventions and steer the swarm show. It can also be used to identify the location and the type of intervention to be taken. This is illustrated through the Groninger Museum and Blauwe Stad examples. The third way of applying Swarm Planning is to design climate landscapes, in which not only the intervention

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is identified but also the dynamic impact in the landscape is part of the design. The examples of a Floodable landscape and the two Bushfire resilient landscapes of Murrindindi and Bendigo illuminate this. Finally, Swarm Planning can be used to create innovative spatial solutions for a specific design assignment. The laboratorial setting of the Swarm Planning Experiment proves the innovative capacity of the approach. All four applications are seen worthwhile and support the potential of the Swarm Planning theory, methodology and use.

Keywords Swarming landscapes • Interventions • Strategies • Climate landscapes • Swarm experiment

8.1 Introduction

Each site is different and the design for every location will be different. The benefit of using the Swarm Planning methodology is that dynamic character of spatial elements will be included in the design and specific interventions, based on the analysis of networks, can be determined and provide resilience in the area to anticipate future climate impacts. In this chapter the results of various Swarm Planning designs are presented. The first section describes a couple of Swarm strategies (Sect. 8.2), while in the second section (Sect. 8.3) specific interventions are highlighted. The design of climate landscapes forms the content of Sect. 8.4 and the chapter ends with presenting the results of the Swarm Planning Experiment.

8.2 Strategies

The result of Swarm Planning eventually takes the shape of a concrete spatial design. The Swarm Planning concept however urges also to think about the underlying strategies. Instead of reacting to a spatial design problem, Swarm Planning anticipates the future and tries to direct the future in a direction that is better capable of dealing with the impacts of climate change. This means that interventions in the spatial domain need to be taken before a climate threat or hazard can be expected. This makes Swarm Planning extremely strategic. In this section two strategies are illuminated: ‘strategic impulses’ and ‘steer the swarm’.

8.2.1 Impulses

To improve preparation for turbulent environments, such as specific impacts of climate change strategic interventions need to be put in place. These interventions are not meant to define in detail the final state an area is planned to become, but they mark the start of a process, which allows emergence of the area on its own from the moment in time the intervention is executed and will start influencing a larger area. To a certain extent, the effect of an intervention may be predicted. The intervention needs to make plausible to be generating increased resilience in the area, but the exact future spatial shape the area will guise is impossible to define. The projection of interventions instead of executing detailed spatial plans makes it possible for stakeholders, involved parties and citizens to co-operate and contribute to the development of the area, because not all is decided on and ‘cast in cement’. The increase of resilience is realised by loosening the fixed planning system of the existing. In many occasions a fixed status is the cause of large risks. Introducing flexibility to deal with future uncertainties, threats and challenges the resilience can be enhanced. When space is created for the impact of these threats and developments might include, society is better prepared for future events. Moreover, these interventions in the spatial system introduce the possible impact at a slow pace, which makes it possible for inhabitants to get used to a situation that will be the new normal on the longer term. The ‘*windows of Groningen*’ (Fig. 8.1) show several of these opportunities (Roggema 2008), where loosening the tight and normative planning rules enable the area to react proactively and to increase preparedness.

These strategic interventions are the impulses, which are added to the area and adjusting the area without changing the functions. The impulses make use of the capacity the spatial system has to adjust itself to new circumstances and developments. In the Groningen case several of these interventions have been identified (Fig. 8.1). They have in common that a single intervention opens the way to an indirect effect in a larger area.

1. Heightening the closure dam of the Lauwers Lake enables the area to store more rainwater in winter, influencing the entire catchment area of the Reitdiep-river;
2. Creating new kwelderworks near the Eems harbour enables the Wadden Sea to create new arable land through natural accretion of sand and clay particles. This new land may be used according future demands: as agricultural land, for industrial purposes or as an ecological zone;
3. Perforating the dike between the Eems harbour and Delfzijl opens the opportunity to create a dynamic coastal system, which is able to supply the hinterland with sand, that sedimentates and raises the topography here. The rise of the land happens at the same pace or even faster as the sea level rises. The area can be used and occupied as an innovative living area;
4. Moving the Sea sluice of Delfzijl outside the city makes it possible to create a safer storm surge barrier and offers Delfzijl the chance to develop its waterfront towards the sea;
5. Generation of a luxurious living area around a new lake in a back-dropped area of Eastern Groningen makes it possible to extend the capacity for water storage and has a positive influence on the living standards in the entire area;
6. The introduction of a new railroad, which connects the City of Groningen with the Peat Colonies, enables the southern part of the province to develop a robust ecological corridor, which gives space to shifting ecological habitats and makes an interesting living area possible amidst nature.

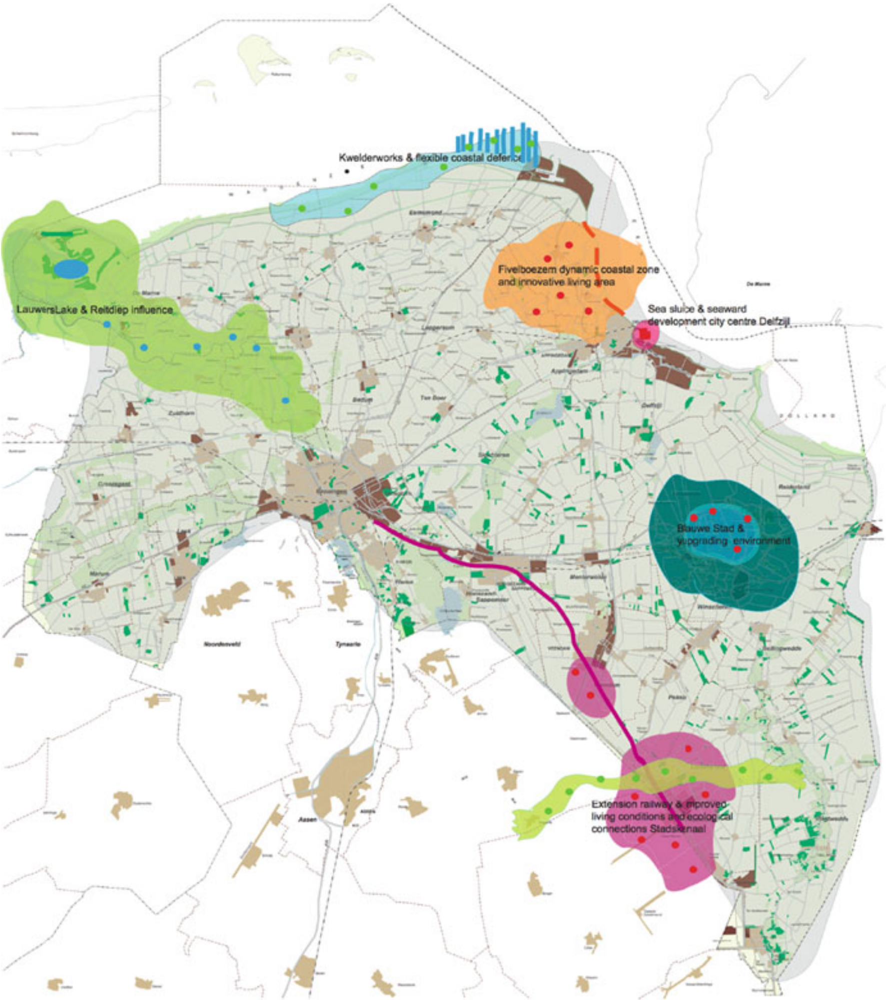

Fig. 8.1 The 'Windows of Groningen', strategic swarm interventions (Roggema 2008)

8.2.2 *Steer the Swarm*

A slightly different strategy has been developed in preparation for the Regional Plan for Groningen Province. In the analysis (Roggema and Huyink 2007) the so-called steer the swarm strategy has been developed. Existing spatial planning processes have difficulties to create creating effective interventions, which can anticipate future turbulent change, such as the uncertain impacts of climate change and the non-fossil energy supply. These kinds of topics are complex, long-term, uncertain and will become manifest in the far future. In traditional terms: they cannot be planned, but will occur as surprises. It is possible to deal with these uncertainties when areas are given the opportunity and the space to adjust anticipative

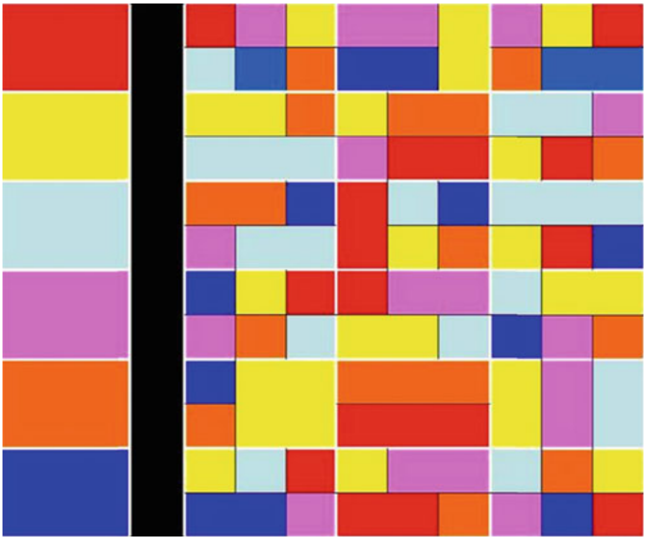

Fig. 8.2 A 'Mondrian' combination of interventions (*left column*) and identities (*right field*) (Roggema and Huyink 2007)

or simultaneously with sudden changes. By starting interventions immediately, experience for future circumstances, threats and challenges, can be built up straight away. The resilience in the area is enhanced when space is created in the spatial lay-out and in plans for unforeseen demands in the form of buffers.

In order to achieve this, the planning system of the future needs to include steering principles, enabling areas to adapt more easily and change its spatial patterns as required. These steering principles include two elements: space to change and strategic interventions. These elements differ from place to place, depending on the characteristics of the natural system and spatial identity. Thus, the swarm needs to be steered accordingly.

Depending on the specific qualities of the area the spatial regime can be distinguished. Each specific identity, consisting of the natural (horizontal axis) and spatial (vertical axis) character of the system (the coloured patterns in the right hand side of the black bar, Fig. 8.2) is directed by a combination of well-defined interventions (the left column, Fig. 8.2). Hence, creating a specific resilience regime (e.g. the specific colour for a certain area). In abstract terms, a 'Mondrian' typology arises (Fig. 8.2) as has been developed in the draft 'Atlas Groningen' (Roggema and Huyink 2007). The swarm is steered in a tailored way, intervention x identity dependent.

8.3 Interventions

Core of the Swarm Planning theory is that a spatial system, seen as a complex adaptive system can be steered and stimulated to perform resiliency or higher levels of adaptation. Crucial factor in the theory is it estimates this happens as a result of well-identified and placed interventions. These types of interventions are not new,

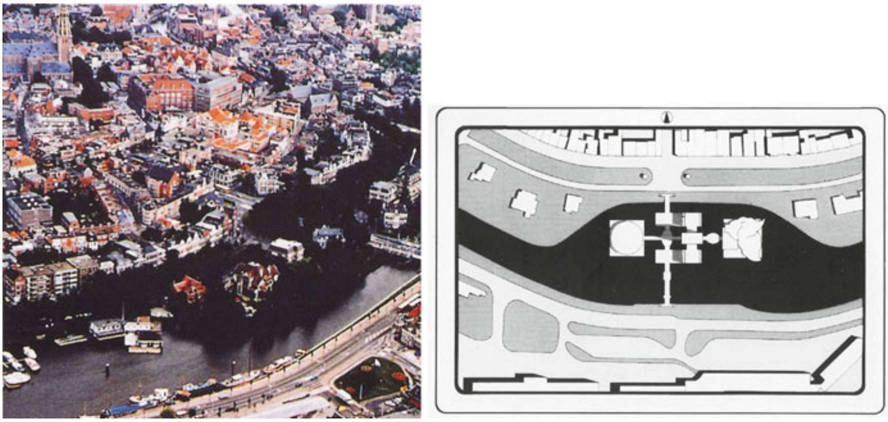

Fig. 8.3 The Groninger Museum positioned in the Verbindingskanaalzone, before (*left*) and after (*right*) the intervention

nor only useful in the case of climate change. In this section two examples from recent history are described: the Groninger Museum and Blauwe Stad.

8.3.1 Groningen Museum

The ‘Verbindingskanaal’ (connection channel) is a waterway at the edge of the city-centre of Groningen, located between the central station and the inner city (Fig. 8.3). In the past, the only way to reach the inner city was to walk around the canal. As a consequence the area at the city side of the Verbindingskanaal became neglected, attracted hooligans and criminals. On a day, a councillor of the municipality decided on to build the cities museum in the middle of the canal (Fig. 8.3), connecting the station with the inner city. As a result of this, the neglected part of the city centre changed into a very lively and attractive area, used by a large number of people. The intervention of building the Groninger Museum (Fig. 8.4), exactly at this location, had widespread effects and transformed the entire city.

8.3.2 Blauwe Stad

> Fact one: the eastern part of the Province of Groningen has traditionally been one of the poorest regions in the Netherlands with pervasively high unemployment, low levels of education and extraordinary poverty. People, who could, left the area.
> Fact two: due to more intense periods of heavy rainfall the need to find water storage in the lowest parts of the province is urgent.
> Fact three: The Blauwe Stad area is one of the lowest places in the province and this fact, in combination with the back-dropped character of the area, has led to the decision to build, around a newly dug artificial lake, a new neighbourhood: the Blauwe Stad (Fig. 8.5).

Fig. 8.4 The Groninger Museum (Picture: ©Rob Roggema)

Fig. 8.5 Blauwe Stad implemented in the landscape of eastern Groningen

This intervention has multiple effects. It results in the upgrading of the entire area, led to economic growth, increase of amount and quality of amenities, improved infrastructure, increased the possibility to deal with large amounts of water and decreased unemployment. The area evolves by itself after the impulse of the Blauwe Stad has been given.

8.4 Climate Landscapes

Interventions can lead to unpredictable developments in the future, but when the Swarm Planning process is taken one step further the future spatial adjustments can be estimated. And, in reverse, when a certain change is desired in the landscape, the right intervention can be invented in order to meet those demands. In this section three designs for these climate landscapes are described: the floodable Landscape and the Bushfire resilient landscapes of Murrindindi and Bendigo.

8.4.1 Floodable Landscape

The Eemsdelta region is located in the northeast of the Netherlands and consists of two industrial harbours and a valuable heritage hinterland, where remains of old artificial hills, the so-called *wierden* and historic churches dominate the landscape. Despite the economic activities in the area and the growth of jobs, the population is shrinking, putting amenities in and liveability of villages under pressure. The area is not very popular to move to and many (younger) people leave the area. The area confronts the Wadden Sea area and dikes defend its coast. However, current coastal defence standards are not met. The weakest point in the coastal defence of Northern Netherlands lies in this area, which places the area for which sea level rise is expected under threat of flooding when a spring tide occurs in combination with a severe storm. An eventual flood will reach the capital city within 36 h and threatens the national gas reserve, which is also found in the area. There are slight topographical differences apparent in the area of around 1.5 m. The highest areas are found closest to the coast. Sea level potentially rises to 1.3 m above current level and relative sea level rises even more because of maximal 40 cm of soil-subsidence as result of gas extraction. The expected change in wind patterns, turning to the northwest will increase the surge of water towards this region, resulting in higher risks at severe storm surges and potential flooding (Fig. 8.6).

In the current discourse in dealing with coastal defences for sea level rise and storm surges, the safety level is increased through the strengthening and heightening of protecting structures, such as levees and dikes. Fast and accelerated sea level rise as predicted by Hansen and others (Hansen 2007; Hansen et al. 2007, 2008; Hamilton and Kaiser 2009; Lenton et al. 2008; Rahmstorf et al. 2007; Tin 2008) give reason to concerns over the capability of defences to withstand extreme circumstances at

Fig. 8.6 Topography and landscape of the Eemsdelta region

all times. Eventually, even the strongest dike will breech. The consequence of this belief in defending the values behind an increasingly stronger dike is that once it breeches these values are highly vulnerable for the effects and a huge disaster destroys most of the values, such as properties, productive land or human life.

Given the uncertain pace of sea level rise and the moment a dike eventually will breech, the question can be raised if alternative designs may potentially be better equipped for decreasing the impact of sea level rise and storm surges.

The main driving climate forces in the Eemsdelta design are sea level rise, storm surge and the topography of the hinterland. These three forces determine the places and the level of a potential flood. Imagining a potential dike breech at a certain location at a certain sea level, the parts of the landscape that will flood can be determined in detail. When different sea level rise scenarios are taken into account the different stages of flooding can be estimated and a future occupation pattern can be designed able to deal with every possible flood level.

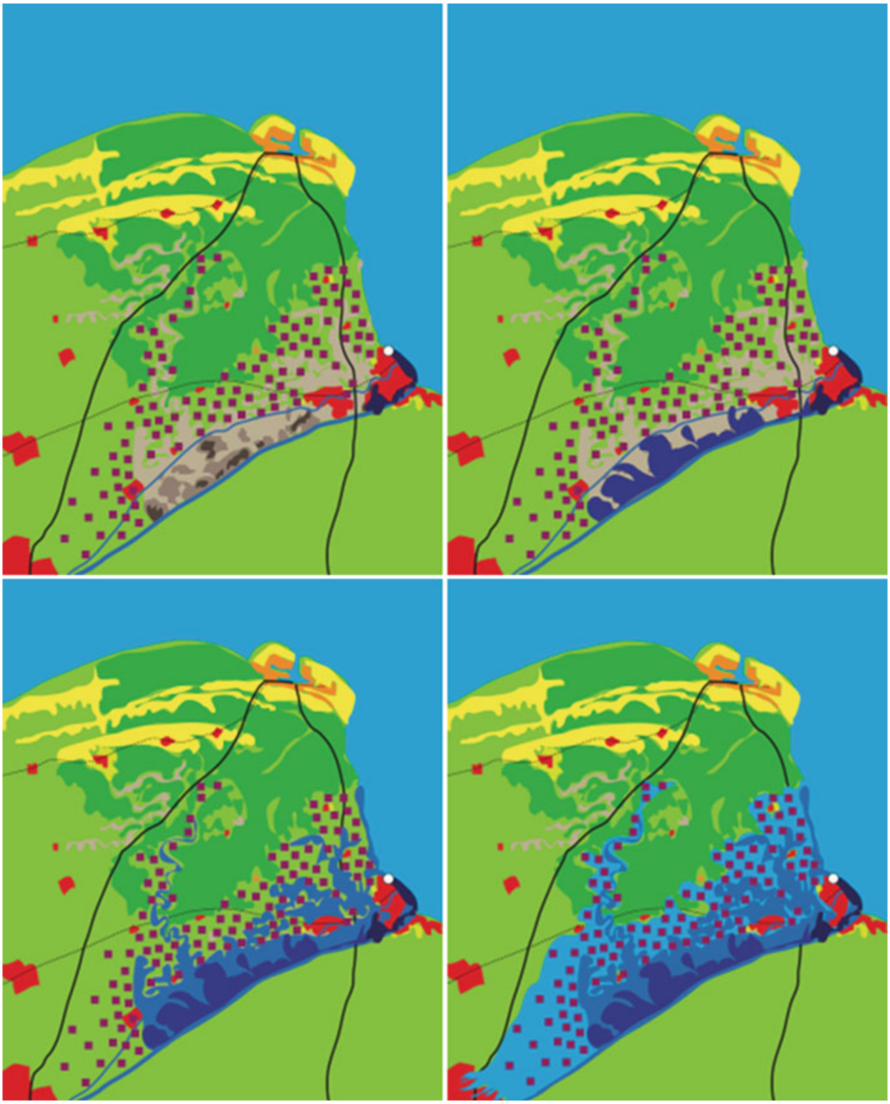

Fig. 8.7 Swarm planning in the Eemsdelta area (Roggema 2009)

8.4.1.1 Intervention at the 'Whole'-System Level

The crucial factor in the design for the Eemsdelta area (Fig. 8.7) (Roggema 2009) is the changed viewpoint from which the problem is approached. Instead of trying to increase the protecting level through strengthening structures, an advanced crucial intervention is proposed, which influences the system as a whole. Instead of keeping water out, it is let in at a very slow pace and in a very well predictable way.

A hole in the coastal defence allows water to enter the hinterland and the level will rise as sea level rise increases. The analysis of networks determines the most crucial and also most vulnerable nodes in the coastal defence. Here (the white dot in the maps, Fig. 8.7), the focal point for a strategic intervention is found. This is the point where water is allowed to enter the hinterland.

8.4.1.2 Freedom to Emerge

As a result of the crucial intervention, allowing a hole in the dike, all individual elements are challenged to perform emergent behaviour. Behind the intervention point, the whole in the dike, the ‘unplanned’ area, which is kept free from any function, is identified. For every single rise in sea level a different area is required for inundating water. Sea levels of 0.3, 0.6, 0.9 and 1.2 m, the latter being the highest level estimated for 2100 by the Dutch Delta Committee (Deltacommissie 2008) determine where it is safe to live and where adaptation is required. Specific areas are reserved for the storage of water, the production of sustainable energy resources and food, all kept outside the maximal inundation area. On the edge between the floodable landscape and higher and dryer places occupation emerges. This twilight zone will face wet circumstances only when sea level rises 1.2 m, but the buildings built in this area can withstand or even profit from being in the middle of sea water. The buildings are constructively adjusted to wet environments (Fig. 8.8), made waterproof, floating (Fig. 8.9) or made suitable to function on both land and in water (amphibious).

The advantages of this design are that impacts as result of a big disaster are prevented, because the water is already allowed in the hinterland and used as an ally and not as an enemy. Because of the fact that accurately can be predicted where the water will flow, people, buildings and organisation are very well capable of adapting at a very early stage. The water will bring gradually changes and benefits. At first, in the unplanned areas brackish conditions emerge, allowing ecological conditions to enrich. Secondly and at a later stage all new buildings face water in their environment, a real estate asset of great value. Probably the biggest advantage is that due to the slow pace of entering seawater a disaster never happens, but it is tamed to a gradually changing wet environment, which makes the area inherent safe. The proposed intervention may help inhabitants in the area to slowly adapt to changes, instead of being surprised by a sudden flood.

8.4.2 Bushfire Resilient Landscape of Murrindindi

The Kinglake-Murrindindi region is located to the North-East of Melbourne Metropolitan area. In the region several small communities and villages, surrounded by agricultural land, are located amidst a hilly and mountainous landscape. Abundant forests and ecologically valuable nature reserves cover most of the area. Divided by

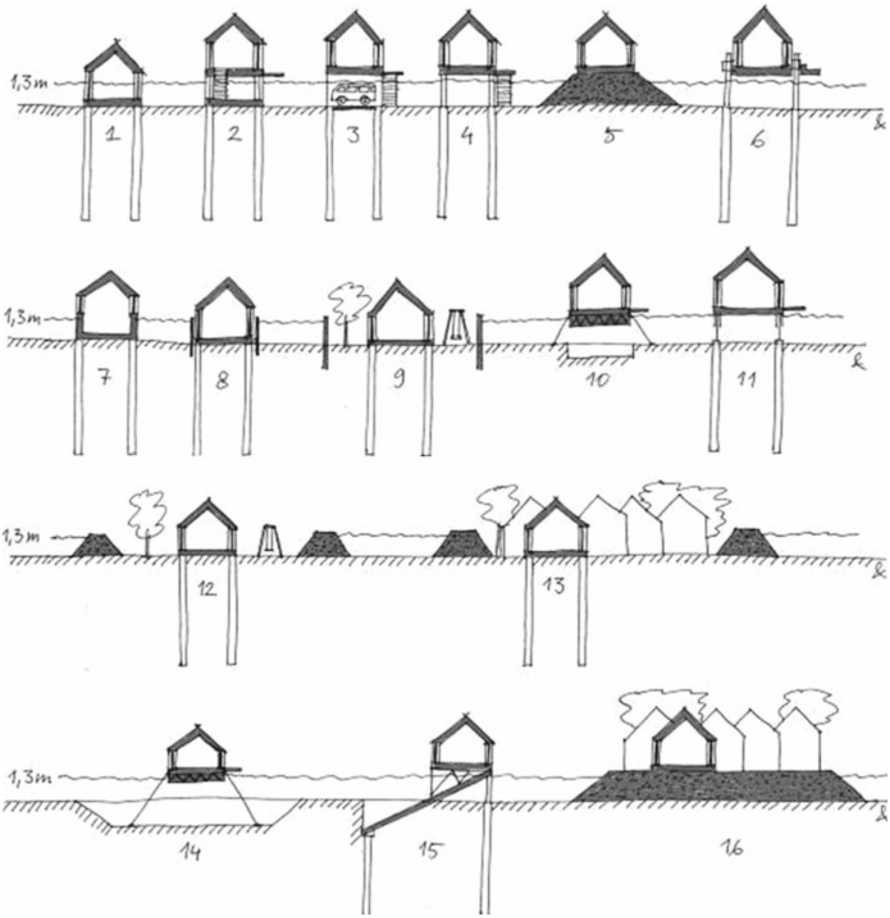

Fig. 8.8 Spectrum of technological innovations to deal with appearance of water in the living environment (TU Delft 2008)

the Great Dividing Range the Northern part of the study area discharges its water to the North (Murray River) and the Southern part to the South (Yarra River) and leaves the area rather quickly. The area is vulnerable for droughts and the warm 'wind tunnel' entering the area during hot summer days from the North. The Kinglake-Murrundindi area is bushfire prone and one of the most severely damaged areas during the Black Saturday bushfires of 2009 (2009 Victorian Bushfire Royal Commission 2009). The area includes both sides of the Great Dividing Range and many types of landscape elements exist: mountainous area, forests, villages, meadows and agricultural use. Despite the fact that the area is very vulnerable for bushfires, people still want to live and recreate there.

The landscape is formed through topographical differences. The Great Dividing Range literally divides the Northern and the Southern areas and functions as a

Fig. 8.9 New forms of living at the edge or on the water (© RAL Architects)

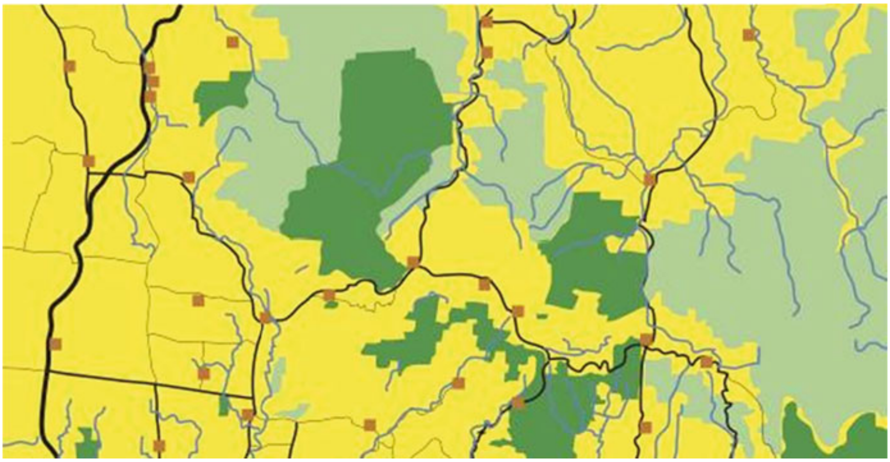

Fig. 8.10 The landscape of the Kinglake-Murrundindi region

watershed (Fig. 8.10). Many of the smaller communities are located at the upper parts of the ridge, where also the main road crosses the area from east to west. The forests are mainly found on the higher grounds and the majority of the water flows undisturbed out of the area. In case of heavy rain floods are likely, but after a period of extensive drought the riverbeds run nearly dry. Many of the (smaller) roads go up or down the hills, but they do not form a circuit.

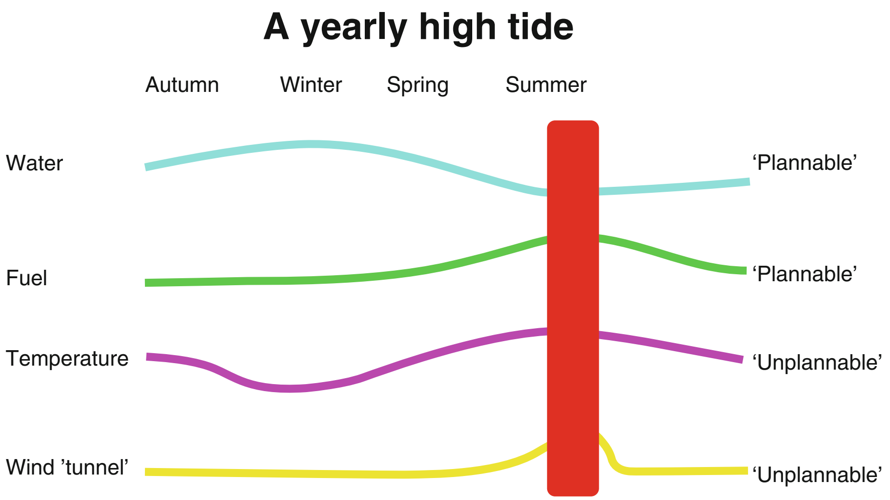

Fig. 8.11 The yearly 'high tide' of risk

The period with highest risk at bushfires is yearly occurring. Most of the year there hardly is any risk. The question how we can make use of this 'no-risk' period to prepare for and anticipate the risk period is interesting as it opens the way to dealing with and planning ahead of a potential disaster, eventually preventing it from happening. The design of the area, which is harvesting water and minimising the amount of fuel in the period before the bushfire season, supports increased safety during this period.

The main drivers to increase the risk at bushfires are (1) increasing temperatures, (2) the acceleration of the 'wind tunnel' effects from the northwest and (3) the amount of fuel (e.g. wood, any plant material that could burn) during the seasons. The combination of these drivers leads to a yearly '*high tide*' of bushfire risk (Fig. 8.11) at the moment of high temperatures, much fuel, hardly any water and a hot and dry wind blowing in from the northwest.

Two of these drivers are 'unplannable' at the scale of the site, because these drivers, the wind-tunnel and the temperature, are exogenous to the area: they originate at the global or continental level, which makes them hard to influence. The amount of water and fuel however, can be influenced at the local level. In the period leading up to the yearly high tide crucial interventions can be taken to minimise risk. When water could be still around and the amount of fuel could be lowest at the moment of the high tide, a landscape can be created in which people can safely live, even in circumstances that would otherwise be dangerous.

8.4.2.1 Intervention at the 'Whole'-System Level

The proposed strategic intervention, which influences the landscape at the 'whole'-system level, is to place small dams in all of the rivers. The exact places of these dams are identified on the basis of the network analysis of the area and are found at the foot of the mountain-ridge, where low-lying areas are naturally formed. Here, the strategically placed dams can harvest water in naturally created reservoirs. All rainwater that falls year-round is collected and fills up the reservoirs over the subsequent seasons (Fig. 8.12). Starting just after summer the reservoirs are empty and dry and will be filling up in autumn and winter. In spring, when bushfire risk is highest, the reservoirs are filled at the highest levels too. In deciding which reservoirs collect water their positioning is important. A North Westerly wind is the one and only dangerous hot wind, causing devastating bushfires. Positioning the reservoir to the North Western side of existing forests creates an extra buffer and makes living here the safest. Based on the network analysis most of the naturally formed reservoirs are located in these places.

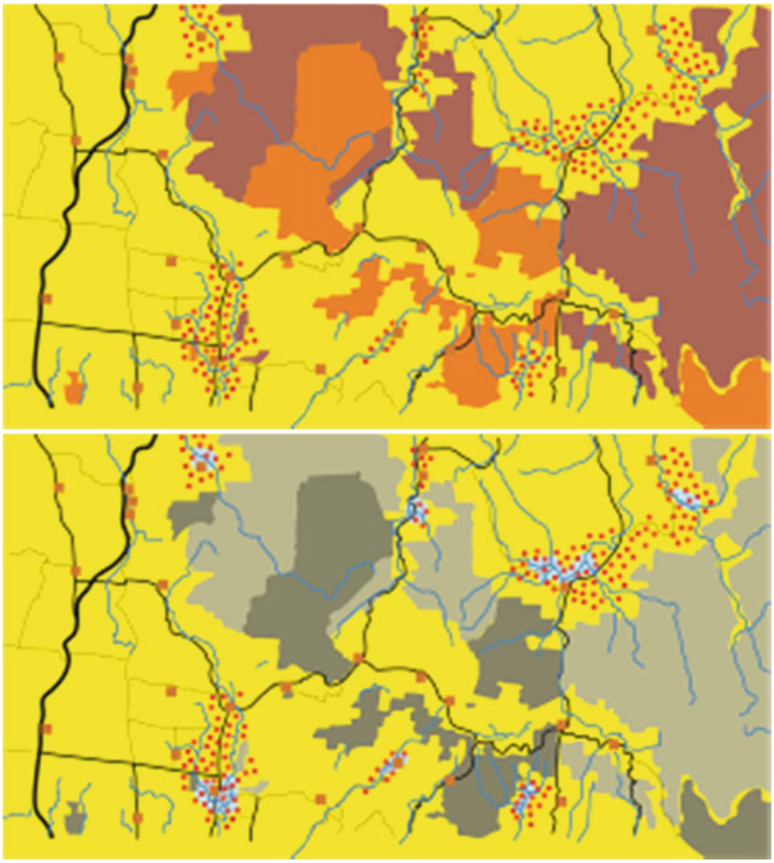

Fig. 8.12 Seasons: the end of summer, the beginning of winter, spring and just before summer

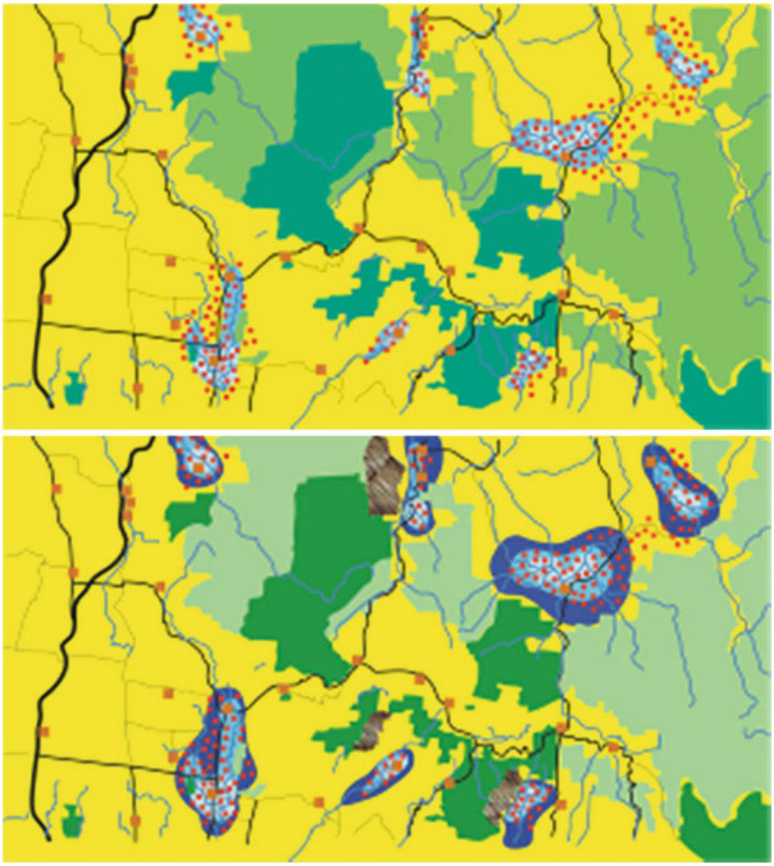

Fig. 8.12 (continued)

8.4.2.2 Freedom to Emerge

Once the interventions at the system level are defined the landscape will take shape as from that point on. The areas that form the reservoirs are dependent on the rainfall; the amount will determine the extent of the reservoirs. In the areas around the reservoirs 'unplanned' space needs to be created, where water can flow is necessary. Around these dynamic reservoirs forests, meadows, agriculture and housing are planned. Any additional forest are planned at the South Eastern side of the reservoirs, agriculture at the edge of the highest expected water levels and meadows are planned where temporarily water can be expected. In and around the reservoirs additional housing can be build, which need to be adjustable to both floods and fires, which leads to the somewhat contradictory proposition of building floodable housing in fire prone areas. These houses are built in what will be temporarily reservoirs over the year, they are placed at distance from potential fires and the water of the reservoirs can be used in an emergency to extinguish the fire. There are not many examples of

Fig. 8.13 Water pavilion (Ties Rijcken)

Fig. 8.14 Bushfire resilient house (John King Architects)

houses that are resilient for water and fire at the same time. Houses are prepared to float, such as the water pavilion (Fig. 8.13) or to be bushfire resilient (Fig. 8.14).

Only recently, solutions for multiple climate hazards are integrated in one design, such as the winning design in the Australian Insurance competition (Fig. 8.15), able to deal with hail, bushfire, heavy rain, flood and cyclones.

8.4.3 Bushfire Resilient Landscape of Bendigo

Swarm Planning theory has been implicitly used for the design of a bushfire resilient landscape in the Bendigo area. This town, in central Victoria, Australia is surrounded by forest and thus extremely bushfire prone. The town was, amongst several other places in Victoria, hit by the bushfires on Black Saturday, 7 February 2009. Bendigo

Fig. 8.15 Bluescope – resilient house, winner of the Insurance competition (Caroline Pidcock)

is one of the fastest growing regional towns in Victoria. It will need to build approximately 23,000 new houses until 2050. At the same time the town is under an increasing threat of bushfires, because (1) the town is surrounded by forests, (2) it is inevitable that new developments will in one way or another enter the surrounding landscape (a push outward) and (3) climate change will exaggerate in the number of hot days and in average high temperatures, leading to an intensified bushfire hazard. In the landscape design for the area (Newman et al. 2011) Swarm Planning interventions are proposed for the entire system (the whole of Bendigo and surroundings) as well as for specific development locations and individual (landscape) elements.

8.4.3.1 Intervention at the 'Whole'-System Level

The major proposition that intervenes in the future development of the entire system is the 'rule' that when a house is destroyed by a bushfire, the house cannot be rebuild but will be replaced by a huge concrete pillar. This pillar symbolises the vulnerability of the place where the house is lost and makes it manifest that the lost house wasn't the most resilient one in the area. Over time only the houses that are best prepared to deal with fire will remain in the area. Because of the fact that the bushfires in this area always originate from the northwest (due to the, on hot days, prevailing hot wind from the central Australian desert), the North Western urban fringe will slowly transform in a zone consisting of the most resilient houses with an increasing number of pillars (Fig. 8.16).

After a while, the North Western zone will start to function as a shield (Fig. 8.17). The combination and positioning of concrete pillars together will protect the

Fig. 8.16 Replacing burnt houses by pillars (the *red dots*); creating safety in the most risky zone (Newman et al. 2011)

Fig. 8.17 Artist impression of the protection zone (Newman et al. 2011)

remaining houses from fire attacks from the northwest, because the shield breaks the wind, and thus preventing the fire to continue its devastating pathway, and it also captures embers, which else would function as the outposts of the fire to start new spot fires in front of the fire-front.

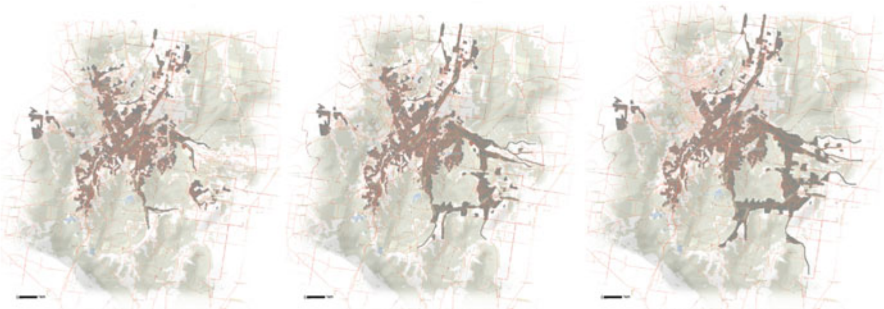

Fig. 8.18 Bendigo 'moves' (Newman et al. 2011)

The total of the urban 'system' will reorganise itself, because the northwest side of town is prevented from new housing, which therefore takes place at the eastern lee side of attacking fires. As result the city slowly 'moves' towards less vulnerable landscapes in the east (Fig. 8.18), meanwhile protected at its most vulnerable North Western side.

8.4.3.2 Freedom to Emerge

The city shape at the eastern side (Fig. 8.19) can be viewed as the level at which individual landscape components in interaction with each other develop emergent properties. The following landscape elements are determined and attributed with complex systems properties:

- Sand-dune: initially the only design intervention that will be realised. The sand is material, which can flow freely in its surroundings, finding shape due to the microclimatic differences in the specific location. Generally, the sand will form structures according to morphological rules and will ultimately shape as sand-dunes;
- Pillars: once the dunes have formed and reached a more or less stable state the pillars are added in the most strategic spots, namely the places where they have largest sheltering effect. They provide shelter for hot winds from the north and break eventual fire from that direction, but they are also capable of offering shadow, creating a micro-climate where animals and plants can survive during the hottest days;
- Pig face: this is the 'un-burnable' plant, which can be planted in order to prevent fire from progressing. The plants are projected at the bottom of the sand dunes and allowed to grow and expand its territory freely. It will, in interaction with the sand dunes and the pillars find its most optimal places to grow. Because it is initially planted at the northern side of the sand-dunes it will stop grassfires from moving up the sand dune hill;
- Bike path: after the dunes, pillars and pig face have established themselves a bike path is added. The path is projected in a way that it profits optimally from the shelter and shadow the sand dunes, pillars and plants offer;

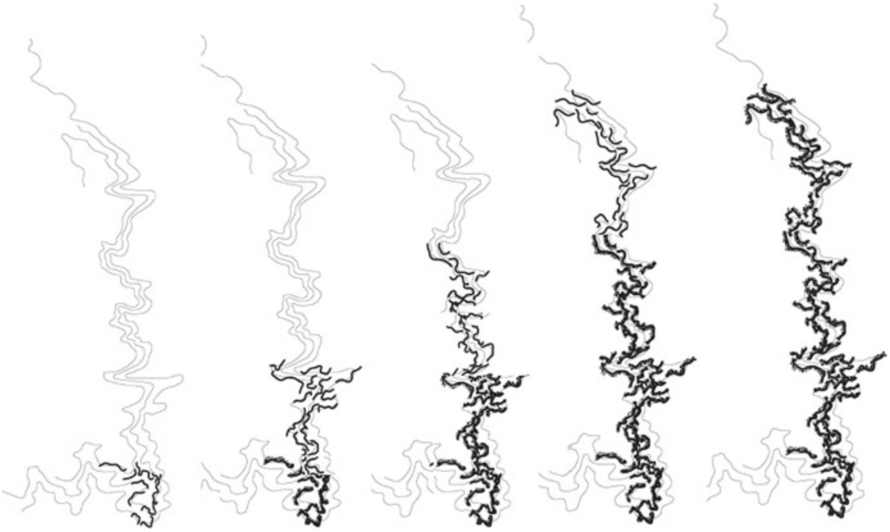

Fig. 8.19 Intervention, followed by occupation in subsequent steps (Newman et al. 2011)

- House: in the last stage of the process people are allowed to build their houses wherever they want to. Because the context is a given, the dunes and pillars created shelter and the bike path accessibility people will generally position their homes (1) behind the shelter, (2) connected to the path and (3) at distance from houses already apparent. This self-organising process will in the end lead to a landscape in which safety, liveability and social responsibility are key values.

Over time the process of growth at the eastern side of town is incremental. As the first dunes are formed and the pillars are under construction, in the next area the dune forming processes can be enhanced. The subsequent process of dune forming, pillar building, planting and occupation leads to a slow occupation and transformation of the landscape (Fig. 8.19), allowing it to adapt to the changing circumstances in an easy way.

The design for Bendigo can be seen as an example of Swarm Planning, in which the core characteristics of complexity are used to intervene in the system and start a process leading to a higher adaptive capacity. The main interventions in this design are the inability to rebuild after burning (and replacement by a concrete pillar) and the initial sand suppletion in the eastern fringe.

8.5 Swarm Planning Experiment

The special session on Swarm Planning for Wicked Problems (see Chap. 7 for background), which took place on 16 June 2009 in Delft, the Netherlands, resulted in four Swarm Planning models for the Eemsdelta region in Groningen: ‘time incongruence’, ‘on the move’, ‘sustainable emergence’ and ‘destructive mob-elections’.

8.5.1 Time Incongruence

The specific question this scenario, time incongruence (Fig. 8.20) needed to deal with was how Swarm Planning can be used to increase coherence amongst people and in society. The proposition in this scenario was to focus on creating a common enemy, create a hyper-meeting place and adjust the landscape, settlements and infrastructure networks according time dimensions.

Several incentives are proposed in this scenario. In the first place two dynamics are introduced: the slow, laid back pace of the interior network and the highly dynamic pace of the turbo-meeting-place. These time-incongruencies make it possible to choose your style accordingly, and let it depend on lifestyle or exogenous factors, such as living with or away from climate hazards. The settlements are organised in connected networks and superposition the slow-turbo dichotomy, allowing for the freedom of choice.

The second intervention is to organise a common enemy. In this case this enemy is a storm surge, entering the area from the North. This common enemy is not always reality, but stays for ever as a mental enemy in people's minds, causing disruptive and uncertain environments. The idea to cause this mental disruptions is to introduce an 'award for the worst plan'; not to realise the plan, but to make people aware of what could happen and confront them with 'maybe-planning'. It might,

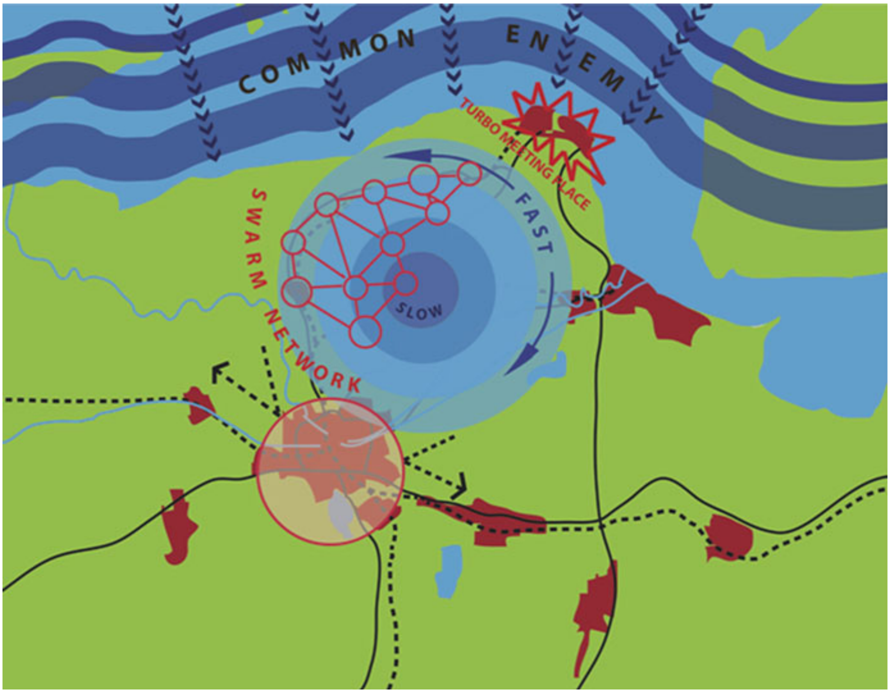

Fig. 8.20 Swarm model one: time incongruence

and it might not happen. The introduction of this uncertainty improves consciousness about peoples' environment, whether it is slow or turbo.

8.5.2 On the Move

The second scenario, on the move (Fig. 8.21) answers the question how to use Swarm Planning in dealing with sea level rise, floods and the fair distribution of fresh water. The proposition in this scenario is to plan a directed flood, occurring in 2059, allowing sea water to flow in the largest part of the region.

Through the introduction of the idea, now, to create a flood, later, two things happen. In the first place is everyone from point zero aware of the fact that in 2059 a flood is going to happen. This flood, then, is no longer a surprise, but a long expected occasion. In anticipation, historic villages can be rebuilt in safer spots, higher and safer villages may get a sister village on the beach and assets can be moved towards the higher landscape in the South. The motto here is 'Dress for the ride, not for the crash', in other words, be prepared to move on time and anticipate, not escape, the future. In the second place this scenario emphasises to accept the powers of nature and climate change. Being conscious about possible future environments

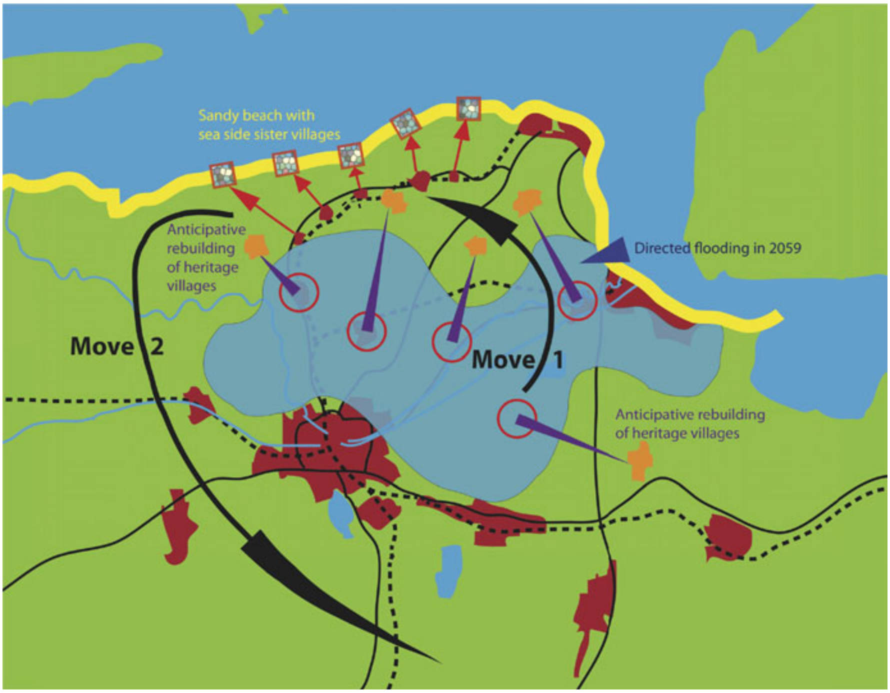

Fig. 8.21 Swarm model two: on the move

allows people to accept (little) floods, start living upstairs and put their furniture on pulleys. The ideas that support this scenario include the creation of unsustainable levees, to remove safety standards and to let structures emerge organically. These small changes in how planning is perceived improves the awareness that humankind is the problem, not climate change.

8.5.3 Sustainable Emergence

In this scenario, sustainable emergence (Fig. 8.22) the question how to improve the identity through the use of Swarm Planning is tackled. The key proposition in this scenario is to abandon planning and design, and to have faith in emergence 'from the ground'.

The scenario emphasises that abandoning planning rules as known to date will enlighten and give freedom to emergence on the basis of natural features of the region. As an outcome this will eventually lead to the development of a new kind of fuzzy rules, which are non-linear (e.g. not for everyone and everywhere the same) and imply all a different kind of incentive, reward or punishment. These rules are not top down anymore, but bottom up, taking the natural, local features as the starting point for designing and let emergence take place from there.

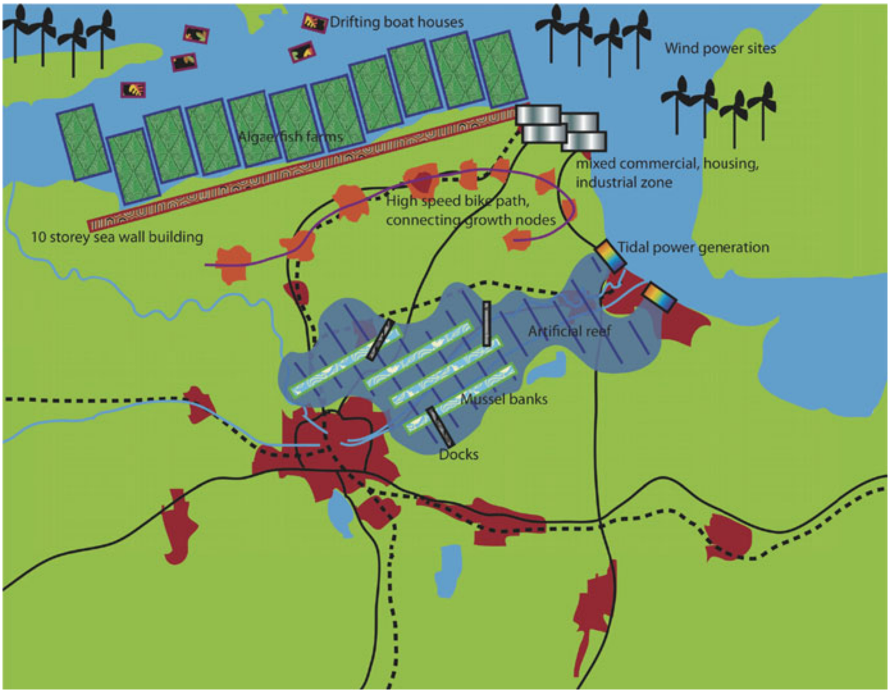

Fig. 8.22 Swarm model three: sustainable emergence

A good way to create plans, which understand the local, original qualities, is to listen to people and tell them the truth. Planners need to take a step backwards, start living in their own plans and before entering the planning profession design a chair. This could prevent the implicit drive of planners to build houses everywhere and to let design rules dictate the result. Instead, by taking into account the natural features of the area, an inland sea with mussel-banks can be envisioned or large algae-breeding and sustainable fisheries can be developed and new forms of energy supply can be realised where the energy richness is largest (e.g. wind turbines where wind blows, and a tidal plant where the tides rule.

8.5.4 Destructive Mob-Elections

The fourth scenario, destructive mob-elections (Fig. 8.23) has been developed in reaction on a very general question how to use Swarm Planning in regions. Main proposition is to make use of surprise and democratic flash-mobs in the planning of regions.

In this scenario the random destruction of buildings and/or villages as a result of surprise elections by text-messages is proposed. The idea is to organise elections by making use of text-messages within a certain area. Voters can vote on their favourite building to be demolished. This election can be organised instantly, on very short

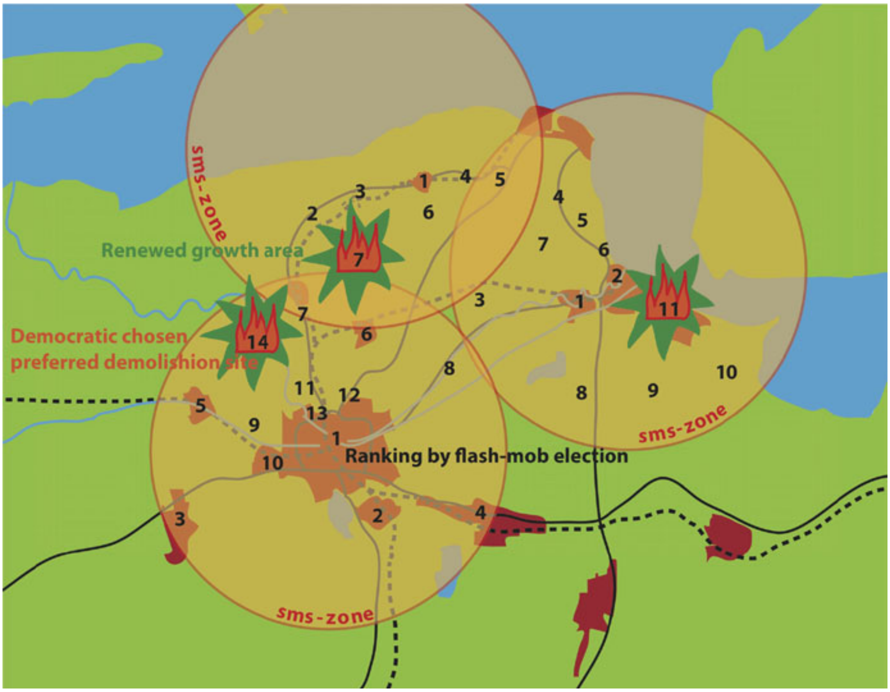

Fig. 8.23 Swarm model four: destructive mob-elections

notice and gives immediate results. The result, destruction of a certain building might sound harsh, but this randomised destruction also keeps a promise of new investments in the least popular places in a certain area. It emphasises also that instead of planning in detail for an entire region, interventions in certain nodes may lead to more development.

8.6 Conclusion

The examples of Swarm Planning design in this chapter illustrate that the Swarm Planning Theory and methodology can be used at, at least, four different levels.

The design can be directed by introducing a certain strategy. The advantage is that multiple interventions can be derived from one strategy, but a disadvantage is that the strategy can be interpreted in ways that do not emphasise a sustainable development or climate proofing.

The second level is the level of the intervention itself. The examples shown in this chapter demonstrate that a precise intervention can lead to widespread, and positive effects in the area around the intervention.

At the climate landscape level the approach proves to be most powerful. Not only the identification of (the location of) the intervention is important to anticipate future climate hazards, the design of the dynamic impact of the event as result of an intervention, support areas to not only prepare for the future but also direct the spatial changes in their environment. This strategy is functional in different types of climatic effects, e.g. both for flooding and sea level rise as for bushfires, as shown through the examples for Eemsdelta, Murrindindi and Bendigo.

The Swarm Planning Experiment, ultimately, shows the power of the approach when real policy boundaries are removed. In a laboratorial setting, occupied by 30 intellectuals, unpredictable and unexpected results were reached. The triggering of brain cells through opening the spectrum of planning tools and challenges led to very innovative spatial solutions, sometimes even extreme ones. However, these examples illustrate the broad opportunities Swarm Planning offers.

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