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A narrative method for learning from innovative coastal projects – Biographies of the Sand Engine

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ABSTRACT

The cyclic nature of integrated coastal management embodies a learning-based approach. Pilot projects in particular have an explicit learning objective. Whereas learning from (changing) physical aspects is often part of the monitoring and evaluation phase within the ICM cycle, learning from the experiences of people is not structurally embedded in integrated coastal management. In this paper a method for learning from the experiences of different actors involved in the realisation of a pilot project is developed. The experiences of actors are expressed in personal narratives obtained in open interview settings. The narrative method developed in this paper, draws on methods deriving from narrative analysis and social science, and results in biographies that represent shared actor-based perceptions on the origin and evolution of a particular pilot project. Learning is then derived from analysis, interpretation and discussion of these biographies.

The method is applied to a Dutch coastal pilot project, the Sand Engine. This massive, artificial, sandy peninsula, implemented in 2011, is designed to enhance coastal safety and forms a nature and recreation area. The narrative analysis of this case results in three biographies that contribute to understanding success experiences in this project, and the resonance of narrative-elements within the coastal policy community.

1. Introduction

The cyclic nature of integrated coastal management, embodying a learning-based approach to policy development and resource management, is described in the seminal work of Olsen et al. (1998). The explicit acknowledgement of learning underpins the adaptive management approach central to ICM (Olsen and Christie, 2000) in which progress towards effective and sustainable coastal management and development is viewed as incremental, involving analysis and learning from experience over several decades. Stojanovic et al. (2004) consider adaptability to include the deliberate design of 'lesson drawing' activities within the coastal management process with pilot projects forming the most obvious example of such activities. They consider pilot projects particularly relevant where information can be gained about physical changes to the coast before the piloted scheme is implemented more widely. Taljaard et al. (2011) concur that pilot projects fall within the ICM policy implementation phase, but view the 'lesson drawing' activities as covering more than only the physical aspects. In this vein, Cicin-Sain and Belfiore (2005) identify the need to scale up implementation efforts, typically pilot or demonstration projects, to the entire coastal zone of a nation, calling for 'more strategic and integrative thinking' on the part of the ICM community in this regard. Within an established and operational ICM programme, pilot projects are used as instruments in building the science and information base leading to adaptation of the ICM approach. This means that they can form an integral element of the 5th phase of an ICM programme as identified by Cicin-Sain and Knecht (1998) namely the Implement, Operate and Evaluate phase. Indeed, pilot projects form a unique way of coupling across the dual adaptive cycles identified by Taljaard et al. (2013) to enable learning from innovations in both the resource management and actor components of an ICM implementation programme (cf Vreugdenhil et al., 2010). Monitoring and evaluation within the Implement, Operate and Evaluate phases of pilot projects, however, again tends to focus

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on the physical changes after implementation. There is little structural attention for the learning of the (policy) actors – the social entities "able to act on or exert influence on a decision" (Enserink et al., 2010, p.79) – who are involved in the pilot project process.

One way to incorporate learning from individual actors is to encourage them to relate their experiences. Constructing stories is a unique human ability (Cobley, 2013); human beings are not only storytellers themselves (Gottschall, 2012), they also constantly construct stories to organize their own experiences "into a whole, thereby attributing significance to individual actions and events according to their effect on the whole" (Polkinghorne, 1988, p.18). So, in seeking to understand the learning from actors involved in an ICM pilot-project, it is intriguing to focus on the stories of these actors. In this paper, we develop a method that allows us to learn from the retrospective accounts of a number of actors telling their stories about the inception and realisation of a coastal pilot project, cross-checked against a variety of written and visual data sources. By drawing on the field of narrative analysis, we develop a novel method for integrating and analysing the "storified" experiences of the involved actors, and we demonstrate its application on the Sand Engine pilot project.

The Sand Engine project is an innovative and multifunctional coastal pilot project, realized at the Dutch coast in 2011. It is a large project with respect to; its size (involving 21.5 Mm^3 of sand), its cost (70 million Euros for realisation, design, monitoring and maintenance) and the number and variety of organisations involved, making this an interesting case on which to apply our actor-focused learning method. The resulting biographies represent shared actor-based perceptions on the origin and evolution of the Sand Engine pilot project. The analysis, interpretation and discussion of these biographies demonstrate the application of the retrospective narrative method in distilling learning from actor experiences in a highly innovative pilot project.

Commencing with a theoretical background on narratives and their role in policy in 2.1, section 2 outlines the new method for learning from innovative coastal pilot projects. The different steps within this method are described in 2.2. The method is applied to a Dutch case study – the Sand Engine pilot project – which is further introduced in section 3.1. Section 3 then provides the analysis, results and conclusions of this case study. In section 4, the employability of the method in learning from innovative coastal projects is evaluated.

2. A narrative method for learning from innovative coastal projects

According to Aristotle (Wagenaar, 2011), a narrative or story can be seen as a course of action that has a beginning (the protagonist usually faces a challenge or puzzle), a middle (the developments of events) and an end (e.g. puzzle solved). However, a narrative is more than simply a *chronicle*; narrative-elements are arranged in such a way that it forms an *enplotted* collection of events (Cobley, 2013; Czarniawska, 2004). There many analytical features of narratives of potential interest to research (Landman, 2012) resulting in 'a continuum of approaches in narrative analysis' (Riessman, 2008).

2.1. Narratives in policy making and the design of this research

Narratives are products of the social groups within which they emerge; the thoughts, beliefs, affects and passions they express and construct are usually not those of an individual, but are situated at the interface of the individual and their wider environment (Wagenaar, 2011). Narratives are cultural artefacts, used by humans to represent the world (Stone, 2002) and convey meanings (Yanow, 2000). For analysts interested in recovering the beliefs and meanings that make actions and practices possible (Bevir, 2006), it is these sociological sense making and meaning giving characteristics of narratives that make them interesting objects to study.

Narratives can also act to frame policy issues: narrators in a policy setting can represent the world in such a way as to make themselves, their skills, and their favourite course of action necessary (Stone, 2002). When this happen, narratives are not only cultural artefacts, but become political artefacts as well (cf Stone, 2002). Research on frames and framing (e.g. Aasetre and Vik, 2013; Bischof, 2010, Dewulf et al.,2009; Van Hulst and Yanow, 2014; Van Lieshout et al.,2012) is, therefore, closely related to research on narratives, but narratives may be characterized as a richer concept than frames; owing to the following features:

- Narratives have a performance-related, emotive effect.
- Narratives can be adjusted every time they are told, forming a flexible type of cultural (and political) artefact.
- Uniquely, the course of action within narratives can prescribes a course of action deemed necessary by the narrator.
- Furthermore, narratives are 'elastic', there is room for the interpretation of others (Baker, 2010). 'Their elasticity', as Van Der Stoep (2014), after Baker (2010) and Van Dijk (2011) clarifies: 'enables stories to travel among a wider audience'.

These characteristics of narratives are particularly relevant in studying pilot projects, because the realisation and follow-up activities of pilot projects involve processes in which many actors interrelate and systems are interconnected in a new (innovative) way (Vreugdenhil, 2010, p.19). Within a particular policy sector, such as coastal management, narratives are not traceable via a single speech or document, but are located in different sources containing narrative-elements in different forms (Dicke, 2000). In the method presented in this paper, the main sources are the personal accounts of people involved in pilot projects; their personal narratives are analysed. Because of the different sources that contain narrative-elements in a policy sector, aggregation is often needed in conducting a narrative analysis (Van Eeten, 2007). Decisions on how to aggregate the personal narratives to shared biographies of the project are made by using the overarching structure of *chronicle*, *emplotment* and *mimesis* (cf Czarniawska, 2004).

2.1.1. Chronicle in narrative analysis

The concept of chronicle (cf Czarniawska, 2004) or sequential framework (cf Sandercock, 2003) is analogous to concepts used in literature theory such as *fabula* (Bal, 1997); 'a series of logical and chronological related events that are caused or experienced by actors'. Studying the *sequences of events* in a personal narrative reveals which events and phases in a pilot project process were experienced as important by an actor. The events have an orientation in time (start time, duration), place, situation and characters (Riessman, 2008). The *time-span* of a personal narrative reveals how an actor experienced the *duration* of the realisation of the pilot project: when did it start for them? In addition, the personal narratives have a *situational orientation*, including a *spatial orientation*: the geographical scale and area where the events took place.

2.1.2. Emplotment in narrative analysis

According to Sandercock (2003), in a narrative the sequences of events are enplotted by:

1) An element of explanation, 2) recognized, generic conventions that relate to an expected framework, plot structure and protagonists, 3) moral tension and 4) a potential for

generalizability. When telling a story, the narrator may add elements, such as an abstract (summary or 'point' of the narratives), evaluation (the narrator steps back to comment on meaning) or a coda (ending the story and bringing the action back to the present) (Riessman, 2008). Riesmann's and Sandercock's story elements rest on the approach of William Labov (1972) which 'remains a touchstone for narrative inquiry' (Riessman, 2008, p. 81). Ivory (2013), consulting several authors, states that to be convincing narratives for spatial plans must: 1) be consistent, testable, lead to a moral position and provide grounds for action, 2) flow logically with one proposed event leading to another and moving from problem to resolution, 3) be meaningful, by drawing on 'recognizable and acceptable social discourses about what is meaningful, moral and relevant' (Ivory, 2013). The latter two characteristics are closely related: the narrative must link problems and potential solutions together in a way that coheres with the discourses about what is meaningful, moral and relevant (Van Hulst, 2012 cited in Ivory, 2013). Of interest is whether these characteristics of convincing narratives in policy can be traced in the personal narratives of actors. In other words, what *problem-solving qualities* are attributed to the projects by the actors?

2.1.3. Mimesis in narrative analysis

Mimesis are the devices employed by the narrator in enplotting. According to Throgmorton (1996), the use of 'the imagery and rhythm of the language' (the use of an effective rhetorical style) is important in being persuasive in planning processes. Referring to Leith and Myerson (1989), he argues that narrators must be aware of their audience and of opposing views, and must understand how an audience gives meaning to stories. Analysing such aspects of mimesis, is most insightful when the live storytelling of actors could be observed during the policymaking. A focus on mimesis is not appropriate, however, in a retrospective narrative analysis as conducted in this research.

2.2. Method design

The personal experiences of individual actors involved in innovative pilot projects are central to this method. Open interviews techniques are therefore selected. In the interviews, the actors are provided with the opportunity to relate their personal experiences during the pilot project process. They are free to emphasize the aspects of most importance to them. Interviewees are asked to commence their narrative about the pilot project at the moment that for them, the pilot became 'something'; the start of their personal experiences within the pilot project process. The chronicle and emplotment (see 2.1.1 and 2.1.2) of these personal narratives are in turn analysed using:

(i) The sequences of events, the time and spatial orientation;
(ii) And the problem-solving qualities ascribed to the pilot project.

A method developed by the sociologist Schütze (Schütze, 1983; Jovchelovitch and Bauer, 2000; Kleres, 2011) and frequently used in biographical research, is adapted for use in the analysis.

First, detailed and high-quality transcriptions of the interview material are made (Step 1, Fig. 1). Then, the narrative structure of the interview text is dissected into discrete narrative segments, coded as 'indexical' or 'non-indexical' segments. Indexical segments have a concrete reference to 'who did what, when, where and why' (Jovchelovitch and Bauer, 2000; cf Schütze, 1983); they describe phases or events (Kleres, 2011). Non-indexical segments go beyond events, yielding descriptions and argumentation. Descriptions 'refer to how events are experienced, to the values and

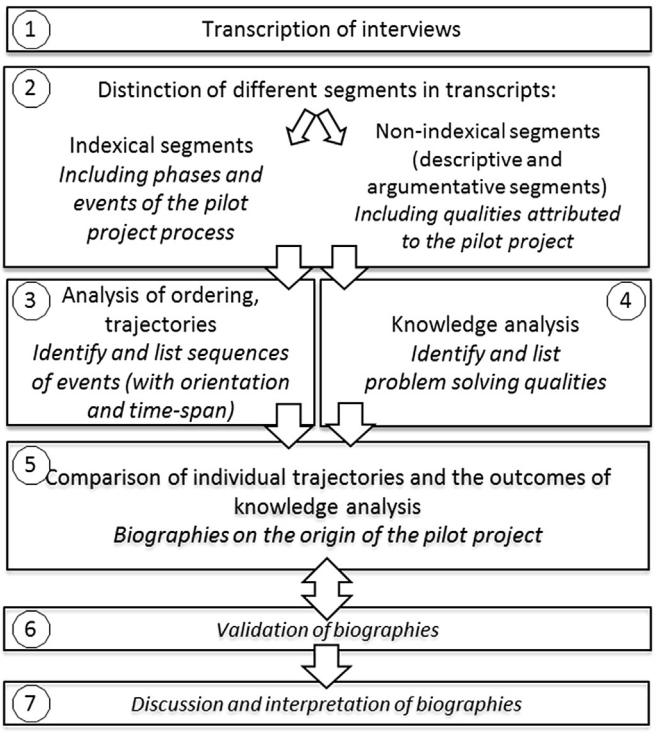


Fig. 1. Overview of the biographical narrative method to study innovative pilot projects (Adapted from Schütze, 1983, Jovchelovitch and Bauer, 2000; Kleres, 2011). Italics indicate the adaptions of Schütze's method for analysing innovative pilot projects.

opinions attached to them, and to the usual and the ordinary', while argumentation refers to legitimizations and reflection (Jovchelovitch and Bauer, 2000); they have an evaluative or theoretical-explanatory character (Kleres, 2011). Both types of non-indexical segments are then (sub)coded (Step 2, Fig. 1). Third, the coded indexical components of the text are used to distinguish the ordering of events for each individual (Step 3, Fig. 1). These sequences of events, or trajectories as Schütze labelled them, form the routes from conception to the design and realisation of the pilot project as outlined by the interviewees. During the fourth step, the non-indexical segments are investigated: the 'problem-solving qualities', which the interviewees attributed to the project, are found in these segments. The outcomes of both analyses (Step 3 and 4) are then compared. The similarities in sequences of events and the problem-solving-qualities are used to assemble the biographical narratives on the origin of the pilot project (Step 5, Fig. 1).

For assessing whether the biographies deriving from the personal narratives match the retrospective views of the broader coastal community (Step 6), several validation forms are conceivable. In the Sand Engine case study, a validation survey among participants of a coastal meeting was undertaken to see whether the participants recognized the biographies and whether they felt affinity with the biographies (3.2 and 3.5). After the validation, the retrospective biographies were interpreted and discussed to distil learning about the realisation of an innovative pilot project (Step 7).

3. Application of the method on the Sand Engine pilot project

Pilot projects often have a learning objective (cf Vreugdenhil et al., 2010). For the Sand Engine pilot project, this learning objective is very explicit. It has become the object of study of large monitoring and research programmes to generate knowledge about how 'Building with Nature' principles work in practice. As

explained by Janssen et al. (2014), such projects require cooperation among a range of disciplines and organisations. The learning objective and the size of the project, including the need for cooperation among many actors, make the Sand Engine an appropriate case for a first application of the narrative method.

3.1. Background and case description

Approximately seventy-two percent of the Dutch coastline (254 km ex of 353 km coastline (Waterman et al., 1998)) consists of sandy beaches and dune ridges, forming part of the 'primary flood defences'[1] – as promulgated in the Water Act (Ministry of Transport, Public Works and Water Management, 2010). Sand supply is necessary to maintain the integrity of the beaches and dunes as a flood defence barrier, protecting the Dutch population against flooding. *Rijkswaterstaat* (abbreviated to RWS) is the public body tasked with the execution of the coastal policy of the Dutch Department of Infrastructure and Environment. This policy involves a programme of annual sand nourishments based on calculation rules and procedures designed to support the implementation of the Coastal Defense Bill[2] (Hermans et al., 2013; Mulder et al., 2011). The nourishment programme is communicated with other governmental organisations that have responsibilities in the coastal regions; provinces, water boards and municipalities (Rijkswaterstaat n.d.). In addition to implementing the current national policy of coastal nourishment, engineers and policymakers seek innovative means to counter further erosion of the sandy coast and counteract the anticipated sea-level rise. One of these innovative ideas is the use of mega-nourishments for coastal protection as described by Stive et al. (2013). Mega-nourishments are extremely large sand nourishments which are expected to be more efficient, economical, and environmentally friendly in the long term than the traditional beach and shoreface nourishments presently used to negate coastal recession (Stive et al., 2013). Sand from a mega-nourishment will be transported by wind and sea to the beaches and from there to the dunes, enhancing coastal defence. The Sand Engine is the first mega-nourishment to be realized, and is a hook-shaped peninsula constructed in 2011 from 21.5 Mm^3 of sand at the Delfland coast, seaward of the municipality of Westland, in the province of South Holland (see Fig. 2).

A comparison between the regular coastal maintenance programme in the Netherlands and the Sand Engine is provided in Table 1, highlighting the trend-breaking nature of the Sand Engine in terms of its size and form. The volume of 21.5 Mm^3 represents far more sand than was placed along the entire sandy coast of the Netherlands in 2011. It also exceeds the 15.4 Mm^3 of sand (Rijkswaterstaat, 2015) used to nourish the coastline of the province of South Holland in the ten year period from 2005 to 2015, as part of the regular coastal maintenance programme.

In addition to its foremost function of maintaining the beaches and dunes, and so maintaining the primary flood defence line, the mega-nourishment currently serves as a recreational nature area and as a habitat for flora and fauna. Because the use of the forces of wind and sea are integral to its design and evolution, the mega-nourishment provides a clear example of the broader concept of 'Building with Nature' which is based on the idea that using inorganic and organic materials and the forces and interactions present in nature can generate better solutions for challenges in low-lying delta areas than traditional 'building in nature' does (Ecoshape et al., 2012, Slinger, 2015, 2016; Vikolainen, 2012; Waterman, 2008). The project was officially initiated by the province of South Holland and RWS. They collaborated with many other governmental parties, scientists and interests groups in its realisation.

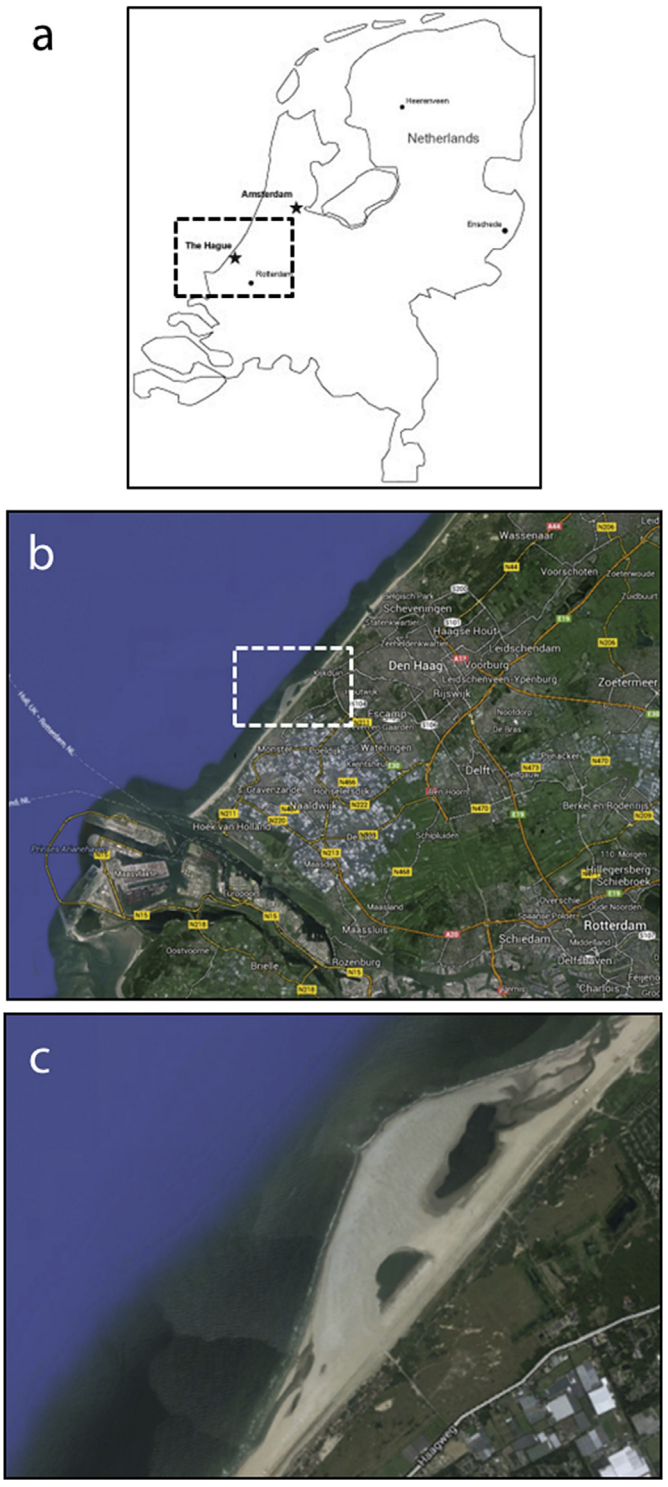


Fig. 2. Location of the Sand Engine within the Netherlands (a), its location on the South Holland coast (b) and a satellite image of the Sand Engine self (c).
Sources: GoolgeMaps and mapresources.com.

[1] Primary flood defences (In Dutch: Primaire waterkeringen) are defence structures protecting the land against flooding caused by 'water from outside'; from the North Sea, the Wadden Sea, the large rivers and the IJsselmeer and Markermeer.

[2] 'Eerste kustnota', Ministry of Transport, Public Works and Water Management, drafted in 1990. For examples of annual calculations and evaluation, see Rijkswaterstaat (2015).

Table 1
Comparison between regular coastal maintenance and the sand engine pilot project.

	Regular coastal maintenance	Sand Engine pilot project
Realisation	Annual programme, these facts are about entire 2011	Between March and November 2011.
Amount of nourished sand (Mm^3)	11.4 (realized at the entire sandy coast of the Netherlands in 2011)[a]	21.5 (realized in this project alone)[b]
Form of nourishment	Combination of beach and foreshore (60/40) along the coastal line[a]	Hook-shaped peninsula created
Nourishment techniques	Trailing suction hopper dredgers that can dump, press or rainbow the sand	Trailing suction hopper dredgers that can dump, press or rainbow the sand[b]
Costs (million Euro)	55[a]	70 (50 for realisation, 20 for e.g. design, monitoring, maintenance)[b]
Initiator(s) and payer(s)	RWS/central government[a]	RWS (58) and Province (12)[b]

[a] Source: National Government (2012). National Budget 2011, Article 11, Main Water Systems.
[b] Source: De Zandmotor (n.d.). Sand Engine Website.

3.2. Data collection

The decision making on the realisation of the Sand Engine occurred within a dynamic actor-network with both the organisations involved and the delegates from these organisations subject to change (Van Der Hoek et al., 2012). The Sand Engine Steering Committee carried the responsibility for major decisions, based on the preparatory work of diverse organisations such as governmental project groups and various research institutions. Later in the process, actors tasked with the maintenance of the project area and its immediate surroundings became involved and the needs of potential future users groups were also investigated in separate meetings (Buitenkamp et al., 2016). Fifteen actors from the diverse organisations, involved in different phases of the process, were selected for interviews sharing their personal experiences in the Sand Engine decision making process. A director of an initiating organisation was invited first. Commencing with this interview, a snowballing technique (Noy, 2008) was used to identify other potential interviewees. The people identified were assessed for suitability on the grounds of their accessibility to the researcher and their distribution among the actor-network. Thirteen open interviews were conducted in total as two were double interviews (Table 2).

The interviews were mostly conducted in the working environment of the interviewee, but sometimes at their home, and once in a locality adjacent to the pilot project site. The length of the interview varied depending on the extent of their experiences with the pilot project and on their enthusiasm, averaging 1.5 h. Although the personal narratives of actors are used as the main data resource for the analysis, the interview-narratives were cross-checked factually against additional information resources such as policy documents, news reports, videos, a plenary presentation by one of the key-actors in the case (9th of September 2013) and an interview with another key-actor (30th of November 2015). The embedding of the research within the NatureCoast research programme also enabled the veracity of related events to be cross-checked and established.

Table 2
List of interviews.

	Interviewee from:	Date of Interview
A	The (former) Provincial council	6th of January 2014
B	Provincial management	13th of January 2014
C	Environmental consultancy	3rd of February 2014
D	A surfers association	29th of January 2014
E	The municipality (spatial planning)	5th of February 2014
F	The village	13th of February 2014
G	The municipality (safety)	13th of March 2014
H	Dredger business	17th of March 2014
I	Engineering science	3rd of April 2014
J	The regional water board	30th of April 2014
K, L	Two interviewees from Rijkswaterstaat	1st of May 2014
M	A nature development organisation	21th of July 2014
N,O	Two interviewees from drinking water company	27th of July 2014

3.3. Narrative analysis of Sand Engine pilot project

The analysis of the personal narratives of interviewees is reported using the stepping stones of *chronicle* and *emplotment* (cf Czarniawska, 2004; see section 2.1).

3.3.1. Analysing chronicle and emplotment by comparing sequences of events, duration and spatial orientation

The distillation of the sequences of events from the 13 interviews yields an analytical table in which 13 sequences of events and their relative position in time are outlined. Fig. 3a provides an overview of this table, while Fig. 3b illustrates one of these sequences in detail. A summary of the situational orientation at the start of the narrative is circled with dotted lines. All sequences end with the realisation of the project in 2011 in the grey bar at the bottom of Fig. 3a. The figure enables us to compare the time-span of the sequences, the situational orientation of the narrative, and provides a first insight in emplotment.

Six interviewees outlined relatively short sequences with time-spans of several years, while the other personal narratives spanned more than a decade or several decades. In addition to the differences in the time scale spanned by the narratives, the sequences of events provide insights on emplotment; how the events are linked casually. Some interviewees link the Sand Engine explicitly to other coastal projects on which they were working (Zwakke schakels/Weak Links, in three narratives) or they link to the need for innovation (in three narratives).

Additionally, there is a difference regarding the attachment of narrative to a specific location. The narratives with a relatively short time span are linked to a local or regional scale, while the narratives

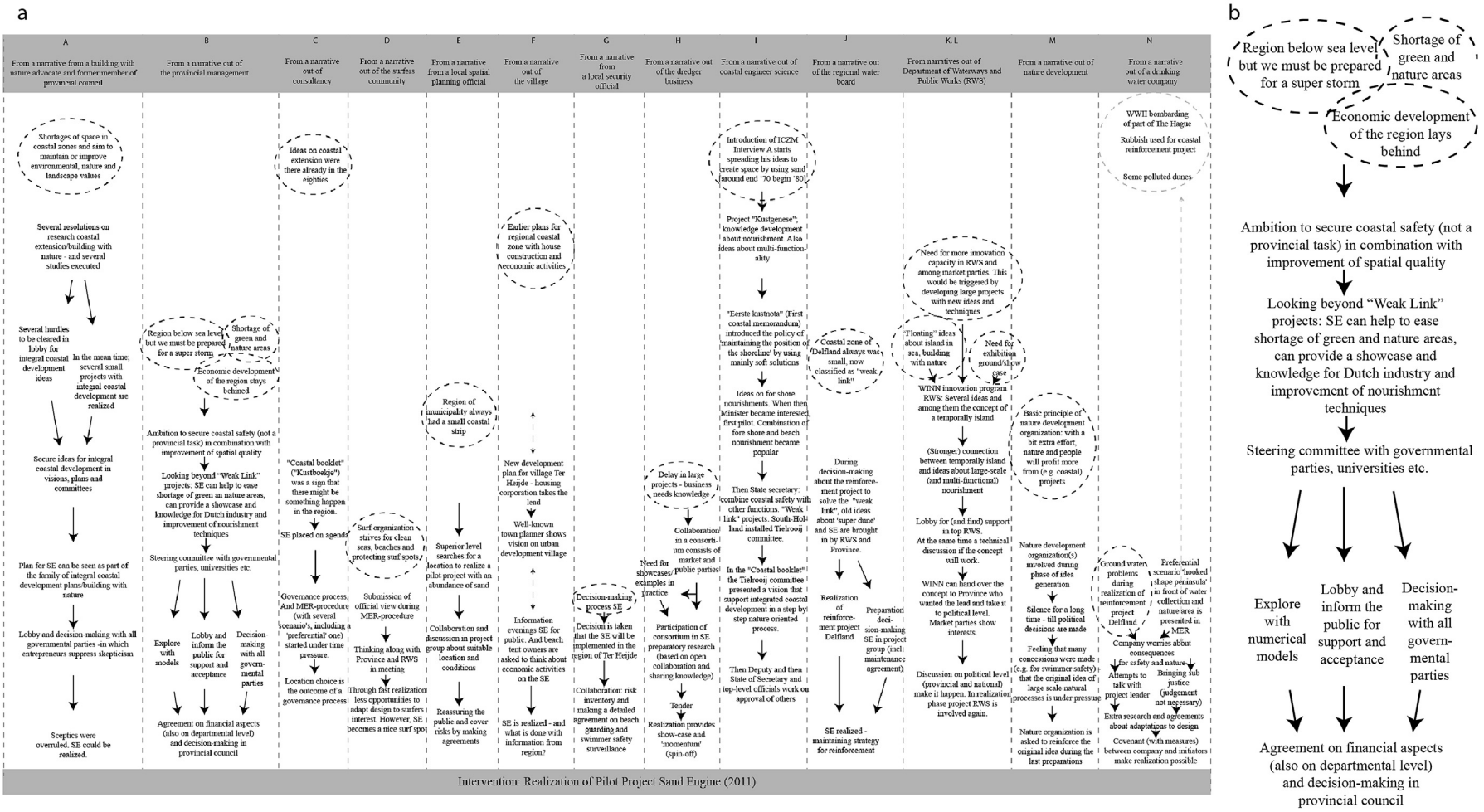


Fig. 3. a. Overview of the analytical table which outlined 13 sequences of events distilled from the personal narratives. b. An example of the situational orientation (dotted lines) and sequences of events that led to the realisation of the Sand Engine. The example is extracted from a personal narrative by a provincial manager.

with a larger time span take place at a higher geographical scale. The example of Fig. 3b, for instance, takes place at a regional to national scale. In the first group of narratives (short time span, local level) the Sand Engine is viewed as a project. Interviewees from the second group of narratives (longer time span, regional to global level) see the Sand Engine not as a project, but as a concept. They refer less to the specific location at which the Sand Engine was implemented than do the people who view the Sand Engine as a project. 'We represent it as a small triangle, but that triangle could be positioned at any place [along the coast]', is a clear illustration from an interview in which the interviewee views the Sand Engine as a non-site-specific concept.

3.3.2. Analysing more on emplotment by comparing the problem-solving qualities of the Sand Engine pilot project

Table 3 represents the main outcome of the problem-solving qualities component of the analysis. The comparison focuses on: Which problems needed to be solved in the perception of the interviewees (column I in Table 3)? And what does the Sand Engine contribute to the solutions (column II in Table 3)?

Although they formulate it slightly differently, almost all interviewees emphasized the importance of coastal safety in the Netherlands or in the region. Sea-level rise is commonly acknowledged as increasing the relevance of coastal safety. In addition to coastal safety, interviewees mentioned more actor-specific problems or needs which partly overlap; such as the need for innovation or for regional economic development (rows B, H, K/L) or the need for knowledge (row H, I, K/L). Some needs are very stakeholder-specific, such as securing the safety of the drinking-water-collection (row N/O) or securing the surf spots (row D). In the narratives of three interviewees, the Sand Engine project itself is a (potential) problem (row G, F, N/O) rather than a problem-solving intervention.

Column II reveals that interviewees frequently view the Sand Engine as an (iconic) example that contributes to the problems they mentioned, not as *the* unique solution. One interviewee concluded that the Sand Engine improved surfing conditions (row D) and some interviewees stated that the reinforcement project (Zwakke Schakel/Weak Link Delfland Coast) was far more important for solving the long term flooding problem (row C and J). The initiators mentioned more problem-solution structures than other actors. They formulated, and explicitly listed, the problem-solving qualities in each of their personal narratives (rows A, B, K/L). The fact that they easily and readily name such a list of qualities suggests that they have regularly used these problem-solution structures in their communication about the pilot project.

3.4. Results: biographies of the Sand Engine pilot project

The comparison of the sequences, duration, spatial orientation (Fig. 3a) and the different problem-solving qualities attributed to the Sand Engine by the various interviewees (Table 3) leads to three distinct clusters. The common characteristics of these clusters form the three overarching biographical narratives: 1) the Sand Engine as something (unknown) that had to implemented, 2) the Sand Engine as an iconic departure from usual practice and 3) the Sand Engine as 'just' a stage in an incremental process of coastal development (Table 4).

3.4.1. Biography 1: something (unknown) that needed to be implemented in the region

From the perspective of some local officials and local actors, the Sand Engine was a project announced at a higher (provincial and national) level, and seen as an unfamiliar task to be implemented in their region (symbolized by the figure in the first of the three rows of Table 4). These narratives typically spanned a time period of a couple of years. The novelty of the task and associated uncertainties were not necessarily interpreted as negative. There were several positive expectations, including the opportunities for large-scale natural processes along the coast (from the stakeholder representing a nature development organisation), and opportunities related to the uniqueness of the Sand Engine for the region (from a local official). However, the lack of familiarity and accompanying uncertainties also caused doubts amongst actors. To reduce these uncertainties to acceptable levels for the actors, additional model simulations and financial calculations were performed and covenants were signed. Zooming from the biographical narrative back to the sequences of events reveals that actors viewed different studies and covenants as crucial to the realisation of the project. These included an agreement on maintenance and responsibilities (water board), additional hydrological research and the resulting extra hydrological measures (drinking water company), as well as an agreement on lifeguard duties and beach surveillance (local safety official).

3.4.2. Biography 2: an iconic departure

The majority of interviewees, however, do not view the Sand Engine as a project, but as the iconic outcome of a continuously evolving process, which commenced in the seventies or eighties (symbolized by the figure in the second row of Table 4). Interestingly the interviewees referred to different continuously evolving processes, which only partially overlap. Some interviewees from the field of coastal engineering consider the Sand Engine as *a new step in the development of nourishment techniques* serving multiple purposes (multi-functionality). This idea overlaps partially with other views that the Sand Engine is *a new step in the integrated development of coastal zones,* because integrated development incorporates the idea of multi-functionality. In such a way, several stories about the concept of the Sand Engine become interwoven, positively reinforcing each other.

However, the interweaving of several stories can also strengthen negative feelings, as illustrated by the reaction of a particular local interviewee. To him, the Sand Engine represents the regeneration of old ideas for integrated coastal development in this locality. These involved plans for the construction of near-shore island(s) with housing and economic activities. Such economic development would have brought much unwanted change to the inhabitants of the nearby village and was viewed as undesirable. Although the concept of the Sand Engine differs substantiality from the old plans, the interweaving of the ideas coloured the interviewee's narrative and strengthened his negative interpretation.

3.4.3. Biography 3: a stage in an incremental process

The third biographical narrative represents an intermediate perception, based initially on one interview. In this perception, the Sand Engine has the advantages of limiting disruption to the ecosystem and of efficient contracting arrangements, but is not an innovation. It is merely a step or even an exception within the tradition of nourishing and maintaining the Dutch coast. As such, it is a stage within an ongoing and incremental process of coastal development.

The intermediate position of this biographical narrative, in which the Sand Engine is neither an 'exciting unknown project' nor an 'iconic departure', seems to make it a less attractive narrative. However, it may have more silent followers amongst the broader coastal management community.

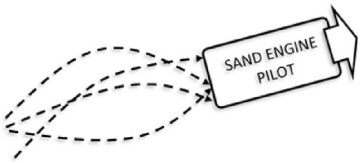
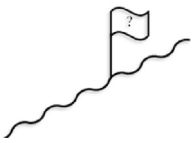
3.5. Validation of the biographies

A validation exercise was conducted at a conference in

Table 3
Overview of the problems and needs mentioned in the personal narratives (I) and the solutions to which the Sand Engine (SE) contributed according to the personal narratives (II).

		I. Problem(s)/Need(s)	II. Contribution of pilot project to solution
A	From a narrative out of the then provincial council	Worldwide in coastal areas: - lack of space - need for maintaining/improving environmental, nature and landscape values - and need for (coastal) safety.	3 possible solution strategies for lack of space are: 1) developing/building upwards 2) more intensive use of hinterland 3) developing seawards by using a multifunctional and integral approach, using natural materials and creating an added value ('building with nature'). SE is small example of the latter solution.
B	From a narrative out of the provincial management	(Western) Netherlands below sea-level: - Must be prepared on super storm - And on further sea-level rise.	(After other reinforcement projects, 'Weak links') SE is a step further in working on coastal safety.
		Southern region of Randstad did not perform well: - Economic performance - Environmental performance - Lack of recreational green space (pressure on green space).	- More green and nature in the region - Innovation in/for business (Showcase and knowledge) - Better nourishment techniques.
		Tender procedures for nourishment too fixed.	SE might open doors for more flexible tenders.
		Resistance for development coastal region.	SE might change this resistance.
C	From a narrative out of consultancy	Coastal safety issue in the region.	Reinforcement project already has covered this issue, so SE was (only) about maintaining the coast.
		Separate tender procedures for nourishment are expensive.	Is example of new ways of tendering nourishments.
		Nourishments disturb sea and coastal life.	Less disruption.
D	From a narrative out of the surfers community	Surf spots (and clean beaches and sea) are important for surfer association, these aspects need attention and protection.	SE provided temporally (for 1.5 year) an excellent surf spot. And it is still a good kite-surf spot.
E	From a narrative from a local spatial planning official	Municipality does not have so much coastal stripe.	The idea of SE from superior level was welcome (on some local spatial planning conditions) to broaden the coastal strip.
F	From a narrative out of the village	Undesired plans and developments in region.	None, SE itself is an undesired change for the region.
G	From a narrative from a local security official	Safety for beach users.	SE brings challenges, but covenant and measures secure this safety.
H	From a narrative out of the dredger business	Delay in large projects partly though lack of (ecological) knowledge.	SE contributes to knowledge (about ecology and sustainable development).
		Need for advanced ideas in nourishment business.	SE is an icon for modern, more sustainable, thinking, a showcase for building with nature (for worldwide clients).
I	From a narrative out of coastal engineer science	Coastal safety in the Netherlands (and today's society and politicians has more needs and demands, like multi-functionality).	Development of appropriate nourishment techniques: he Sand Engine is a great example for long term and multifunctional coastal maintenance.
		Need for knowledge about coastal morphology and nourishments.	Functions as a large scale scientific study object.
J	From a narrative out of the regional water board	Delfland coast always was a small coastal strip.	The reinforcement project has strengthened the coast and the SE helps to maintain the new coastline.
K/L	From narratives out of Department of Waterways and Public Works (RWS)	Several needs: - More innovation (both within RWS as with market parties) - Exhibition ground for (technical) developments.	SE shows the innovation capacity and function as showcase. (Other ideas from Innovation Programme WINN do that as well.)
		Sea-level-rise.	3 strategies to counter sea-level rise consequences: 1) Strengthen the line of defence (the dikes/dunes) 2) Relocate line of defence backwards (receive the water behind dikes/dunes) 3) Relocate line of defence forwards (break the water force in front of dikes/dunes). SE is an example of the third strategy.
M	From a narrative out of nature development	Coastal safety is important in the Netherlands. There is also a need for development of nature which people can enjoy	Project as SE are primarily intended to strengthen coastal safety, but also provide opportunities to nature development (and large-scale natural processes).
N/O	From narratives out of a drinking water company	Coastal safety is important in the Netherlands.	SE contributes to coastal safety.
		In their dune-area, the company needs to: - secure the safety of the drinking-water-collection - secure the ecological value	With some adaptations and management measures, the SE is not a danger for these needs.

Table 4
Overview of three biographical narratives on the development of the Sand Engine pilot project – these consist in interpreted personal narratives, not the official stances of formal agencies or institutions.

3 biographies: The Sand Engine …	Details and varieties within the biographies:	Based on personal narratives from the:	Time-span	Spatial orientation
1. As something (unknown) that needed to be implemented in the region 	Providing opportunities for actors	municipality, surfer association, nature development water board	Some years	Local to regional level
	Potentially causing danger for actors	drinking water company municipality village		
2. As an iconic departure 	Emerged from coastal defence techniques/nourishment techniques/successor of the Delta Works	dredger business RWS	Decade or some decades	Regional to global level
	Emerged from knowledge development in coastal engineering (closely related to above)	engineering science RWS		
	Emerged from Integrated Coastal Zone Development/ regional development	province, provincial council		
	Emerged from unwanted plan development (for economic activities which changes the areas character)	village		
3. As a stage in an incremental process of coastal development 	Nourishment, not really new techniques, but with some improvements relating tender procedures and ecological impact.	consultancy	Some decades	Regional to global level

Wageningen, the Netherlands, devoted to 'Building with Nature' research (12th of November 2014). The three biographical narratives were narrated to 44 conference participants. The conference participants are considered representative of the broader coastal community involved with developments in the nourishment and maintenance of the Dutch coast, but are not necessarily representative of the local actors in South Holland.

When the three biographies were narrated, the participants were asked to indicate on their questionnaire form:

(1) Which of the three biographical narratives, if any, they recognized (a closed-ended question) and;
(2) For which of the three biographical narratives, if any, they felt the most affinity (a closed-ended question).
(3) If they did not feel affinity with any of the three biographical narratives, they were asked to suggest another potential biographical narrative (open-ended question).

An outcome of lack of recognition, or a lack of affinity, and the identification of many other narratives would indicate that the biographies do not fit with the retrospectives views of the broader coastal community and vice versa. Because the participants were primarily representatives from consultant engineering companies, and governmental and scientific organisations, a preference for the second and third biographical narrative could be expected. Indeed, it was conceivable, but not likely, that the first biographical narrative, favoured by local actors, might not even be recognized by the conference participants. The results of the validation survey (Table 5) accord with our expectations based on the composition of conference participants. More than a third of the participants recognized all three biographical narratives, and 70% recognized two or three of them. Biographical narrative 1, which scored lowest on recognition and affinity (as expected), was still recognized by more than half of the community. One participant felt most affinity for biographical narrative 1. He works for the drinking water company which makes him a stakeholder rooted in the local area. In addition, the validation survey reveals the anticipated silent support for biographical narrative 3 and justifies distinguishing this biographical narrative.

The overwhelming recognition of the three biographical narratives combined with the identification of each of the participants with at least one biographical narrative serves to validate the three biographical narratives that were derived from the narrative analysis. This validation does not mean that the biographies represent a statistically proven truth, but merely indicates that the clustering of interpretations is recognizable within this coastal community and that the biographies can be used to deepen understanding of the project and for further reflection.

Table 5
Summary of validation survey, n = 44, showing 1) the percentage of participants who recognized each biographical narrative, 2) the percentage of participants who felt most affinity for each biographical narrative 3) the percentage of participants who recognized 0, 1, 2 or 3 of the 3 biographical narratives.

	1) Recognition of biographical narrative	2) Felt most personal affinity for:
Biographical narrative 1	59%	2%
Biographical narrative 2	82%	45%
Biographical narrative 3	64%	57%

3) Overall recognisability of biographical narratives	
Percentage of respondents that recognizes 0 out of 3 narratives	0%
Percentage of respondents that recognizes 1 out of 3 narratives	30%
Percentage of respondents that recognizes 2 out of 3 narratives	36%
Percentage of respondents that recognizes 3 out of 3 narratives	34%

4. Usability for learning from innovative coastal projects

Drawing on the field of narrative analysis, we have developed and applied a novel method for integrating and analysing the "storified" experiences of the actors involved in the Sand Engine pilot project. But, what kind of insights on the Sand Engine has the narrative analysis delivered? And, what does the method contribute to the learning from pilot projects for coastal management?

4.1. Learning from the narrative understanding of the Sand Engine pilot project

The biographies help in explaining why many actors reflect positively on the realisation of the Sand Engine. Since everybody cannot be involved in the conception phase of a project, there will always be projects that are seen as 'something (unknown) coming from on high'. Most interviewees who had such an experience, were nevertheless reasonably happy about the way the sand Engine project was presented and how the process was organized. However, the differences between biographies 1 and 2 reveal a potential pitfall. While actors rooted within the region were inclined to tell narratives analogous to the first biographical narrative, a narrative on a local level, the initiators and their most direct supporters experience the process as biographical narrative 2; an iconic departure. So, the dominant narrative 2 does not take the local landscape, the 'genius-loci', into account. This non site-specific characteristic of the dominant biographical narrative 2 poses the risk that local actors may not recognize their own beliefs and desires in the communications of the initiators. A lack of understanding between the actors attached to the two biographies could have widened the gap between initiators and local actors. This gap was not explicitly studied in this work, but is recognizable in remarks within the narratives of some local actors, such as: 'What did they do with the input from the region? Nothing.' or 'They did not listen to our story'. Fortunately for the initiators, the dissatisfaction was insufficient to disrupt the process. Most of the actor-based perceptions were very positive. The Sand Engine comprises so many ingredients that 'there is something in it for (almost) everybody' yet it retains binding key-elements like the importance of coastal safety, which is undisputed in the Netherlands. This is reflected in biographical narrative 2, 'an iconic departure', which actors endorse for a wide variety of reasons (Table 3, column 2).

Some narrative-elements emerged in several personal narratives. For instance, several interviewees mention that the project is 'an impulse for the Dutch [dredging]business' although they themselves are not directly involved in such a business. And some actors speak highly of the 'room for natural and morphological processes', even if they themselves are not (primarily) concerned with this topic. This conforms to the idea of Van Der Stoep (2014) who reasoned further on the work of Benford and Snow (2000): 'When stories resonate among listeners, the latter are more inclined to participate in storytelling'. The resonance of the positive narrative-elements among several of the interviewed actors seems to be an indication of effective storytelling during the pilot project initiation process. This resonance also requires reflection. First, to what extent are the experiences told by the interviewees 'polluted' by the resonance of the success stories? If some (serious) problems had occurred and the resonating stories had become negatively-loaded stories, the personal narratives would presumably have been told in a different way. Second, whose stories are heard? By using a snowball technique in identifying potential interviewees, actors located at the perimeter of the actor network, for example those experts critical of the effects of the pilot project on silt dynamics, were not selected for interviews. The inherent methodological bias towards success experiences ensured that success stories are heard. In this case, the widespread positive narrative-elements and the support for the biographical narrative 'Sand Engine as Iconic Departure' may be viewed as outcomes of resonating success experiences. The positive narrative 2 can itself be understood as a cultural artefact developed within the Dutch coastal community.

An interesting aspect of the 'balanced' biographical narrative 3, is that it had a small root in the interview series, but a very strong basis in the validation survey. While interviewees tend to emphasize the 'iconic' aspects of the project in the interview conversations (leading towards narrative 2), the broader coastal community – with less personal involvement in the project – has slightly more affinity with narrative 3.

In short, the multi-faceted nature of the Sand Engine has allowed actors to select and couple diverse narrative-elements into their own biography of the pilot project. This multi-faceted nature has definitely helped in bridging the potential gap between initiators and other actors. The resonance of positive narrative-elements has contributed to the positive spirit in which the Sand Engine is regarded. This is still recognizable in the Dutch coastal management community to date. As an outcome of the ex-post understanding of the Sand Engine case, we would advise pilot project initiators to actively manage the multi-faceted nature of a project. For instance, developing strategies to include diverse elements within their narratives, so as to broaden the potential identification with the narratives, could be considered.

4.2. Contribution of the method to learning from innovative coastal projects

Each pilot project in coastal management involves a unique group of actors, and the process towards realisation differs. This means that if this method is applied in another situational context, different narratives will be distinguished and other lessons may be drawn. However, the narratives provide insight in the experiences of actors in such contexts in a concentrated form from which the whole coastal community can learn. They allow coastal initiators to understand the different perspectives held on a pilot project, and this understanding can be used during the organisation of follow-up activities (e.g. dissemination or institutionalisation within the same context). At the same time, the narratives create awareness of the situational dependence of the realisation of innovative coastal projects. The situational dependence implies that disseminating or replicating the concept of a successful pilot project into a different context, will require attention both for the physical differences and for the differences in actor perceptions.

As demonstrated in this paper, the narrative analysis of open interviews enabled an exploration and validation of selected actor experiences in the Sand Engine pilot project. The biographical narratives served to deepen insight on the process of realising an iconic pilot project. While other narrative methods focus on deadlocks (Van Eeten, 1999) and situations characterized by conflicts, attempting to use narratives to resolve such situations (cf the method of Roe, 1994), this method can explore similarities and overlaps between actor experiences and indicate how these have contributed to the success experience of a pilot project. Here the narrative method was applied retrospectively to the past experiences of actors, but – with some adaptations – it could also be applied to the development of the narratives following realisation of the pilot project. Studying the development of narratives after pilot project realisation can deepen understanding of the diffusion (or lack of diffusion) of the innovations tested in the pilot projects within the broader coastal management community.

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References

Aasetre, J., Vik, J., 2013. Framing the environment – disputes and developments in the management of Norwegian salmon fjords. Ocean Coast. Manag. 71, 203–212.
Baker, A.C., 2010. Catalytic Conversations: Organizational Communication and Innovation. ME Sharpe.
Bal, M., 1997. Narratology: Introduction to the Theory of Narrative, second ed. University of Toronto Press.
Benford, R.D., Snow, D.A., 2000. Framing processes and social movements: an overview and assessment. Annu. Rev. Sociol. 26, 611–639.
Bevir, M., 2006. How narratives explain. In: Yanow, D., Schwartz-Shea, P. (Eds.), Interpretation and Method: Empirical Research Methods and the Interpretive Turn. ME Sharpe, New York, pp. 281–290.
Bischof, B.G., 2010. Negotiating uncertainty: framing attitudes, prioritizing issues, and finding consensus in the coral reef environment management "crisis". Ocean Coast. Manag. 53, 597–614.
Buitenkamp, M., Van Den Brink, C., Van Mastrigt, A., 2016. De Zandmotor Is Van Iedereen. Beleidsevaluatie 2016. The Sand Engine is from everyone. Policy evaluation 2016.
Cicin-Sain, B., Belfiore, S., 2005. Linking marine protected areas to integrated coastal and ocean management: a review of theory and practice. Ocean Coast. Manag. 48, 847–868.
Cicin-Sain, B., Knecht, R.W., 1998. Integrated Coastal and Ocean Management: Concepts and Practices. Island Press.
Cobley, P., 2013. Narrative, second ed. Routledge - Taylor & Francis Group, London and New York.
Czarniawska, B., 2004. Narratives in Social Science Research. Sage Publications, London.
De Zandmotor, n.d. Project Website from Sand Engine [Question and Answer Section] [online], n.d. http://www.dezandmotor.nl. (Accessed 10 August 2015).
Dewulf, A., Gray, B., Putnam, L., Lewicki, R., Aarts, N., Bouwen, R., Van Woerkum, C., 2009. Disentangling approaches to framing in conflict and negotiation research: a meta-paradigmatic perspective. Hum. Relat. 62, 155–193.
Dicke, W., 2000. Narratieve analyse van de watersector. In: Nelissen, N., Goverde, H., Van Gestel, N. (Eds.), Bestuurlijk vermogen: analyse en beoordeling van nieuwe vormen van bestuur (Administrative Capacity: analysis of new management forms) (in Dutch). Coutinho, Bussum, pp. 78–103.
Ecoshape, De Vriend, H., Van Koningsveld, M., 2012. Building with Nature. Thinking, Acting and Interacting Differently. EcoShape, Building with Nature, Leiden.
Enserink, B., Hermans, L., Kwakkel, J., Thissen, W., Koppenjan, J., Bots, P., 2010. Policy Analysis of Multi-actor Systems. Lemma, The Hague.
Gottschall, J., 2012. The Storytelling Animal: How Stories Make Us Human. Houghton Mifflin Harcourt.
Hermans, L., Slinger, J., Cuttingham, S., 2013. The use of monitoring information in policy-orientedlearning: insights from two cases in coastal management. Environ. Sci. policy 29, 24–36.
Ivory, C., 2013. The role of the imagined user in planning and design narratives. Plan. Theory 12, 425–441.
Janssen, S.K.H., Mol, A.P.J., Van Tatenhove, J.P.M., Otter, H.S., 2014. The role of knowledge in greening flood protection. Lessons from the Dutch case study future Afsluitdijk. Ocean Coast. Manag. 95, 219–232.
Jovchelovitch, S., Bauer, M.W., 2000. Narrative Interviewing [online]. LSE Research Online, London.
Kleres, J., 2011. Emotions and narrative analysis: a methodological approach. J. Theory Soc. Behav. 41, 182–202.
Labov, W., 1972. Language in the Inner City: Studies in the Black English Vernacular. University of Pennsylvania Press.
Landman, T., 2012. 3 Phronesis and narrative analysis. Real Soc. Sci. Appl. Phronesis. 27–47.
Leith, D., Myerson, G., 1989. The Power of Address. Explorations in Rhetoric. Routledge, London and New York.
Ministry of Transport, Public Works and Water Management, 2010. Water act. In: Ministry of Transport, Public Works and Water Management (The Hague).
Mulder, J.P.M., Hommes, S., Horstman, E.M., 2011. Implementation of coastal erosion management in The Netherlands. Ocean Coast. Manag. 54, 888–897.
National Government, 2012. National Budget 2011, Article 11, Main Water Systems.
Noy, C., 2008. Sampling knowledge: the hermeneutics of snowball sampling in qualitative research. Int. J. Soc. Res. Methodol. 11, 327–344.
Olsen, S.B., Christie, P., 2000. What are we learning from tropical coastal management experiences? Coast. Manag. 28, 5–18.
Olsen, S.B., Tobey, J., Hale, L.Z., 1998. A learning-based approach to coastal management. Ambio 27, 611–619.
Polkinghorne, D.E., 1988. Narrative Knowing and the Human Sciences. State University of New Yoark Press.
Riessman, C.K., 2008. Narrative Methods for the Human Science. Sage Publications, United States of America, Thousand Oaks.
Rijkswaterstaat, 2015. Rapport kustlijnkaarten 2016 [report on coastline maps 2016]. In: Ministery of Infrastructure and the Environment. Rijkswaterstaat, p. 122.
Rijkswaterstaat, n.d. Planning en aanpak [Planning and approach] [online]. http://www.rijkswaterstaat.nl/water/veiligheid/bescherming_tegen_het_water/veiligheidsmaatregelen/kustlijnzorg/planning_en_aanpak/. (Accessed 17 February 2015).
Roe, E., 1994. Narrative Policy Analysis: Theory and Practice. Duke University Press.
Sandercock, L., 2003. Out of the closet: the importance of stories and storytelling in planning practice. Plan. Theory Pract. 4, 11–28.
Schütze, F., 1983. Biographieforschung und narratives Interview, vol. 13. Neue Praxis, pp. 283–293.
Slinger, J.H., 2015. Building with Nature @ TU Delft 2015. Faculty of Civil Engineering and Geosciences, TU Delft.
Slinger, J.H., 2016. Engineering: Building with Nature 101x: Series of 11 Videos (TU Delft).
Stive, M.F., Schipper, M.a.D., Luijendijk, A.P., Aarninkhof, S.G.J., Gelder-Maas, C.V., Vries, J.S.M.V.T.D., Vries, S.D., Hendrequez, M., Marx, S., Ranasinghe, R., 2013. A new alternative to saving our beaches from sea-level rise: the sand engine. J. Coast. Res. 29, 1001–1008.
Stojanovic, T., Ballinger, R.C., Lalwani, C.S., 2004. Successful integrated coastal management: measuring it with research and contributing to wise practice. Ocean Coast. Manag. 47, 273–298.
Stone, D.A., 2002. Policy Paradox: the Art of Political Decision Making. WW Norton & Company, New York.
Taljaard, S., Slinger, J.H., Van Der Merwe, J., 2013. Dual adaptive cycles in implementing integrated coastal management. Ocean Coast. Manag. 84, 23–30.
Taljaard, S., Slinger, J.H., Van Der Merwe, J.H., 2011. Criteria for evaluating the design of implementation models for integrated coastal management. Coast. Manag. 39, 628–655.
Throgmorton, J.A., 1996. Planning as Persuasive Storytelling. The Rhetorical Construction of Chicago's Electric Future. They University of Chicago Press, Chicago.
Van Der Hoek, R.E., Brugnach, M., Hoekstra, A.Y., 2012. Shifting to ecological engineering in flood management: introducing new uncertainties in the development of a building with nature pilot project. Environ. Sci. policy 22, 14.
Van Der Stoep, H., 2014. Stories Becoming Sticky: How Civic Initiatives Strive for Connection to Governmental Spatial Planning Agendas. Wageningen University, Wageningen.
Van Dijk, T., 2011. Imagining future places: how designs co-constitute what is, and thus influence what will be. Plan. Theory 10, 1–20.
Van Eeten, M., 1999. Dialogues of the Deaf - Defining New Agendas for Environmental Deadlocks. Eburon, Delft.
Van Eeten, M., 2007. Narrative policy analysis. In: Fischer, F., Miller, G.J., Sidney, M.S. (Eds.), Handbook of Public Policy Analysis: Theory, Politics, and Methods. crc Press, pp. 251–269.
Van Hulst, M., 2012. Storytelling a model *of* and a model *for* planning. Plan. Theory 11, 299–319.
Van Hulst, M., Yanow, D., 2014. From policy "frames" to "framing": theorizing a more dynamic, political approach. Am. Rev. Public Adm. 46, 92–112.
Van Lieshout, M., Dewulf, A., Aarts, N., Termeer, C., 2012. Doing scalar politics: interactive scale framing for managing accountability in complex policy processes. Crit. Policy Stud. 6, 163–181.
Vikolainen, V., 2012. Nature at Work. The Feasibility of Building with Nature Projects in the Context of EU Natura 2000 Implementation. Twente University.
Vreugdenhil, H., 2010. Pilot Projects in Water Management. Practicing Change and Changing Practice (PhD. TU Delft).
Vreugdenhil, H., Slinger, J., Thissen, W., Ker Rault, P., 2010. Pilot projects in water management. Ecol. Soc. 15, 13.
Wagenaar, H., 2011. Meaning in Action: Intepretation and Dialogua in Policy Analyses. M.E. Sharp, inc., New York.
Waterman, R.E., 2008. Integrated Coastal Policy via Building with Nature, second ed. (Delft).
Waterman, R.E., Misdorp, R., Mol, A., 1998. Interactions between water and land in The Netherlands. J. Coast. Conserv. 4, 115–126.
Yanow, D., 2000. Conducting Interpretive Policy Analysis. Sage Publications, Thousand Oaks, CA.

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