

Before You Make That Big Decision:
*detecting and avoiding biases within the
spatial planning process*

Bachelor thesis: Technische Planologie

Author: Gijs Elting,

Contact: G.J.Elting@student.rug.nl

Supervisor: dr. ir. Katharina Gugerell

University of Groningen

Faculty of Spatial Science

June 2014

*“We’re blind to our blindness. We have very little idea of how little we know.
We’re not designed to know how little we know”*

(Daniel Kahneman)

Abstract

This paper concerns detecting and avoiding cognitive biases within the spatial planning process, specifically as an assessor of spatial solutions. The viability of a bias avoidance method (BIAM), recently co-developed by Daniel Kahneman and introduced in a Harvard Business Review Article, *The Big Idea: before you make that big decision*, was tested within the spatial planning process. The method addresses all of the common biases within the decision-making process by asking twelve questions, and provides tools to both recognize and avoid them (Kahneman, et al., 2011). The research question is: “Is the bias detection and avoidance method, developed by Kahneman and Lovallo, able to detect and avoid biases within the spatial planning process?” This question was answered by a case study of the city renewal project in Emmen, the Netherlands, which involved relocating the Emmen Zoo and is also called the Atalanta project.

During the assessment of spatial solutions within the case study the bias avoiding method is able to uncover biases within the spatial planning process. The first hint of biases being present appeared from the preliminary question, mainly because of the presence **affect heuristic** and **self-interest bias**. The preliminary outcome provided great suspicion that other biases were present, and that the possibilities of biases should be investigated further. The challenge and evaluation questions further revealed that **saliency bias, confirmation bias, anchoring bias, halo effect, sunk-cost fallacy, overconfidence, optimistic bias, competitor neglect**, and **disaster neglect** could be present. The advised course of action within the Atalanta project would be to reevaluate the worst case scenario, rigorously establish an outside view, reevaluate the project whilst actively neglecting past decisions, adjust the numbers that are suspected of being unsubstantiated anchoring, and actively reevaluate project alternatives. The implementation of these actions should avoid the suspected biases within the Atalanta spatial planning process, and, accordingly, improve the project’s operating result (Lovallo & Sibony, 2010).

Based on the case study results, the main research question can be partly answered. It certainly is possible for BIAM to detect biases within the spatial planning process. However, no reliable statement can be made about the extent to which the biased can be avoided. Also, it cannot be stated that BIAM will be able to detect biases within every spatial planning process. The lack of independency between the people assessing the spatial solutions and the people generating the solutions limits BIAM within the spatial planning process. Further research is required to get a deeper understanding of the method its ability to avoid biases. Such research should contain multiple cases, which hold results after conducting the method and also a database for reference class forecasting.

Table of Contents

1. A brief introduction	5
2. Academic framework	6
2.1 Defining the spatial planning process	6
2.2 Solution assessment and its importance.....	7
2.3 Human reasoning and intuitive prediction.....	7
2.4 Before you make that big decision, the method to avoid biases.....	8
2.4.1 Preliminary Questions	8
2.4.2 Challenge Questions.....	9
2.4.3 Evaluation Questions.....	10
3. Research methods and strategies	12
3.1 Context dependent explorative case study research.....	12
3.2 The case study: Atalanta Emmen	12
3.2.1 Emmen Zoo: triggering the Atalanta/city renewal project	12
3.2.2 Emmen: Atalanta in its context	13
3.2.3 Atalanta: project specifics	13
3.3 Data within the case study	14
4. Results	16
4.1 Applying BIAM	16
4.1.1 Preliminary Questions	16
4.1.2 Challenge questions	18
4.1.3 Evaluation questions	22
5. Conclusion	24
6. References.....	25
7. Appendix.....	28
7.1 Interview design (Dutch)	28

Table of Figures

Figure 1: Spatial planning process conceptualization (Roo & Silva, 2010, p. 47).....	6
Figure 2: De Verbinding (Gemeente Emmen, 2014c).....	13
Figure 3: Centrum-West (Gemeente Emmen, 2014c).....	13
Figure 4: Hoofdstraat (Gemeente Emmen, 2014c)	13
Figure 5: Project overview (Gemeente Emmen, 2014c)	14
Figure 6: Opinion analysis actors Atalanta (Coopman, 2011, p. 59)	17

1. A brief introduction

The European Landscape Convention pleaded for better tools to improve landscape planning (Council of Europe, 2000). This paper aims to improve the spatial planning process by avoiding cognitive biases in the spatial planning process. The scope is to reduce cognitive biases within the spatial planning process. The importance of reducing biases in decision-making is supported by substantial empirical research. A McKinsey study of over one thousand major business investments revealed that when effort is invested in reducing the effect of biases on the decision making process, a seven percent higher return is realized (Lovallo & Sibony, 2010). The benefits of reducing biases within the spatial planning process seem evident. The method that is going to be tested, within the spatial planning process, is a bias avoidance method, recently co-developed by Daniel Kahneman and introduced in a Harvard Business Review Article, *The Big Idea: before you make that big decision* (Kahneman, et al., 2011). The method addresses all of the common biases within the decision-making process by asking twelve questions, and provides tools to both recognize and avoid them. The research question is: “Is the bias detection and avoidance method, developed by Kahneman and Lovallo, able to detect and avoid biases within the spatial planning process?” This question is examined by applying the method to a city renewal project located in Emmen, the Netherlands. Firstly, the theoretical framework will be addressed, summarizing the discourse on cognitive biases and conceptualizing the spatial planning process. Secondly, the methodology will be discussed, wherein the data collection process and the case study will be introduced. Thirdly, the results of applying the method within the case study project will be discussed. Finally, the viability of the method within the spatial planning process will be evaluated, the findings summarized, combined with a discussion of the limitations of the method and suggestions for further research.

2. Academic framework

2.1 Defining the spatial planning process

Before it is possible to elaborate on the bias avoiding method, a general conception of the spatial planning process is required. Throughout academic discourse there are three definable generations of planning models. The first generation was one of technical rationality, wherein there was no room for cognitive influence and planning. The second was based on the communicative or participative view of planning that incorporated the concept of subject knowledge and cognitive driven planning. The third generation, which is used here, shifts to content planning where the two issues of content and communication are viewed and conceptualized separately. The perceptions of the cognitive and communicative are still maintained but a difference is incorporated between the conceptual content of a planning operation and issues such as the psychological, social and historical that make the conceptual content possible (Roo & Silva, 2010). The third generation of conceptualizations seems most suited because of this separation. Within this generation the possibility of assigning a place and meaning towards the bias avoiding method is the greatest.

Figure 1 shows that the most fitting location for the bias avoiding method seems to be at the elaboration of instructions step. This step lies within the “planning world” and is focused on generating and assessing solutions. Assessing the viability of proposals or solutions comes closest to Kahneman

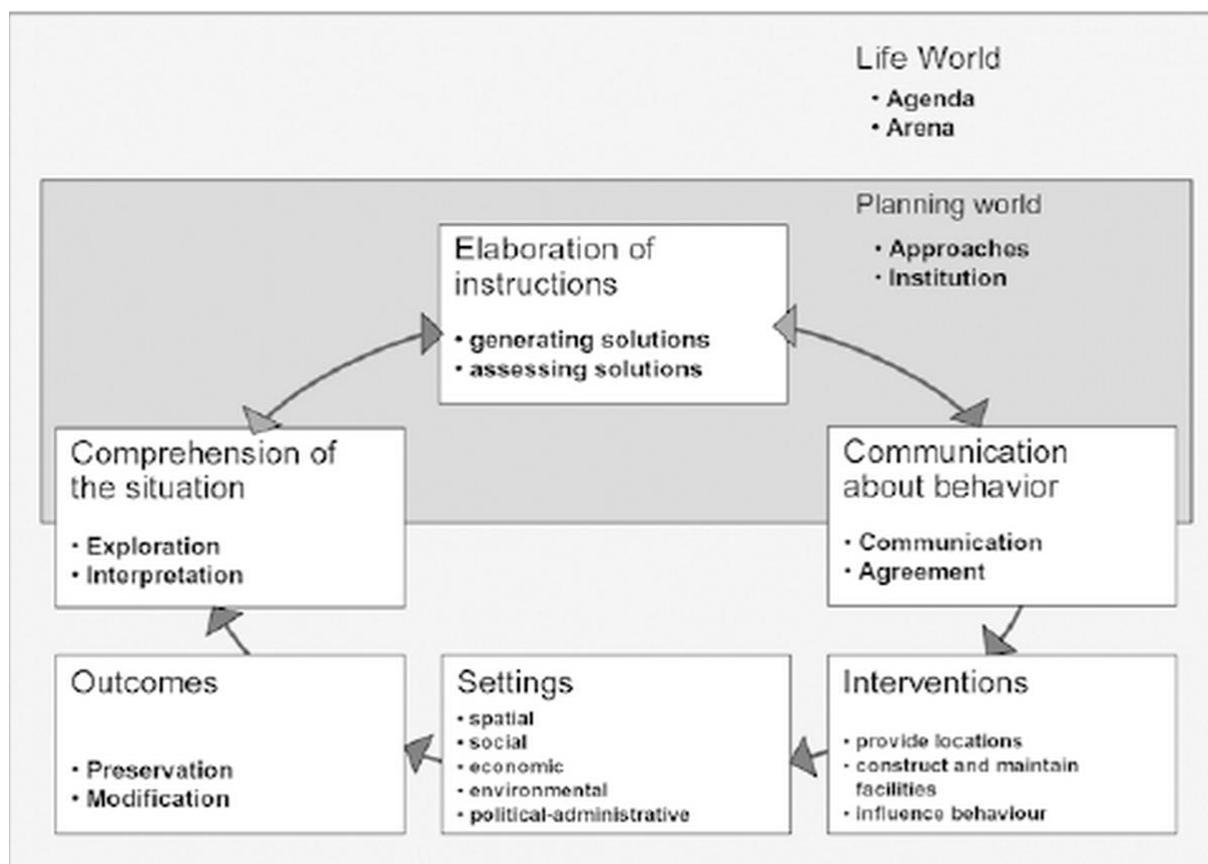


Figure 1: Spatial planning process conceptualization (Roo & Silva, 2010, p. 47)

his original intention, which was to evaluate business proposals. Consequently, the transition from business decision evaluation towards a spatial planning context will be the smallest. Based on the planning process conceptualization, the influence of the bias avoiding method can also be defined more accurately. If applicable, the method directly alters the comprehension of the situation by influencing the solution assessment process and could generate new solutions. Similarly, influencing

the solution assessment process directly influences the communication about behavior, which involves communication and agreement. Thus, by possibly avoiding biases in assessing the generated solutions, the solution communication and agreement will be directly influenced, which could indirectly lead to alternative interventions, settings and outcomes. The subsequent goal of avoiding biases in the “planning world” is to improve the interventions, settings and outcomes of the “life world”, which would subsequently lead to a new comprehension of the situation. Based on Figure 1, it can also be concluded that the chosen approach and the type of institution within the process matters. This means that, within different institutions and planning approaches, the exact utilization of the method would be different, which also implies different levels of applicability. The reviewed method is thus, within the spatial planning process, an assessment method of spatial solutions.

2.2 Solution assessment and its importance

In this study, assessment of generated spatial solutions is understood to be in accordance with Bent Flyvbjerg’s conception of due diligence and its importance:

“Specifically understood as an evaluation of the costs and benefits deriving from investing in a given project, and especially whether the estimated costs and benefits for that project are likely to materialize. Due diligence is thus developed to be used as “quality control” of business cases, cost-benefit analyses, and the go-decisions in projects” (Flyvbjerg, 2013).

The importance of accurate, assessment-generated spatial solutions within the planning process is seemingly apparent, as it reduces uncertainty. Note that the goal is not to eliminate uncertainty: that is impossible. The goal of solution assessment is to create an accurate image of the kinds of uncertainty that are involved with specific forecasts, decisions and projects. There is a substantial body of research among both governmental and private spatial planning organizations that has shown a large inaccuracy between the assessment of “solutions” and their actual outcomes (Flyvbjerg, et al., 2002; Flyvbjerg, et al., 2005; Dantata, et al., 2006). Improving the assessment of generated spatial solutions implies more accurate spatial planning and can therefore be considered as important. The next step lies within human reasoning.

2.3 Human reasoning and intuitive prediction

Before making an effort to reduce biased decision making, it is necessary to understand more about cognitive bias. Cognitive scientists categorize human reasoning into two modes of thinking: intuitive and reflective. Intuitive thinking is fast, effortless and unconscious (for example, when strolling around or brushing your teeth). Reflective thinking, on the other hand, is slow, laborious and conscious (for example, solving a complex math equation). Another distinction is that intuitive thinking produces a constant interpretation of the world, whilst reflective thinking is generally just monitoring things. Therefore, generally intuitive thinking determines our thoughts and actions. Intuitive thinking is focused on generating a single coherent explanatory image of events and, because we are not aware of its functioning, our intuitive reasoning can give us false, simplified explanations of events. Within the intuitive reasoning process there are a lot of systematically occurring biases that cannot be avoided easily (Kahneman, et al., 2011). In other words:

“This inability to sense that we’ve made a mistake is the key to understanding why we generally accept our intuitive, effortless thinking at face value. It also explains why, even when we become aware of the existence of biases, we’re not excited about eliminating them in ourselves. After all, it’s difficult for us to fix errors we can’t see” (Kahneman, et al., 2011, p. 2).

Any activity that involves planning and forecasting is connected with uncertainty. Thus, spatial planning is too. The main focus in planning and forecasting is to account for these uncertainties, which involves intuition, judgment and guesswork (Kahneman & Lovallo, 1993). Daniel Kahneman and Amos Tversky were amongst the first to notice some systematic inaccuracies in dealing with uncertainties (Kahneman & Tversky, 1977). It is important to mention that Kahneman and Tversky considered intuition to be an important aspect of prediction. They also considered intuitive reasoning to be the mode of thinking used within solution assessment. The notion is that the intuitive aspect of prediction is irreducible and often useful. The fact that intuitive prediction is frequently predictably biased is problematic. The scope of their article is thus not the mitigation of intuitive prediction, but the mitigation of its predictable biases. Kahneman and Tversky arrived at the following significant conclusions concerning intuitive prediction biases:

- (1) Judgmental errors are more often of a systematic nature than of a coincidental one, thus rather a bias than confusion.
- (2) The occurrence of these biases amongst experts is not significantly different to the non-experts.
- (3) Even when a person is aware of these biases, they remain present.

Kahneman and Tversky went beyond noticing and categorizing these biases: their intent was to present an approach that would uphold many of the upsides of intuitive prediction and would mitigate some errors to which it is vulnerable, which is where the tested method was based on.

2.4 Before you make that big decision, the method to avoid biases

The proposed method to avoid biases is a 12-question based review of business decisions aimed at identifying and minimizing known, common biases. An important aspect of the Bias Avoidance Method (BIAM) is that the individuals performing it should be completely independent from the recommending teams. Whilst the checklist was originally supposed to be used by decision makers, within this paper (as discussed in Section 2.1), it will be applied to the spatial planning process, specifically to solution assessment. This shift adds difficulties to BIAM because of the complexities of many spatial planning projects. The complexities make it almost impossible for the people assessing the spatial solutions to be completely independent from the people that are generating them (Boisen, 2014). This ensures that investigation of the viability of BIAM within the planning process is interesting. Due to space constraints, it is important to stress that only a brief synopsis of BIAM is given here. Throughout this entire section, the original article, *The Big Idea: before you make that big decision*, is used as the main source, and should be read to gain a deeper conceptualization of BIAM (Kahneman, et al., 2011).

2.4.1 Preliminary Questions

The first three questions Kahneman proposes are intended for the decision maker to ask him/herself. The focus of these questions is to get a general idea of the likelihood of biases being present (Kahneman, et al., 2011). Within the spatial planning process there is no single decision maker, thus the perspective will shift from the single executive decision maker towards people within the spatial planning process who are assessing solutions containing big and non-routine decisions.

1. “Check for self-interested biases. Is there any reason to suspect the team that is making the recommendation of errors motivated by self-interest? Review the proposal with extra care, especially for over optimism” (Kahneman, et al., 2011, p. 54). Self-deception and rationalization frequently occur in decision-making in which the decision maker’s own interest is involved. Assessing if there is a significant risk of motivational issues involved is necessary, especially when there are limited project alternatives or power and reputational issues involved are.

2. “Check for the affect heuristic. Has the team fallen in love with its proposal? Rigorously apply all the quality controls on the checklist” (Kahneman, et al., 2011, p. 54). The affect heuristic concerns a bias which involves too much emotional reaction in the decision making process. A calculation of risks and benefits would be much more reliable. Minimizing the costs and risks involved combined with exaggerated benefits is often seen with this bias. This bias is often easily recognizable (Slovic, et al., 2002).

3. “Check for group thinking. Were there dissenting opinions within the team? Were they explored adequately? Solicit dissenting views, discreetly if necessary” (Kahneman, et al., 2011, p. 54). Unanimity within group could be a sign of consent. However, it could also be insincere because of group thinking and influence of the group leader. Group thinking is seen mostly within recommending teams that lack diversity. The absence of different views in a group is often caused by group thinking and therefore should be acted upon. Discretely asking opinions of team members with an alternative view would be the short term best solution to avoid this bias.

2.4.2 Challenge Questions

The second group of questions is intended for the people assessing the spatial solutions to ask the people making. These questions should be used to challenge the proposed course of action to avoid biases.

4. “Check for saliency bias. Could the diagnosis be overly influenced by an analogy to a memorable success? Ask for more analogies, and rigorously analyze their similarities to the current situation” (Kahneman, et al., 2011, p. 56). Past successes are often case building arguments when recommending a certain project. However, success in the past might be less relevant for current projects than generally perceived. This is known as saliency bias. The key question here is how comparable certain past experiences are. Avoiding this bias could be achieved by reference class forecasting, wherein statistical data of similar projects is used as a benchmark for the current one.

5. “Check for confirmation bias. Are credible alternatives included along with the recommendation? Request additional options” (Kahneman, et al., 2011, p. 56). Confirmation bias is a type of bias wherein people tend to confirm their preconceptions regardless of the truthfulness of the information. Selective memory recall and interpretation of information are apparent. To avoid this, it is important to not solely rely on one favored scenario, but include alternatives. Looking for information that contradicts the operability of the chosen scenario is a necessary part of the decision making process (Schwind & Buder, 2012).

6. “Check for availability bias. If you had to make this decision again in a year’s time, what information would you want, and can you get more of it now?” (Kahneman, et al., 2011, p. 56). Often within the planning process, it is assumed that what is seen is the whole story. This is because our intuitive mind fills the holes with a narrative story. A coherent story created by our minds only includes the data that is known to us. A way to avoid this is asking: “If the decision was a year from now, what additional data would be useful?”

7. “Check for anchoring bias. Do you know where the numbers came from? Can there be ... unsubstantiated numbers? Extrapolation from history? Motivation to use a certain anchor? Re-anchor with figures generated by other models or benchmarks and request new analysis” (Kahneman, et al., 2011, p. 56). An important aspect of information, whereon decision-making is based, is its accuracy. In project planning, the initial estimates are often used without fully questioning their accuracy. In addition, estimations based on extrapolated historical data should be questioned for reliability. Other estimates are steered deliberately to help the process. To avoid anchoring bias, the

accuracy of key numbers should be questioned and benchmarks should be used. Flyvbjerg supports the use of benchmarked estimations. He notes that, based on empirical research:

“The policy implications are clear: legislators, administrators, investors, media representatives, and members of the public who value honest numbers should not trust cost estimates and cost-benefit analyses produced by project promoters and their analysts” (Flyvbjerg, et al., 2002, p. 23).

Flyvbjerg, Kahneman, Tversky and Lovallo state that, in order to use benchmark comparison, only statistical significance within the distribution of the project estimates is needed, (Kahneman & Tversky, 1977; Lovallo & Sibony, 2010; Flyvbjerg, 2013).

8. “Check for halo effect. Is the team assuming that a person, organization, or approach that is successful in one area will be just as successful in another? Eliminate false inferences, and ask the team to seek additional comparable examples” (Kahneman, et al., 2011, p. 56). The halo effect is characterized by a simpler and emotionally logical construct of reality (for example, attributing success to the personal characteristics of a CEO, whilst factors such as luck and randomness are often neglected). Basing decisions on reputations and false inferences should be avoided. This can be done by asking more about the assumed interferences and their validity.

9. “Check for sunk-cost fallacy, endowment effect. Are the recommenders overly attached to a history of past decisions? Consider the issue as if you were a new CEO” (Kahneman, et al., 2011, p. 56). The sunk cost-fallacy effect deals with the influence of past decisions. Ideal practice in the decision making process would be to disregard any previously made decisions that do not change outcomes. The problem is that decision makers do not neglect such decisions. Decision makers allow future decisions to be influenced by past ones, even by those that are not directly related. Asking what decisions would be made if, for example, past expenditure had not been made, is needed to avoid this bias.

2.4.3 Evaluation Questions

The final group of questions focus on proposal evaluation. These question are directed at the business case and concern the results of the case. The business case is evaluated by asking these questions.

10. “Check for overconfidence, planning fallacy, optimistic biases, competitor neglect. Is the base case overly optimistic? Have the team build a case taking an outside view; using war games” (Kahneman, et al., 2011, p. 58). The planning fallacy is characterized by making intuitive predictions based on singular data instead of distributional data. Singular information, also called case data, is defined as the information on the project itself. Distributional information, also called base-rate data, is defined as distributional outcomes in similar situations. Although there are many “unique” projects where relevant distributional data is not available, Kahneman and Tversky remark that when distributional data is available, people also primarily rely on singular data, even when the quality or quantity of singular data is insufficient. Kahneman and Tversky categorized this bias of adopting an internal approach to prediction as the planning fallacy (Kahneman & Tversky, 1977).

A consequence of the planning fallacy is the underestimation of downsides and the overestimation of upsides, also referred to as optimism bias. Underestimation of downsides and overestimation of upsides leads to unrealistic, optimistic projections, often combined with attributing success to personal factors and failure to random events (Kahneman, et al., 2011). Another bias that is often seen when using an internal view is competitor neglect. In every business case it is important to account for the position of competitors. Thinking only about a project’s goals, uniqueness and strong points and neglecting the fact that competitors think in the same way could be destructive for a business. It often results in an underestimation of negative events such as price wars and overcapacity. Thus, the

planning fallacy bias partly accounts for unrealistic, optimistic project predictions (Kahneman & Tversky, 1977). The outside view, looking at distributional data of statistically similar cases is the most applicable method to mitigate these biases (Flyvbjerg, 2013).

11. “Check for disaster neglect. Is the worst case scenario bad enough? Has the team conducted a pre-mortem: imagine that the worst has happened, and develop a story about the causes” (Kahneman, et al., 2011, p. 58). Many business cases uphold different scenarios varying from best to worst cases, often the worst case is not bad enough. Decision makers should therefore ask about the origins of the worst case, ask about the unknown and competitor responses. A viable technique is the pre mortem technique developed by Gary Klein — imagining that the worst case has already happened and then devising a story about how it happened — could be useful to detect unseen possible occurrences (Kahneman, et al., 2011).

12. “Check for loss aversion. Is the recommending team overly cautious? Realign incentives to share responsibility for the risk or to remove risk” (Kahneman, et al., 2011, p. 58). When decision makers face risky decisions they are often subject to loss aversion: no one wants to be responsible for a failed project. The acceptable height of the risk profile is often not characterized, which strengthens the tendency towards risk aversion. Being overly conservative in business cases can lead to underperformance. A possible mitigation of this aversion could be to provide assurances about the responsibility of the risk.

3. Research methods and strategies

The research discussed in this paper is about avoiding cognitive biases within the spatial planning process. The study is conducted because of the current lack of attention towards biases within the spatial planning process. The research question is: “Is the bias avoiding method, developed by Kahneman and Lovallo, able to detect and avoid biases within the spatial planning process?” The goal of the research is to replicate BIAM within spatial planning process of the Atalanta project.

3.1 Context dependent explorative case study research

This paper is exploring the usefulness of BIAM within the spatial planning process, thus the nature of the main research is explorative. The sub-questions are derived from Kahneman and Lovallo and are mostly reproduced from their original article (Kahneman, et al., 2011). To answer the research question, the appropriate research strategy is case study research. Within this paper, the case study is viewed as the appropriate research strategy because of the qualitative and context-dependent nature of the research. The hypothesis that BIAM is applicable within the context of the spatial planning process is tested. According to Flyvbjerg, case study research is the most appropriate strategy for asserting context-dependent knowledge and testing hypotheses. Context-dependent research was chosen because of the nature of social sciences, wherein context independent knowledge is rejected (Flyvbjerg, 2001).

“Predictive theories and universals cannot be found in the study of human affairs. Concrete, context-dependent knowledge is, therefore, more valuable than the vain search for predictive theories and universals” (Flyvbjerg, 2006, p. 224).

This paper will therefore test BIAM within the context of the spatial planning process, specifically as an assessment method of spatial solutions. In the case of verification or falsification of the viability of BIAM, the conclusion will directly tell something about context of the chosen case, in this instance, the spatial planning process of the Atalanta project. The more general conclusions that can be drawn are dependent on the exact outcomes. The case selection strategy was based on the likeliness of biases being present within the case. Because of the perceived uniqueness, size and historical embeddedness of the Atalanta project, the chance of biases occurring are very likely (Kahneman, et al., 2011). The selection strategy could therefore be defined as information-oriented selection of extreme cases. The extremeness of the Atalanta project lies in the likeliness of biases occurring. This selection strategy implies that when, within the chosen case, the occurring biases cannot be recognized and avoided by BIAM, the hypothesis will be falsified. This is in accordance with Flyvbjerg’s notion that cases of the most likely type are well-suited towards falsification (Flyvbjerg, 2006).

3.2 The case study: Atalanta Emmen

The project chosen for the case study is a city renewal project named Atalanta, located in the city of Emmen, the Netherlands. With a projected cost of €468 million, the Atalanta project is considerably large, especially compared to the size of the municipality of Emmen itself. The project is divided into three sub-projects. Centrum-West where a new zoo, combined with a modern theater, will be built; de Hoofdstraat, where the location of the old zoo will be redeveloped; and De Verbinding which consists of a proposed development of a lively square to connect the new zoo and the city center.

3.2.1 Emmen Zoo: triggering the Atalanta/city renewal project

The Emmer Zoo’s financial trouble was the major trigger for the Atalanta project. The city is dependent on the well-known zoo that is situated in the midst of the city center. However, the current zoo is having problems. Thirty-five years ago the Emmen Zoo, was considered a pioneer amongst Dutch zoos,

being the first that removed the animals from their cages. Today, the Emmen Zoo has lost this pioneering, innovative role and has become outdated. This is partly because it is currently locked in the city center, which has limited the expansion possibilities. The Zoo's annual visitor amount has more than halved in the last decade from 1.5 million in 2003 to less than 700.000 in 2013 (Volkskrant, 2010). This decline has led to severe financial problems and as a consequence, this has made the zoo's survival very dependent on municipality support. There was a clear notion that, in order to save the zoo, something needed to be done, and this has been the main trigger for the entire Atalanta project. The municipality vigorously supports the project, as Emmen without a zoo seems unimaginable. Relocating the zoo to Noordbargeres (Figure 2) seems to be the solution. The relocation project and other city renewal projects that are intertwined with this are framed under the name Atalanta (Coopman, 2011).



Figure 2: De Verbinding (Gemeente Emmen, 2014c)

3.2.2 Emmen: Atalanta in its context

For the city of Emmen, the Atalanta project is about inner-city development. The intention is to redefine the city of Emmen, which could have implications for the entire municipality and surrounding regions. These implications might include new local employment opportunities, increased tourism, and overall, a city center the region can be proud of. The Atalanta project is a huge enterprise for Emmen. The municipality has around 110,000 inhabitants, more than half of whom are located in the city itself. Being a region that has a relatively high unemployment rate, decreasing housing prices, and a decreasing and aging population, the desire to create more economic activity is often mentioned as a reason for the Atalanta project. The municipality spans 360,000 acres and is not very densely populated in comparison to other regions in the Netherlands. As a region, Emmen is falling behind and is trying to move forward. The Atalanta project is supposed to be a step in the right direction (Coopman, 2011).

3.2.3 Atalanta: project specifics

The Atalanta project is divided into three sub-projects, which are all spatially intertwined. These sub-projects are the spatial solutions assessed by BIAM. Sub-project de Verbinding, seen in Figure 2, is intended to be a new, lively square that connects both parts of the city center. The goal is to create a central meeting location that can be used for multifunctional purposes. It should be the daily functioning heart of the city. Subproject Centrum-West, seen in Figure 3, is where the new zoo and theater will be located. Spanning approximately 69 acres in size, it should become a location full of leisure, culture and business activity. Being the catalyst for the Atalanta project, it is also the most expensive sub-project and, arguably, the most important. Sub-project Hoofdstraat, seen in Figure 4, is the redevelopment of the old zoo area. This location should become a park. The intention is that the current qualities and characteristics of the area will be maintained (Dienst Beleid B&P-Projectmanagement ,



Figure 3: Centrum-West (Gemeente Emmen, 2014c)



Figure 4: Hoofdstraat (Gemeente Emmen, 2014c)

2008). The estimated cost for the Atalanta project is €468 million. More than half of this is covered by the municipality, which derives its resources from multiple sources such as subsidiaries, parking resources, real estate resources and financial reserves. The other half is funded by private investors (Projectbureau DPE Next, 2011). Covering half of the Atalanta project is substantial for a municipality that is forced to economize and has a yearly budget of around €340 million (Gemeente Emmen, 2014a). The overall estimated project benefits should be substantial. Adding 4,700 work years during construction, a structural extra 820 jobs, an increased yearly spending of €92 million, and an improved inner city. The project initiative dates from pre-2006. The project is currently in the implementation stage and should be finished in 2018 (Gemeente Emmen, 2014b).



Figure 5: Project overview (Gemeente Emmen, 2014c)

3.3 Data within the case study

The data within the case study is derived from expert interviews, literature studies and policy research. The method itself consists of a twelve sub-questions. To answer each of the questions, a mix of policy research and expert interviews, sometimes combined with supporting academic literature, is required. The advantage of public urban projects is that there is a lot of data available. The data on the decision making process, business case, and costs and benefits are especially abundant. The objectivity of this data should be questioned however, because of the fact that the same organization that is involved in the planning process is publishing the data. The material used in the policy research originates mainly from the Municipality of Emmen website. The author of this type of data varies from independent research desks, the zoo, the municipality itself and city council reports.

The expert interviews follow a semi-structured design wherein the sub-question questions originally devised by Kahneman and Lovallo are translated into Dutch. This design is chosen because of the need to follow the same structure as BIAM. The research is focused on a simulation of BIAM within the spatial planning process and more specifically within the assessment of spatial solutions, therefore the method to derive results should try duplicate BIAM within the context of the case study. The experts interviewed are Martin Boisen, a university employee and expert on the city renewal project, and Harry Werkman, the Emmen municipality council clerk. Both were chosen because of their “neutral” view on the project. Martin Boisen as an independent research from the University of Groningen, without direct ties towards the project, delivers a unique perspective. Harry Werkman is directly involved with the municipality, but his neutrality is documented (Coopman, 2011). In his employment as municipality council clerk, Werkman delivers a perspective that contains a lot of inside information. The interviews supply subjective information about the decision making process, which implies a necessary caution when handling this information. However, the original BIAM is also established based on such subjective information. Thus, the interviews are essential for testing the viability of BIAM within the spatial planning process.

4. Results

4.1 Applying BIAM

In this section the results of applying BIAM to the Atalanta project in Emmen will be discussed. Each question will be dealt with separately and within each question a conclusion will be given. Throughout this section quotes of the interviewees, in Dutch, are used to support statements. In order to maintain the readability the quotes have been interpreted and translated into English, the original Dutch quotes are placed in the footnotes, with a reference to their location in the transcript. In the concluding chapter the viability of BIAM will be discussed.

4.1.1 Preliminary Questions

1. Check for self-interested biases. Is there any reason to suspect errors motivated by self-interest?

The possibility of self-interest bias being present seems dual. Harry Werkman stated that the public interest was the primary consideration involved and that there were no real personal interests (Werkman, 2014, p. 1)¹. On the other hand, Martin Boisen mentioned that, within spatial projects of this size, there are almost always personal interests at stake, most of which are unknown (Boisen, 2014, p. 12)². This contradiction continues throughout the complexity research article: *Atalanta-project Emmen: Metamorfose van het centrum, sturen in het donker!?* In this article, opponents of the Atalanta project such as city councilman Jos van Goethem, claim that political prestige was an important reason to continue the redevelopment, whilst proponents, such as project manager Harry Hoefsloot, claim that economic and spatial improvement, such as employment, were the main triggers for redevelopment (Coopman, 2011). Interests such as political, or career improvement motives could be considered as personal self-interest motives. Thus, based on the expert interviews and Coopman, there is a contradiction in the notion of self-interest being present. A definitive answer cannot be given. However, because of the partial suspicion of personal interests, as described above, there is enough reason to suspect motivation errors, or errors driven by self-interest. BIAM suggests this suspicion implies that the remaining questions should be handled with extra care (Kahneman, et al., 2011).

2. Check for the affect heuristic. Has the actors fallen in love with the spatial solutions?

The affect heuristic suggests an emotional connection between the involved and the Atalanta project. Harry Werkman considers the emotional connection of involved actors, such as municipality councilmen, to be strong, sometimes even too strong. He considers the overall sense of emotional involvement and responsibility to be substantial (Werkman, 2014, p. 1)³. Martin Boisen makes this emotional involvement more specific by referring to Emmen and its irrational feelings towards the zoo (Boisen, 2014, p. 13)⁴. This emotional attachment, especially towards the zoo, is confirmed by multiple other sources. *Business case Dierenpark Emmen Next 7.0a*, uses the historical connection of the zoo and the city, combined with their notion of the zoo being the face of Emmen, as one of their motives for the redevelopment (Projectbureau DPE Next, 2011, p. 9). Municipality spokeswoman Erica Hoekstra, reported that the municipality and its council couldn't imagine a scenario that involves Emmen being without a zoo, considering its historical ties (Volkskrant, 2010). Coopman also notes the deep historical ties and emotional connection of the city and the Atalanta project, which also appears in location Hoofdstraat, which is known by its historical ties with the old zoo landscape. The wish is

¹ "Nee, nee. Het algemeen belang heeft hier echt daadwerkelijk voorop gestaan"

² "Ik denk dat er sowieso in alle projecten van zo'n maat, persoonlijke belangen spelen"

³ "Het emotionele belang van raadsleden en het college is enorm groot ze realiseren zich ik ben hier raadslid wethouder of burgemeester. Wij trekken op dit moment een hele grote broek aan door een investering van om en nabij 468 miljoen in d binnenstad van Emmen te genereren"

⁴ "Ik denk wel dat men bepaalde irrationele gevoelens koestert voor het Dierenpark Emmen als concept"

that the landscape stays similar, maintaining the existing trees and only allowing new buildings on the location of existing ones, which does directly affect possibility of investment return within the Atalanta project (Coopman, 2011). This evidence leads to the observation of a deep emotional connection being present between the involved and the Atalanta project. Phrasing it as “fallen in love” might be too strong, but the emotional connection is certainly present. Therefore, the affect heuristic seems to apply, which might influence the attitude of the involved towards the project. The presence of the affect heuristic suggests that the possibility of biases, thus BIAM, should be investigated thoroughly (Kahneman, et al., 2011).

3. Check for group thinking. Were there dissenting opinions about the spatial solutions? Were they explored adequately?

Coopman investigated the opinions of a range of actors involved in the Atalanta planning process. Within the Atalanta project the opinions do differentiate amongst actors involved in the planning process, as seen in Figure 6. Moreover, within the city renewal project, the enthusiasm for the different sub-projects is variable.

	Locatie Hoofdstraat	Centrum -West	Dierenparktheater	De verbinding	Atalanta
Wethouder Sleeking	+ *	+	++	+ *	++
Oppositielid Van Goethem	-- **	- *	n.v.t.	-- **	-- **
Projectmanager Hoefsloot	+ *	+ *	+	+	+
Voormalig dierenparkdirecteur Hiddingh	+	++	+	0 **	++
Raadsgriffier Werkman	- **	- *	0 **	0 **	+ **
Klankbordgroeplid Van Herpt	- *	- *	+ **	- **	- **
Klankbordgroeplid Espeldoorn	+	++	+	0 **	+ *
Klankbordgroeplid Pruim	+	+ *	+ *	+ *	0 **

Figure 6: Opinion analysis actors Atalanta (Coopman, 2011, p. 59)

--	VERY NEGATIVE
-	NEGATIVE
0	NEUTRAL
+	POSITIVE
++	VERY POSITIVE
*	WORRIES
**	SUBSTANTIAL WORRIES

Coopman notes that the opinions about De Verbinding are characterized the most by concern and uncertainty. The positive perspective is that De Verbinding will be the sub-project that connects the other parts with a viable and lively square. According to Coopman’s research, the concerns are mostly focused on the spatial quality and the successfulness of the cooperation with future users. The fear is that De Verbinding will become a desolate square that will serve as a barrier instead of a connection between the other sub-projects. The dissenting views within the Centrum-West sub-project are characterized by the differentiating opinions about the zoo leaving the city center. The opponents retain the view that the unique selling point of the Emmen Zoo is its location directly within the city

center. The proponents think that leaving the city center is the only way the zoo can become viable again. There are also dissenting concerns about the feasibility of aimed consumer experience level and amount of potential visitors to the new zoo, viewed as conditions for the successfulness of the Atalanta project. Those actors who are generally positive about the whole Atalanta project are also mostly positive about the different parts. The people who are negative about the project as a whole are also mostly negative about the parts. (Coopman, 2011).

Along the political spectrum there is a clear distinction between the opponents and the proponents. Political parties, such as Wakker Emmen and the SP that belonged to a political minority in 2010, are notable opponents of the current city renewal project (SP Emmen, 2010; Wakker Emmen, 2010). In contrast, political parties that at the time belonged to the political majority, such as PvdA and D66, are notable proponents of the project. The supporters use the added economic viability and employment as their main arguments, whilst the opposing side argues that the financial risks are too great for Emmen to bear (PvdA Emmen, 2011; Dagblad van het Noorden, 2012). Harry Werkman also notes that there has been an active attitude towards generating dissenting views within the project, which also involved the installation of various citizen advisory groups (Wakker Emmen, 2010)⁵. Martin Boisen adds to this by stating that within the planning process the dissenting views were most certainly present, however he does note that a lot of these views have been left out of the public spectrum. Based on the observations made above, group thinking across the entire spatial planning process does not seem likely. Given the notion that the opposing views mainly originate from the political minority, adding to the limited exposure these views received, their full exploration could be questioned. However, dissenting opinions were present and thus appearance of group thinking is not likely.

4.1.2 Challenge questions

4. Check for saliency bias. Could the spatial solutions be overly influenced by an analogy to a memorable success?

Only the projected number of annual visitors seems to be influenced by salient analogies. Werkman notes that the popularity of the zoo in the past has been used as a partial basis for the projection of 1.3 million annual visitors. This will be elaborated on in Question 7 (Werkman, 2014, p. 2)⁶. The salient analogy in this case is the comparison of the old zoo with the new. Are the visitor numbers of the old location really comparable with the new location? There is no evidence of other analogies to memorable success. The municipality of Emmen has never before participated in a project this size and this realization is often documented (Coopman, 2011; Projectbureau DPE Next, 2011; Twynstra Gudde, 2011). BIAM suggests salient analogies can be avoided by using reference class forecasting, which is discussed in more detail in Question 10.

⁵ "Sterker nog, dat hebben we proberen te organiseren, die gezonde tegenspraak. Want die moet je hebben in iedere organisatie"

⁶ "Met dat bezoekersaantal dat is een succes uit het verleden dat is door vertaald naar een doelstelling van de dierentuin vanaf 2016. Want zegt men, in het verleden en dat is 10-15 jaar geleden, heeft Emmen ook meer dan 1.3 miljoen bezoekers in de dierentuin sec kunnen ontvangen. Waarom zouden we met een veel grotere belevingspark waar niet alleen dieren centraal staan, maar ook het beleven van avontuur, waarom zouden we daar niet veel meer bezoekers mee kunnen genereren?"

**5. Check for confirmation bias. Are credible alternatives included along with the spatial solutions?
Request additional options?**

There was an early notion that the zoo, in its current location, could not be maintained (Coopman, 2011). Throughout the planning process there was an early commitment towards the new relocation area, which will be elaborated on in Question 9. However, according to Werkman, the zoo's board of directors did consider a lot of alternative scenarios throughout multiple stages of the planning process, when they notified the municipal council of their wish to relocate. None of the scenarios were deemed feasible: to the east, the railroad limited expansion possibilities; on the other side, the shopping center was causing problems (Werkman, 2014, p. 3)⁷. Boisen confirms that, through multiple stages of the planning process, multiple alternatives have been considered (Boisen, 2014, p. 14)⁸. Thus it appears that throughout the latter stages of the planning process, the alternatives have been considered, however on another aspect they might not be.

Coopman reveals that the whole notion of expanding dates back to 1993 when the annual number of visitors was around 1.8 million. Back then, in order to accommodate the visitors, expansion seemed necessary (Coopman, 2011). Today, the necessity to expand could be questioned. Low visitor numbers and the poor economic climate imply that the alternative of not expanding might also be useful to consider. Werkman notes this has not been done (Werkman, 2014, p. 8)⁹. This influences the possibility of a confirmation bias in the Atalanta project extensively. The decision to expand or not also requires radical changes to the other sub-projects. Thus selective interpretation of data in favor of expanding could be present amongst all the sub-projects. The danger is that the sub-projects and its data could unknowingly be selected and interpreted in favor of this scenario. Thus based on the data mentioned above, there is a possibility of confirmation bias occurring. BIAM suggests this can be avoided by intensively investigating alternative scenarios. For the Atalanta project planning process, this would mean asking questions such as: "Is it really necessary to expand the zoo?" and, "How would this change the other sub-projects?"

6. Check for availability bias. If you had to assess the spatial solutions in a year's time, what information would you want, and can you get more of it now?

The information basis acquired in the planning process seems sufficient. There have been numerous feasibility studies, risk management studies, and information gathering studies which were conducted by both internal and external agencies such as Ecorys, Twynstra Gudde, Nederlands Adviesbureau Risicomanagement, UNO Bedrijfsadviseurs, and the Municipality of Emmen itself (Gemeente Emmen, 2008; Twynstra Gudde, 2009; Coopman, 2011; Ecorys, 2011a; Ecorys, 2011b; Projectbureau DPE Next, 2011; Twynstra Gudde, 2011; Nederlands Adviesbureau Risicomanagement, 2013). Werkman further notes that there has been an active attitude towards collecting new information which was used in the

⁷ "Toen is het gemeentebestuur in overleg gegaan met de directie van de dierentuin, de dierentuin had z'n huiswerk goed gedaan er is ook gekeken naar alternatieven. Kunnen we bijvoorbeeld uitbreiden op de huidige locatie? Daar is al het probleem dat aan de oostkant van de dierentuin, daar is het spoor. Wil je inderdaad daar iets mee doen, dan moet je ook overeenstemming zien te krijgen met NS en met de staat. Daar voelde men zich toch beperkt in, aan de andere kant van de dierentuin ja daar waren winkelpanden en grote winkels uitkopen dan moet je ook een boel geld meenemen"

⁸ "Ja, maar op allerlei verschillende stadia in het besluitvormingsproces"

⁹ "En is men ook uitgegaan van feiten die in de lijn van economische groei zitten. Op het moment dat, de wereld verandert, want de wereld is behoorlijk veranderd, zijn de uitgangspunten niet aangepast. Ook in de verwachting dat er ergens wel weer groei ontstaat"

decision making process (Werkman, 2014, p. 4)¹⁰. Werkman also states that only information about the economic situation, a year from now, would be useful to have. However, this information is not realistically attainable (Werkman, 2014, p. 5)¹¹. Boisen states that the measures, heuristics and tools used in the spatial planning process are very common and widely used (Boisen, 2014, p. 15)¹². Hence, the presence of availability bias seems unlikely.

7. Check for anchoring bias. Do you know where the numbers came from? Can there be unsubstantiated numbers? Extrapolations from history? A motivation to use a certain anchor?

Werkman notes that the origin and validity of some numbers used in the planning process was not always clear. Moreover, he adds that those numbers, such as the expected 1.3 million annual zoo visitors, were based on gut feelings (Werkman, 2014, p. 6)¹³. Even the council advisory firm Twynstra Gudde commented that they had a 'feeling' that the 1.3 million annual visitors would be realistic (Twynstra Gudde, 2011). Boisen states that most numbers, except the construction costs, originate from standardized methods, which are benchmarked against national averages. Numbers used in the planning process, such as demographic developments, recreational activity patterns, and consumer thrust indexes, originate from the *Dutch Central Bureau of Statistics*. Other numbers, such as recreational spending and economic effects, are based on national research desks such as ContinueVrijetijdsOnderzoek (CVTO), ContinueVakantieOnderzoek (CVO), and LISA. However, Boisen does mention it is difficult to use benchmark data within such a project. The uniqueness of the Atalanta projects makes it hard to estimate the relevance of benchmarked data (Boisen, 2014, p. 16)¹⁴. Moreover, Twynstra Gudde and Werkman stated that, within the planning process, there was a clear motive to use a positivistic anchor, and that the difference between unsubstantiated estimations and factual data was not always clear (Twynstra Gudde, 2011). Werkman sees this as a way to convince external financiers to participate. He thinks that without such a positivistic anchor, the project would not be realisable, which is elaborated further in Question 10.

It has to be noted that most of the data, as mentioned above, is derived from standardized benchmarking methods. However, the unclear separation between unsubstantiated numbers and factual data, the clear motive to use a positivistic anchor, and the lack of validity and origin of some

¹⁰ "We hebben heel veel externen expertise op dit gebied binnengevlogen. Tot en met adviseurs van de Efteling die doorberekeningen hebben gemaakt. We hebben een extern bureau die dat hele project, en alle projecten in het programma monitort en daar ook periodiek met kwartaalrapportages over geeft. Het is zelfs zo dat de gemeenteraad zijn eigen adviseurs op dit programma heeft"

¹¹ "Als we die informatie hadden gehad, maar niemand kan in een glazen bol kijken, hadden we rekening kunnen houden met de verslechterde economische situatie waarin we nu verkeren"

¹² "Ja, sterker nog, dit is ook de methode die we gebruiken wanneer we bijvoorbeeld van een financieringsaanvraag van de Rabobank moeten beoordelen of het een goed financieel plan is. Dus dit is een normale methodiek"

¹³ "Nee dat zal niet altijd duidelijk geweest zijn. Ik kan niet aangeven daar en daar heeft het gemankeerd aan de afkomst van de cijfers, zodat je die ook inderdaad kunt interpreteren van 'ze zijn valide, ik hoef er niet aan te twijfelen'. Maar er zijn ongetwijfeld ook feiten gebruikt in het besluitvormingsproject, waar voor een groot gedeelte op gevoel. Ik heb het gevoel dat, hoor ik onze raadsadviseur nog zeggen. Ik heb het gevoel dat. Eh, nou ik noem maar wat. Dat die 1.3 miljoen reëel is, dat hebben ze aangegeven. Maar gevoelens kun je zo moeilijk staven"

¹⁴ "Je hebt landelijke registerdata basis en daar zitten verschillende data in over vrijetijdseconomie, dus bijvoorbeeld als het gaat over Fte's, dan kan je dingen uit LISA halen. Als het gaat over bevolkingsontwikkeling, vrijetijdsbesteding, consumentenvertrouwen heb je statline. CVO en CVTO dat zijn continu vakantieonderzoeken en continu vrijetijdsonderzoek, die ken je ook. Daar haal je dan het Nederlands gemiddelde uit, dat kan je op basis van frequentie en op basis van besteding en dan hier eigenlijk een casus ingetekend"

numbers, give substantial suspicion about anchoring bias being present. The presence of anchoring bias suggests using benchmarked data with a similar statical distribution, however no such database seems to be present. Therefore, generating such a database could be useful for mitigating the anchoring bias.

8. Check for halo effect. Is there an assumption that a person, organization, or approach that is successful in one area will be just as successful in another?

The halo effect assumes some kind of simplification about false inferences of successfulness in the decision making process. Werkman notes that the development of the new square, situated in sub-project de Verbinding, might be influenced by false inferences. He states that there has been a lot of inferences and comparison with successful squares in countries such as Italy, without controlling for climate and other situational factors (Werkman, 2014, p. 7)¹⁵. Boisen suspects a false inference in the amount of additional fulltime-equivalent employment (FTE) each zoo visitor brings. According to Boisen, the fact that the zoo will move out of the center will drastically decrease the FTE per visitor. Thus, the economic effects per visitor will be lower than the current situation. Boisen suspects a false inference in partly extrapolating the current FTE per visitor into the new situation (Boisen, 2014, p. 22)¹⁶. The currently assumed, yearly added, 820 FTE might be a simplified false interference (Emmen, 2011). Moreover, Boisen adds that the expected visitor numbers to the new zoo are influenced by the false inference that bigger is better. There is overall simplification in the notion that a bigger park attracts a larger amount of visitors.

The interviews clearly show numerous cases where the suspicion of false simplification is substantial. Thus, based on the interviews, the presence of the halo effect within the spatial planning process for the Atalanta project, seems likely. These false inferences should be investigated and could be avoided by asking about additional examples of the existence of these inferences. For example, within the planning process the following questions could be asked: "Is there an existing causal connection between zoo size and visitor numbers?" "How much of the FTE per visitor is dependent on the zoo being located in the city center?" "Is a square in the Netherlands really comparable to one in Italy?"

9. Check for sunk-cost fallacy, endowment effect. Is there an over attachment to a history of past decisions?

Throughout the entire Atalanta project, the historical attachment with the zoo is the greatest. Opening its doors in 1935, means that the zoo and Emmen have been connected for almost 80 years, which already suggests an over attachment. Boisen confirms that there is definitely an over attachment to the current project proposal and decisions made in the past. However he adds this is the case in many spatial planning projects. He notes that if the zoo had not been allowed to become dependent on municipality support, the entire Atalanta plan might have been redundant. This attachment has led to a point of no return, where not intervening and not relocating the zoo is not an option anymore (Boisen, 2014, p. 18)¹⁷. Moreover, Coopman remarks that the grounds for the first decision to expand the zoo to the new location were laid in 1986, when the plans were made to make the Hoofdstraat a pedestrian zone (Coopman, 2011). The first official commitment to the new location, was a 39-acre

¹⁵ "Er werd wel vaak het vergelijk getrokken met pleinen in Italië bijvoorbeeld, maar ook dat geeft weer hele andere situaties, want een plein in een Italiaans stadje is sowieso in een ander klimaat en omgeving geplaatst"

¹⁶ "Eerder kan je krijgen dat verhoudingsgetal tussen aantal bezoekers en het aantal Fte's kleiner wordt, waardoor je nog meer bezoekers nodig hebt om hetzelfde omzet te genereren en om dezelfde Fte's te hebben"

¹⁷ "Ik denk dat misschien het hele plan niet nodig was geweest. Als men anders had ingegrepen toen, het Dierenpark niet indirect afhankelijk laten worden van de overheid, we men niet in een positie gekomen waar men nu nog meer afhankelijkheid van de overheid nodig had"

lease contract between the zoo and a water company dating back to 1996 (Historisch Emmen, 1999). After the lease was signed, the construction of the zoo expansion began in 1998, at Noordbargeres, which is the location for the current relocating plans. In 1999 the expanded area and the main zoo were even connected by a pedestrian bridge crossing the city center.

It can be observed that there has been an over-attachment towards the location of the new zoo project. This attachment has shaped the entire Atalanta project into its current form (Coopman, 2011). Therefore, the presence of sunk-cost fallacy and endowment effect seems likely. Kahneman and Lovallo note that it is beneficial to ignore past expenditures that don't affect future costs. For the Atalanta project, this would mean that within the spatial planning process, the expenditure and decision regarding the old expansion should be actively ignored. Thus, within the project evaluation it should be asked that: "If the aforementioned past decisions had not occurred, would the plans still be the same?"

4.1.3 Evaluation questions

10 Check for overconfidence, planning fallacy, optimistic biases, and competitor neglect. Are the assumptions about the spatial solutions overly optimistic?

Both Boisen and Werkman note that there is a very optimistic tendency in presenting the Atalanta project. They mention that there appears to be an incentive for optimism. According to Werkman this incentive is caused by the need for positive projections in order to realize the project and attract additional financing. External financiers such as the *Samenwerkingsverband Noord-Nederland* and the Province of Drenthe, have to be persuaded to finance such projects, which leads to an optimistic incentive (Werkman, 2014, p. 8)¹⁸. Boisen directly mentions that, in his view, the long-term base case visitor numbers are overly optimistic (Boisen, 2014, p. 19)¹⁹. Twynstra Gudde also supports this view (Twynstra Gudde, 2011). Thus, there is a strong possibility of the base case being too optimistic. BIAM suggests an outside view to mitigate these possible optimistic biases, planning fallacies, competitor neglect, and overconfidence.

Because of the uniqueness of each spatial planning project, establishing a reliable outside view appears to be difficult. Thus, there is a lack of comparative material that is essential for establishing a reliable outside view (Kahneman & Lovallo, 1993). Both Werkman and Boisen noted that the municipality did actively search for outside help and comparisons throughout most phases of the project. This led to advisory comments for other recreational parks, such as the Efteling and the Hamburg Zoo. However, these comparisons were situated in a very different context and thus remain difficult to use. Therefore, the planning fallacy seems hard to detect and counteract. Werkman notes that there could be some cases of competitor neglect, because in his view more people visiting the Emmen Zoo could lead to less visitors towards other recreation activities. Werkman does believe this is somewhat neglected (Werkman, 2014, p. 6)²⁰. To summarize, even though there is a possibility of over optimism and competitor neglect, it will be difficult to build a comparison class that holds statistical similar distributions. Therefore, building a case solely taking the outside view or reference class forecasting, as BIAM suggests, does not seem viable.

¹⁸ "Te optimistisch nee, maar enig optimisme moet je wel hebben, want je moet je plannen wel kunnen verkopen, anders krijg je geen co-financierders. Ook de provincie Drenthe en Samenwerkingsverband Noord-Nederland moeten erin in geloven, anders hadden die niet meegefinancierd"

¹⁹ "Ik denk dat de inschatting van bezoekersaantallen te optimistisch is, niet op de korte termijn, maar op de midden-en lange termijn"

²⁰ "Maar ik denk dat er misschien wel sprake kan zijn van kannibalisme onderling. En daar moet je ook voorzichtig mee zijn"

11. Check for disaster neglect. Is the worst case bad enough?

In their final business case evaluations, municipality council advisor Twynstra Gudde made a few remarks suggesting that the worst case was too optimistic in their view. For example, in their view the worst-case room for debt repayment is not sufficient, whilst sufficient reinvestment in the zoo will not be possible. Twynstra Gudde notes that the need for capital in such a situation would be larger than currently assumed. Also, the worst-case number of visitors is considered to be too optimistic according to the municipality council advisor. (Twynstra Gudde, 2011; Nederlands Adviesbureau Risicomanagement, 2013).

Conducting a pre-mortem with the interviewees has led to two stories about how the worst case will happen. The pre-mortem conducted with Boisen led to a worst case that has to do with negatively changing the city image, caused by a lack of livelihood in the squares and redeveloped land. Boisen also notes that the effects on the economy because of the zoo visitors spending less within the city, could lead to a deserted cityscape (Boisen, 2014, p. 22)²¹.

The pre-mortem conducted with Werkman proposed a worst case where failure had to do with low zoo visitor numbers caused by not realizing a state of the art project. Werkman believes the worst case would have to do with forced budget cuts, thus forcing the zoo and theater construction to make cuts on quality. Not achieving a state of the art, high-end zoo could be, according to Werkman, the cause of such a failure (Werkman, 2014, p. 10)²².

Based on the remarks above, the worst-case scenario might be too optimistic, which implies the presence of disaster neglect. BIAM suggests conducting an extensive pre-mortem, similar to those discussed above. Then the actors involved in the planning process could gain more of an understanding of the possible “disasters”.

12. Check for loss aversion. Are the actors being overly cautious?

Loss aversion, or excessive caution within the Atalanta planning process does not seem likely. Boisen states that the lack of actual accountability amongst the actors within such a planning process reduces the possibility of excessive cautiousness (Boisen, 2014, p. 24)²³. Werkman notes that a lot of the actors, such as the city council, have been very determined to continue the realization of the project (Werkman, 2014, p. 11)²⁴. Thus, both interviewees note that, in their opinion, excessive cautiousness is not present. Also, council advisor Twynstra Gudde remark that certain aspects, such as the expected 1.3 million annual visitors might be too optimistic (Twynstra Gudde, 2011). Therefore, there is no reason to suspect over cautiousness within the project.

²¹ “Ze hebben hoogwaardige, grote, openbare ruimtes gecreëerd waar te weinig mensen gaan komen. Waar wel mogelijkheid is om af en toe grote evenementen plaats te geven, maar die verder gewoon heel onderhoudsintensief zijn”

²² “Het moet kwaliteit uitstralen en die kwaliteit is een afgeleide van de ambitie van ons”

²³ “In het bedrijfsleven is het meer een op een, werkt het niet dan ontsla ik je, de vraag is hier bijvoorbeeld als wethouder, in hoeverre ben je verantwoordelijk”

²⁴ “Ik vind dit gemeentebestuur en dan bedoel ik voornamelijk het College van Burgemeester en Wethouders enorm vastberaden en vastbesloten om ook door te gaan met dit project”

5. Conclusion

Based on Roo and Silva their conceptualization, BIAM's most appropriate place and role, within the spatial planning process, is the assessment of spatial solutions (Roo & Silva, 2010). The systematic occurrence, of biases in planning, even among experts, was discovered by Kahneman and Tversky (Kahneman & Tversky, 1977). The importance of reducing cognitive biases, within the spatial planning process, and improving the assessment of spatial solutions is supported by Flyvbjerg, Lovallo and Sibony (Lovallo & Sibony, 2010; Flyvbjerg, 2013).

For the spatial solutions of the Atalanta case study, the bias avoiding method is able to uncover biases within the spatial planning process. The first hint of biases being present appeared from the preliminary question, mainly because of the presence **affect heuristic** and **self-interest bias**. The preliminary outcome provided great suspicion that other biases were present, and that BIAM should be investigated further. The challenge and evaluation questions further revealed that **saliency bias**, **confirmation bias**, **anchoring bias**, **halo effect**, **sunk-cost fallacy**, **overconfidence**, **optimistic bias**, **competitor neglect**, and **disaster neglect** could be present. The advised course of action within the Atalanta project would be to reevaluate the worst case scenario, rigorously establish an outside view, reevaluate the project whilst actively neglecting past decisions, adjust the numbers that are suspected of being unsubstantiated anchoring, and actively reevaluate project alternatives. The implementation of these actions should avoid the suspected biases within the Atalanta spatial planning process, and, accordingly, improve the project's operating result (Lovallo & Sibony, 2010). However, it is not possible to tell to what extent the biases can be avoided. This is because of a lack of independency between the people assessing the spatial solutions and the people generating the solutions, which is considered essential in *The Big Idea: Before you make that big decision* (Kahneman, et al., 2011). Also, establishing a reliable comparison class seems difficult because of the lack of a reliable reference class.

Based on the case study results, the main research question can be partly answered. It certainly is possible for BIAM to detect biases within the spatial planning process. However, no reliable statement can be made about the extent to which the biased can be avoided. Also, it cannot be stated that BIAM will be able to detect present biases within every spatial planning process. The lack of independency discussed above does imply that BIAM is limited within spatial solutions assessment. Moreover, establishing an outside view for spatial projects is difficult, and this limits the extent to which BIAM can avoid biases. These results suggest further research should be conducted. Firstly, further case studies, applying BIAM, would allow a more rigorous statement about its possibilities to detect biases in more cases. Secondly, research directed at constructing a reference class for spatial projects, would be useful for establishing an outside view. Thirdly, further research about the extent to which BIAM is able to avoid biases is needed, which means applying BIAM and the suggestions it gives to more spatial planning processes.

6. References

- Boisen, M. (2014). *Expert interview Atalanta-Emmen* [Interview] (Transcript Available) (14 05 2014).
- Coopman, L. (2011). *Atalanta-project Emmen: Metamorfose van het centrum, sturen in het donker!?*, Groningen: RUG.
- Council of Europe (2000). *European Landscape Convention*, s.l.: s.n.
- Dagblad van het Noorden (2012). *Dekrantvantoen*. [Online]
Available at: <http://www.dekrantvantoen.nl/vw/article.do?id=DVHN-20120320-DO01022011&vw=org&lm=atalanta%2Cemm>
[Accessed 01 05 2014].
- Dantata, N. A., Ali, T. & Donald C, S. (2006). *Trends in US Rail Transit Project*, Washington, DC: Transportation Research Board Annual Meeting.
- Dienst Beleid B&P-Projectmanagement (2008). *Raadsvoorstel RA08.0130*, Emmen: Gemeente Emmen.
- Ecorys (2011a). *Gebiesontwikkeling Atalanta: Een Maatschappelijke Kosten-Batenanalyse*, Rotterdam: Gemeente Emmen.
- Ecorys (2011b). *Gebiesontwikkeling Atalanta: Een economische effectanalyse*, Rotterdam: Gemeente Emmen.
- Emmen, G. (2011). *GS stemmen in met extra bijdrage dierenpark/theater Emmen*. [Online]
Available at: <http://www.emmen.nl/nieuws/persberichten/item/archief/2011/12/artikel/gs-stemmen-in-met-extra-bijdrage-dierenparktheater-emmen-5398.html>
[Accessed 20 05 2014].
- Flyvbjerg, B. (2001). *Making Social Science Matter*. s.l.:s.n.
- Flyvbjerg, B. (2006). Five Misunderstandings about Case-Study research. *Qualitative Inquiry*, 12(2), pp. 219-245.
- Flyvbjerg, B. (2013). Quality Control and Due Diligence in Project Management: Getting Decisions Right by Taking the Outside View. *International Journal of Project Management*, 31(5), pp. 760-774.
- Flyvbjerg, B., Mette, K. S. H. & Søren L, B. (2005). How (In)accurate Are Demand Forecasts in Public Works Projects? The Case of Transportation. *Journal of the American Planning Association*, 71(2), pp. 131-146.
- Flyvbjerg, B., Mette, K., Skamris, H. & Søren L, B. (2002). Underestimating Costs in Public Works Projects: Error or Lie. *Journal of the American Planning Association*, 68(3), pp. 279-295.
- Gemeente Emmen (2008). *Gebiedsprogramma Masterplan Emmen-Centrum 2020*, Emmen: Gemeente Emmen.
- Gemeente Emmen (2014a). *Begroting 2014*. [Online]
Available at:
http://www.emmen.nl/fileadmin/files/www.emmen.nl/Tekstpaginas/Bestuur_en_politiek/Financien/Begroting/Begroting_2014/Begroting_2014.PDF
[Accessed 02 06 2014].

- Gemeente Emmen (2014b). *CVE /Atalanta*. [Online]
Available at: http://www.gemeenteraad Emmen.nl/themas/folder/cve_atalanta/parent-folder/inwoners_en_bestuur.html
[Accessed 05 06 2014].
- Gemeente Emmen (2014c). *Atalanta*. [Online]
Available at: <http://www.emmen-atalanta.nl/home.html>
[Accessed 29 04 2014].
- Historisch Emmen (1999). *Noorden Dierenpark Chronologisch*. [Online]
Available at: [Het Dierenpark sluit een erfpachtcontract af met de waterleidingmaatschappij voor](#)
[Accessed 20 05 2014].
- Kahneman, D. & Lovallo, D. (1993). Timid Choices and Bold Forecasts: A Cognitive Perspective on Risk Taking. *Management Science*, 39(1), p. 25.
- Kahneman, D., Lovallo, D. & Sibony, O. (2011). *The Big Idea: Before You Make That Big Decision...*, Cambridge: Harvard Business Review.
- Kahneman, D. & Tversky, A. (1977). *Intuitive Prediction: Biases and Corrective procedures*, Eugene: Defense Advanced Research Projects Agency.
- Lovallo, D. & Sibony, O. (2010). *The case for behavioral strategy*, New York: McKinsey Quarterly.
- Nederlands Adviesbureau Risicomanagement (2013). *Risico-analyse Project Markt*, Emmen: Gemeente Emmen.
- Programmabureau CvE (2014). *Risicomanagement Centrumvernieuwing Emmen*, Emmen: Gemeente Emmen.
- Projectbureau DPE Next (2011). *Samenvatting Business Case 7.0*, Emmen: Dierenpark Emmen.
- PvdA Emmen (2011). De Rooie Droad. *Partijblad van de PvdA afdeling Emmen*, 6 Februari, pp. 2-8.
- Roo, G. d. & Silva, E. A. (2010). *New Directions in Planning Theory : Planner's Encounter with Complexity*. e-book ed. Farnham: Ashgate Publishing Group.
- Scholz, R. W. & Tietje, O. (2002). *Embedded Case Study Methods. Integrating Quantitative and Qualitative Knowledge*, Thousand Oaks: Sage.
- Schwind, C. & Buder, J. (2012). Reducing confirmation bias and evaluation bias: When are preference-inconsistent recommendations effective – and when not?. *Computers in Human Behavior*, 28(6), pp. 2280-2290.
- Slovic, P., Finucane, M., Peters, E. & MacGregor, D. G. (2002). *The Affect Heuristic*, New York: Cambridge University Press .
- SP Emmen (2010). *SP EMMEN KOMT OP VOOR HET BEHOUD VAN 'ONZE' DIERENTUIN*. [Online]
Available at: <http://emmen.sp.nl/nieuws/2010/10/sp-emmen-komt-op-voor-het-behoud-van-onze-dierentuin>
[Accessed 24 04 2014].
- Twynstra Gudde (2009). *Risicomanagement project Atalanta*, Amersfoort: Gemeenteraad Emmen.

Twynstra Gudde (2011). *Gemeenteraad Emmen*. [Online]

Available at: www.gemeenteraad Emmen.nl/nc/vergaderingen/.../theme%3A1380.html

[Accessed 26 04 2014].

Volkskrant (2010). *Het mooiste dierenpark is ingehaald*. [Online]

Available at: <http://www.volkskrant.nl/vk/nl/2664/Nieuws/article/detail/1032485/2010/10/12/Het-mooiste-dierenpark-is-ingehaald.dhtml>

[Accessed 12 05 2013].

Wakker Emmen (2010). *Wanbeleid Dierentuin Emmen*. [Online]

Available at: <http://www.wakker Emmen.nl/het-atalantaproject/wanbeleid-dierentuin-emmen>

[Accessed 24 04 2014].

Werkman, H. (2014). *Transcript Expert interview Atalanta* [Interview] (Transcript Available) (14 05 2014).

7. Appendix

7.1 Interview design (Dutch)

De eerste serie vragen zijn preliminaire vragen.

Hebt u enige reden om te vermoeden dat het voorstel van het Atalanta Project gestuurd is door persoonlijke belangen van de actoren? Bijvoorbeeld financieel, carrière of politiek.

Is de emotionele binding van de actoren groot met het project? Denkt u dat het mogelijk is dat de actoren als het ware “verliefd” zijn geworden op het project?

Weet u of er binnen het project/ en of onderdelen van het project er tussen actoren en het business plan er afwijkende meningen waren over het project? Voornamelijk binnen adviserende team

De volgende serie vragen hebben betrekking op het business plan.

Denkt u dat de sommige aannames in de business case beïnvloedt kunnen zijn door vroegere succes van de gemeente Emmen op andere gebieden? Zoals bezoekers aantallen, kosten en duur van de bouw?

Zijn er haalbare alternatieven in overweging genomen voor de huidige plannen? Zoals locaties, grootte, invulling etc.? In welke fase zijn deze te niet gedaan? Is er naar uw mening actief naar informatie gezocht die de huidige business kan ontkrachten?

Als de goedkeuring van het project over een jaar opnieuw gemaakt zou kunnen worden, welke informatie zou u dan relevant zijn om te weten? Is het mogelijk om nu al meer van deze informatie te krijgen?

Weet u waar de cijfers uit de business case vandaan komen? In hoeverre zitten er niet onderbouwde aannames in? Of aannames geëxtrapoleerd uit het verleden? Welke van de cijfers zijn feiten en welke zijn schattingen? Waar komen de cijfers vandaan? Bijv. Bezoekersaantallen, Bouwkosten, Onderhoudskosten, effect op gemeente budget.

Denkt u dat er aannames gedaan worden over succes in het project, afgeleid uit succes op andere gebieden?

In hoeverre komen de plannen voort uit sunk-costs uit het verleden? Wat als de eerder gemaakte kosten buiten beschouwing worden gelaten?

De volgende serie vragen hebben betrekking op de evaluatie van de plannen.

Bent u van mening dat de gemaakte aannames en veronderstellingen over optimistisch zijn?

In welke mate zijn de aannames gedaan op basis van informatie uit vergelijkbare projecten? Zijn de aannames, zoals bouwtijd, kosten, bezoekers, winstgevendheid beredeneerd vanuit top-down vergelijkingen met andere projecten, of zijn ze vanuit het project zelf gekeken?

Zijn de zogenaamde worst case scenario's die gemaakt zijn in de plannen “slecht” genoeg?

Maak een Pre-mortem: Stel u voor de slechtste mogelijke scenario is gebeurd? Wat is er gebeurd denkt u?

Hebt u de indruk dat de plannen gekenmerkt zijn door overmatige voorzichtigheid?

