

Does it have fur or feathers?

A Categorisation of Theme Park Attractions

Author: Frank Cornelissen

Author ANR: U0396714

Supervisor: Pieter Cornelis

2nd Reader: Greg Richards

Date: August 17th, 2010

Tilburg University

Tilburg School of Social and Behavioural Sciences

Department of Leisure Studies

Preface & Acknowledgements

One should think that the concept of 'once bitten, twice shy' would apply after finishing my bachelor thesis, yet a little over four months ago I once again found myself at the beginning of what then seemed an impossible task. The goal? To devise an empirically founded categorisation of theme park attractions. That task may seem simply at first, but when looking at attractions in the likes of, to name but a few, Tower of Terror, Hocus Pocus Hall, The Flying Dutchman, Lisebergtower, Hex or Dragon Khan, it will seem become apparent that each and every of these attractions is highly unique. As the seemingly endless imagination and the incredible skills that come into play in converting the most impossible of ideas into reality was part of what raised my interest in the theme park industry many years ago, that didn't come as a surprise. It did, however, make things considerably more difficult. Luckily, I wasn't on my own in taking on this challenge.

First and foremost I would like to thank my supervisor Pieter Cornelis; I would not have been able to finish my thesis without his support, guidance, wisdom and ruthless criticism. I sincerely appreciate the advice Fetene Tekle, Marie-Anne Mittelhaeuser and especially Theo van der Weegen have given me regarding statistics in general and dimension reduction of dichotomous data in particular.

For the past five months I have enjoyed the support of my friends and family who were all willing to help me forget about my thesis and European theme park attractions when necessary, and made writing this thesis so much easier than it could have been. My sincerest gratitude goes out to Maarten for providing a listening ear during my early struggles of defining a thesis topic and Tim for joining me in letting off steam with some of the bloodiest of video games. Throughout the final stages of my thesis Philip took pride in his role as the ultimate 'bad example' and did everything he could to motivate (and if that didn't work – force) me to finish this thesis. Last but not least I would like to thank my parents for supporting me no matter what, to respect and stimulate my interest in and passion for the theme park industry and for always being there for me – even if I pretended I did not need their help.

Finishing a thesis is at the same time the end of an era as well as the beginning of a new and as of yet unpredictable era. And with that cliché, I have just finished mine.

Frank Cornelissen

Breda – August 2010

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Summary

Year after year, sizeable investments are made in new theme park attractions. It is estimated that the European theme park industry invests approximately 400 million euro per year to update its product (IAAPA, 2010a). Investments in new attractions are often named one of the most significant drivers for theme park attendance, both by industry professionals (Cornelis, 2009; Pikkemaat & Schuckert, 2007) as well as analyst publications (NRIT, 2007; PricewaterhouseCoopers, 2007, 2008; TEA/ERA, 2007, 2008, 2009). On average, almost 20% of theme park turnover (Kemperman, 2000) or up to 5-10% of the initial project investment (Wanhill, 2008a) is reinvested in new attractions. The reinvestment rate and the apparently escalating scale of investments in new attractions have been of concern to industry experts for decades (Anton Clavé, 2007; Wanhill, 2008a). Several public attempts have been made to determine ideal reinvestment rates and to isolate the effects of new attractions on theme park performance in the past decade. Insight – however limited it may at the moment – has been created into these effects. However, this insight is post priori only; a priori modelling remains an impossibility.

In order to develop a method for a priori modelling, more insight into attraction characteristics is needed. It is widely argued that these characteristics are believed to have a significant influence on the effect of a new attraction on theme park attendance (Cornelis, 2010a, 2010b; Van Oest, Van Heerde, & Dekimpe, 2010), however little insight exists in the various attraction categories and their varying influences (Cornelis, 2010a). The goal of this thesis is to create an empirically founded theme park attraction categorisation to be used in further research into the effects of new attractions on theme park attendance.

In the literature there is evidence of three already existing attraction categories; theme versus thrill (Van Oest, et al., 2010), the market-imagescape mix (Wanhill, 2008b) and main attraction types (Anton Clavé, 2007). Even though these categorisations are useful in their own right, according to Cornelis (2010a), their disadvantages range from a scope that can be considered too narrow (Van Oest, et al., 2010) to a lack of true classifying power (Wanhill, 2008b). Additionally, the categorisations by Van Oest et al. (2010) and Anton Clavé (2007) lack a theoretical underpinning. All three categorisations have little if any empirical evidence supporting the categorisation as such.

They do, however, provide indications as to which attraction characteristics influence the effect of new attractions and theme park performance and thus should be considered in developing an attraction categorisation. When combined with various industry literature, the following characteristics have been distilled; market (Wanhill, 2008b), imagescape (Wanhill, 2008b), thrill factor (Brown, 2002; Van Oest, et al., 2010), degree of theming (Brown, 2002;

Bryman, 1999; Van Oest, et al., 2010), theme (Anton Clavé, 2007; Bryman, 2004; Gottdiener, 2001; Wong & Cheung, 1999), park fit (Cornelis, 2008, 2010a; Van Oest, et al., 2010), storytelling (Nijs & Peters, 2002), seasonality (Cornelis, 2009, 2010b; Goulding, 2003; Kemperman, 2000; Kemperman, Borgers, Oppewal, & Timmermans, 2000; Wanhill, 2008a), education (Anton Clavé) and intellectual properties (Cornelissen, 2008, 2009; De Bruyckere, 2009).

Data has been collected from the top twenty-two European theme parks and all of their theme park attractions regarding the characteristics listed above and all further characteristics that have appeared during the data collection process. Subsequently, the common factors regarding this sample have been analysed regarding an explorative factor analysis (cf. Field, 2009; Malhotra & Birks, 2007), the results of which will be detailed below and can be found in chapter five.

A total of 105 attraction characteristics were included in the data file, 57 of which are based on literature and a subsequent 48 were accumulated through a process of inclusion on appearance. Analysis of the data file led to the exclusion of 28 variables based to missing cases (due to limited resources and / or limited availability of data). Another six variables were excluded to maintain the explorative nature of the analysis. A principal component analysis was performed on the 79 remaining variables, leading to unsatisfactory results. The Kaiser-Meyer-Olkin measure indicated that the matrix was non-positive definite and thus unstable to a certain degree. This can be solved either by increasing the number of cases or by decreasing the number of variables (Field, 2009). The decision was made to decrease the number of variables, due to practical limitations. By removing variables with low correlation scores, the overall matrix score and stability is increased, resolving the non-positive definite issue (Field, 2009). Subsequently, all variables that scored fewer than four correlation matrix scores of ,30 or higher were removed from the principal component analysis. This resulted in a principal component analysis of 30 variables.

This analysis featured a Kaiser-Meyer-Olkin measure of sampling adequacy of ,909 which is well within acceptable boundaries (Hutcheson & Sofroniou, 1999). Additionally, Bartlett's test of sphericity yielded a significance score of ,000 which is more than acceptable (Field, 2009). Based on Cattell's criterion, a division in four components was favoured above the five categories that resulted from the use of Kaiser's criterion. The principal component analysis with four factors yielded an explained variance of 55,5% and produced four components when only variables with a factor loading of ,40 or higher were included (cf. Field, 2009; Malhotra & Birks, 2007; Stevens, 2009).

Unfortunately, naming the components appears to be very hard, due to several overlapping variables and a lack of distinguishing marks. A further analysis of the four components

subsequently demonstrated that the components were not simultaneously collectively exhaustive and mutually exclusive, which is a necessity in order to ensure the applicability and usefulness of the categorisation (cf. Cornelis, 2010a; Field, 2009). It should thus be concluded that the categorisation, even though statistically significant, is not applicable in future research regarding the theme park industry.

This result was in part due to the necessary removal of variables from the principal component analysis, which led to an overrepresentation of variables pertaining to theming and / or elements of theming. The proposed methods of increasing either the number of variables or the variety of variables in the principle component analysis will undoubtedly have a positive effect on our insight in European theme park attractions, however, there is no guarantee that these proposed methods would lead to a satisfactory categorisation of theme park attractions.

It must be taken into consideration that no empirically founded, mutually exclusive and collectively exhaustive attraction categorisations have been developed to date. The two category model by Van Oest et al. (2010) contained too few categories to enable generalisations to the population, Wanhill's (2008a) categorisation did not do justice to the diverse nature of theme park attractions by merely looking at market and imagescape and the classification by Anton Clavé (2007) can not be considered collectively exhaustive and mutually exclusive. Additionally, none of these categorisations appears to have a solid empirical base.

This by no means indicates that the creation of a mutually exclusive and collectively exhaustive attraction categorisation is impossible. It does indicate that it is very difficult to do so – with or without empirical backing. Within the theme park industry hundreds of theme park attraction typifications are currently in existence. Furthermore, the theme park industry has a tendency for developing new ideas and previously unthought-of concepts to continually amaze their customers (see, among others, Anton Clavé, 2007; Ford & Milman, 2000; Imagineers, 1996, 2010; Lukas, 2008; O'Brien, 2005). This tendency will also continuously challenge attraction categorisations and, in reality, makes it difficult to produce a collectively exhaustive and mutually exclusive categorisation that will withstand the test of a creative industry.

At the same time, despite the industry's continuous investments in previously un-thought of attractions – or perhaps as part of – theme parks are not immune to the broader concept of de-differentiation as described by Lash (1990). Boundaries between theme parks and other types of leisure, and even leisure and everyday working life, become ever more flexible and unclear, leading to changing business strategies and consumer behaviour (see, among

others, Bryman, 2004; Hesmondhalgh, 2007). This has, naturally, also affected the manner in which theme parks operate.

Apart from the macro and meso effects associated with de-differentiation (refer to, among others, Lash, 1990; Williams, 2003 for more information regarding de-differentiation), the concept of de-differentiation has a distinct micro-effect within the area of theme park attractions as well. In the previous years, various so-called 'hybrid attractions' have been introduced, transcending traditional attraction typification borders. Additionally, shifting boundaries have led to the addition of attractions previously only sparsely encountered in the theme park industry, such as the recent addition of a SEA LIFE aquarium to Alton Towers. At the same time, midway attractions incorporate theme park attractions such as roller coasters or dark rides, indoor theme parks expand outdoors and water parks plan to include roller coasters in their offer. All these developments have led to an ever more unclear view of the theme park industry and its differentiation from other leisure industries as well as everyday life.

These developments, and the subsequent new attraction types that are introduced based on these developments, only add to the already existing difficulty of categorising theme park attractions.

All in all, this attempt to achieve an attraction categorisation meeting all previously formulated demands was – to a certain extent – unsuccessful. Various factors are suspected to have at least partially caused this situation. With regards to theme park research, acquiring reliable and extensive data sets is seen to be a considerable challenge (see, among others, Hogley, et al., 2005). With regards to this study, an increase in the number of cases and / or the creation of a greater variety within variables could significantly improve results.

At the same time, the theme park industry's continuous development of unique and previously un-thought of attractions has created a situation in which it appears to be nearly impossible to develop a collectively exhaustive and mutually exclusive categorisation that will withstand the test of a creative industry. One must also take into consideration the effects that macro trends such as de-differentiation have on the leisure industry in general and new theme parks in particular. The recent appearance of so-called 'hybrid attractions' would be a good example of eroding traditional borders and distinctions that complicate the development of an attraction categorisation, yet many more examples are in existence, significantly complicating the contemporary leisure landscape.

Despite the unsuccessful nature of this study's attempt to formulate an empirically founded attraction categorisation, it was successful in adding to the contemporary academic research

relating to the theme park industry and it was successful in creating a deeper insight into this industry. Additionally, it has argued in favour of and served to demonstrate an empirical method of developing an attraction categorisation, as opposed to the current attraction categorisations that appear to be largely unfounded and thus cannot be used in future research projects. The author cordially invites researchers to build on this study, or to explore other aspects of the theme park industry.

Chapter 1 – Introduction

In this first chapter, an introduction to the topic will be given followed by the problem definition. Afterwards, the research goal and the research question will be defined and the relevance of the research project will be discussed.

1.1 – Introduction

The year 2010 has become quite a significant year for Universal Studios. Not only did the company open a completely new theme park in Singapore (Loh, 2009), it also invested heavily in what has since been referred to as a 'theme park within a theme park' (B. Barnes, 2009). Approximately 265 million dollar will be invested to create a 20-acre, multi-attraction addition to Universal Orlando's Islands of Adventures theme park aptly named WIZARDING World of Harry Potter. The 20-acre 'theme park within a theme park' will feature various experience ridden retail as well as food & beverage locations. Two existing attractions will be rethemed and a third, mysteriously unknown, attraction will be added (B. Barnes, 2009).

Investments such as the above detailed WIZARDING World of Harry Potter at Universal's Islands of Adventure theme park do not merely serve to feature Universal's unique talent regarding storytelling and theming. Investments in new attractions are often named one of the most significant drivers for theme park attendance, both by industry professionals (Cornelis, 2009; Pikkemaat & Schuckert, 2007) as well as analyst publications (NRIT, 2007; PricewaterhouseCoopers, 2007, 2008; TEA/ERA, 2007, 2008, 2009). On average, almost 20% of theme park turnover (Kemperman, 2000) or up to 5-10% of the initial project investment (Wanhill, 2008a) is reinvested in new attractions. The reinvestment rate and the apparently escalating scale of investments in new attractions has been of concern to industry experts for decades, ever since the opening of what is generally regarded as the first contemporary theme park; Disneyland (Anton Clavé, 2007; Wanhill, 2008a). Since that time, several attempts¹ have been made to determine ideal reinvestment rates and to isolate the effects of new attractions on theme park performance, some more successful (Cornelis, 2009, 2010b; Van Oest, et al., 2010) than others (Hogley, Chen, & He, 2005; Price, 2003).

The results from the studies into the effect of new attractions on theme park performance by Cornelis (2009, 2010b) and Van Oest et al. (2010) both indicate that various attractions have been found to have had a significant positive effect on performance, whereas others were

¹ Various models that share this purpose are in existence within the theme park industry as well, yet since these models are considered proprietary information and are not publicly available these will not be discussed nor dealt with in this research report.

found to have had no substantial significant effect (Cornelis, 2009) or to have not attained a return on investment rate of over 100% (Van Oest, et al., 2010). Even though several possible explanations were given for these differences of impact, a deeper insight into the factors that influence a new attractions impact on theme park performance has yet to be gained.

Van Oest et al. (2010) discuss the differences between effects of new attractions with the concepts of monetary investment, type of attraction, saturation effect and reinforcement effect. These effects will be further explored in chapter three of this report. With regards to type of attraction, Van Oest et al. distinguish between thrill and theme attractions. No theoretical background is provided for this categorisation of theme park attractions in two categories and it appears as though the distinction between thrill and theme is primarily based on the existence of physical stimuli or sensations in a certain attraction, opposed to a theoretically underpinned division in two distinct categories of attractions. One might even argue that 'theme versus thrill' is an oversimplification of the plethora of attraction types in use in the contemporary theme park industry. Several attractions typified by Van Oest et al. as being thrill attractions, such as Piraña, Monsieur Cannibale and Vogel Rok have themed elements as well as physical stimuli in various degrees.

Cornelis (2009, 2010b) acknowledges the potential influence of attraction type but has not yet operationalised a classification of theme park attractions. Furthermore, apart from attraction characteristics, Cornelis (2009, 2010b) emphasises the importance of context; a new attraction placed in theme park A for year X may have a very different impact on performance from the same new attraction placed in theme park A for year Y or that same attraction placed in theme park B for year X. Van Oest et al. (2010) make a similar argument and substantiate this argument with their concepts of saturation effect and reinforcement effect, which are discussed in greater detail in chapter three.

Results attained in one theme park thus cannot be blindly generalised to other theme parks without regards for context since there are more differences than similarities between European theme parks (Anton Clavé, 2007; Camp, 1997, 2001).

1.2 – Problem Definition

Attempts have been made to successfully determine the influence of new attractions on theme park attendance as well as performance. Even though these models incorporate a plethora of factors influencing theme park attendance, little information regarding the new attraction itself are used in the model. Van Oest et al. (2010) do incorporate monetary investment and a distinction between thrill and theme attractions, yet forego on all other

differences between attractions. In contrast, Cornelis (2009) acknowledges the potential influence of attraction type but has yet to devise a categorisation that sufficiently takes into account the myriad of differences between attractions.

Through the use of attraction characteristics monetary investment and 'thrill versus theme', Van Oest et al. (2010) have attempted to not only evaluate existing attractions but to also evaluate hypothetical new attractions. This evaluation of hypothetical new attractions appears to be less than optimal, as Cornelis (2010d) argues, due to limits in the data set regarding number of new attractions, lack of moderation for price effects and lack of moderation for context (i.e. already existing attractions). Additionally, one could argue that, even if management knows that a thrill attraction would be the optimal new attraction considering context, this knowledge provides little guidance when it comes to choosing between alternatives such as Piraña, Monsieur Cannibale and Vogel Rok.

1.3 – Research Question & Goal

As discussed in the previous paragraphs, successful models have been developed to determine the effect of new attractions on theme park performance. However, the differences in effect on performance between attractions are yet to be fully explained. Theme park performance is believed to be influenced by the characteristics of new attractions. Therefore, a solid categorisation of theme park attractions has to be developed. This leads to our research question;

Which empirically founded attraction categorisation can be developed for application in research regarding the impact of a new attraction on theme park performance?

The goal of this research project thus is to identify attraction characteristics that significantly influence the impact of a new attraction on theme park attendance in order to improve current models. This would further decrease the uncertainty under which investment decisions are generally taken within the theme park industry and would elaborate on current research when it comes to investments in and effects of new attractions.

1.4 – Relevance

This research project has both societal as well as scientific relevance. The societal relevance relates to the theme park industry and the concerns from within the industry regarding increasing investments made under relatively large uncertainty. Uncertainty reduction is

considered desirable, and the work of Van Oest et al. (2010) and Cornelis (2009, 2010b) has already reduced uncertainty to a certain extent. However, when it comes to attraction characteristics and their influence on the effect of new attractions on theme park performance, little is known or empirically evidenced. A deeper insight into these characteristics and their effects could further decrease the uncertainty surrounding investments in new attractions and might lead to attractions which have a greater impact on theme park performance.

Academic research regarding theme parks is limited (Heo & Ap, 2009; Liu, 2007; Milman, 2001; Pikkemaat & Schuckert, 2007), yet interest in the topic recently appears to be increasing (Van Oest, et al., 2010). Recent studies have provided intriguing insights and have simultaneously led to a myriad of new research questions. These studies have also focussed attention to areas in which empirical research remains scarce, such as attraction characteristics (Cornelis, 2010b). A further insight into these characteristics and a possible model of characteristics that have an effect on the influence of new attractions on theme park performance not only benefit the theme park industry but may also form starting points for future research as well as an extension of current studies.

Chapter 2 – The Theme Park Industry

The definition of a theme park will be given in the first paragraph as an introduction to the concept, followed by an analysis of the origins and history of the contemporary concept of a theme park. Then a brief analysis of the current state of affairs regarding the global theme park industry will be given as to place this research project in a current context. A special emphasis will be placed on the European theme park industry throughout this chapter, as this research project will focus solely on European theme parks.

2.1 – Definition of a Theme Park

Academic literature and research regarding theme parks and attractions can be considered relatively young and is limited at best (Cornelis, 2009; Liu, 2007; Milman, 2001; Pikkemaat & Schuckert, 2007; Van Oest, et al., 2010) and precise definitions of a theme park are scarce at best (Cornelissen, 2008; Heo & Ap, 2009). Furthermore, according to TR&M (1995) and Anton Clavé (2007) defining a theme park is generally “avoided due to the existence of multiple similar formats that hinder such a task” (p. 28). The various definitions that are in existence appear to be inaccurate or incomplete, generally not differentiating theme parks from other forms of leisure parks (Anton Clavé, 2007).

In order to overcome that disadvantage of rigid definitions, several authors have resorted to lists of characteristics that can be used to distinguish between a theme park and other forms of recreational parks (see, among others, Anton Clavé, 2007; Heo & Ap, 2009). The characteristics list developed and advocated by Anton Clavé (2007) is often used in academic works on theme parks (see, among others, Klaassen van Oorschot, 2009; Van Beek, Chen, Cornelissen, Leenders, & Olfen, 2009). According to Anton Clavé, “theme parks are recreational areas [...] where the following characteristics can be observed” (2007, pp. 28-29):

- They have a thematic identity that determines recreational alternatives;
- They contain one or more themed areas;
- They are organized as closed spaces or with controlled access;
- They have a great capacity to attract families;
- They contain enough rides, shows and systems of movement to create a visit that lasts on average between five to seven hours;
- They present atmospheric forms of entertainment (musicians, characters or actors who perform in the street ‘free of charge’);

- They have an important commercial vocation (fundamentally food and beverages, and shops);
- They have high levels of investment per unit of ride or show capacity;
- They have high-quality products, service, maintenance and standards of cleanliness;
- They manage their productive and consumer processes centrally;
- They incorporate technology as much in the production processes as in those of consumption;
- Generally, though exceptions do exist, they have a single ('pay-one-price') admission system.

It must be noted that this list of characteristics need not be used as a rigid measure; a theme park may still be classified as such if it only meets, for example, ten of Anton Clavé's twelve characteristics. This invariably means that defining a theme park still remains somewhat subjective, yet on the other hand it provides a guideline accompanied by the margins needed to distinguish theme parks from other types of recreational parks.

2.2 – The Global Theme Park Industry

2.2.1 – Origins & History

The opening of Disneyland in 1955 is often described as the birth of the contemporary theme park (Anton Clavé), even though theming was already used in other amusement parks prior to this event (Bryman, 1999, 2004; Wanhill, 2008a). An example is the Efteling, located in the Netherlands, which opened in 1952 and utilises various degrees of theming as well - and has done so since its inception (Anton Clavé, 2007; Wanhill, 2008a).

In fact, according to Botterill (1997), the origins of contemporary theme parks lie in medieval fairs and carnivals, gradually evolving into the permanent fairgrounds of the sixteenth to eighteenth century. It is a particular type of these permanent fairgrounds that several authors agree to as a precedent to contemporary theme parks; the pleasure garden (Anton Clavé, 2007; Botterill, 1997; Wanhill, 2008a). Pleasure gardens were complex urban landscapes, developed as a reaction to the rise in urbanisation and industrialisation as a method of returning to nature (Botterill, 1997), that exposed visitors to theatre, concerts, fireworks, light spectacles and attractions (Samuelson & Yegoiants, 2001). Most pleasure gardens disappeared in the mid nineteenth century due to changing consumer tastes, yet some live on to this day, most notably Tivoli Gardens in the centre of Copenhagen (Wanhill, 2008a).

At the same time that pleasure gardens began appearing all over Europe, seaside resorts began to be developed, especially in the United Kingdom, and the transition from permanent fairground to amusement park commenced (Botterill, 1997). This transition was not only

brought about by the rise of seaside resorts, it was also furthered by the growing popularity and importance of World Fairs (Anton Clavé, 2007; Botterill, 1997). World Fairs contributed significantly in the shaping of the contemporary theme park industry due to the fact that they were not focussed on the exchange of goods (as was the norm at that period in time), but had a strong emphasis on consumption (Anton Clavé, 2007; Botterill, 1997). In that sense, World Fairs demonstrated that, at that time, consumers were willing to not only pay but travel for entertainment and leisure as well (Anton Clavé, 2007). According to Canogar (Anton Clavé, 2007), the 1939 New York World Fair evidenced the fact that consumers would rather invest in social position, prestige or lifestyle opposed to useful instruments.

Whereas seaside resorts in the United Kingdom were slowly evolving into amusement parks, this same transition was occurring in the United States, yet under somewhat different circumstances (Wanhill, 2008a). Developments in transportation, disposable free time as well as disposable income led to trolley parks in the United States (Botterill, 1997; Wanhill, 2008a). These parks were primarily built to better utilise the trolley networks in the weekends (when they were in disuse, due to the fact that the trolleys were primarily used by commuters), but played a significant part in the shaping of contemporary theme parks in the sense that American audiences grew familiar with the prime park concept. Currently, only a few trolley parks (most notably Dorney Park) and seaside resorts (most notably Blackpool Pleasure Beach) are still in existence (Wanhill, 2008a).

Ever increasing disposable income, an increase in free time for the working and middle class and the rise of new mass communication systems have further contributed to the development of contemporary theme parks (Anton Clavé, 2007). Another important factor was the influence of the movie industry. Both cinemas as well as theme parks reshape reality by creating a spectacle that is relived by the audience with the use of scenes and a themed environment. Additionally, cinemas and theme parks both stimulate consumption due to the way in which the commercial nature of their products / service is highly unrecognisable (Anton Clavé, 2007), which forms a departure from the usual behaviour of investing solely in useful objects in stead of social position, prestige or lifestyle. It should come as no surprise that several movie studios have or have had ownership of theme parks (Anton Clavé, 2007).

Anton Clavé (2007) and Wanhill (2008a) argue that contemporary theme parks have taken over the position once dominated by amusement parks circa 1950, around the time of the opening of Disneyland. Botterill (1997), on the other hand, argues that this shift in dominance did not occur until around 1970, partly due to the broader acceptance of the rise of a new era emphasizing consumption and leisure at that period in time. Independent of the exact year that theme parks took over the position formerly held by amusement parks, the popularity of theme parks had been rising since the opening of Disneyland, and the subsequent opening of various other theme parks both in the United States as well as Europe (Anton Clavé, 2007),

mostly due to their clean and structured nature, their safety and the overall family oriented nature of theme parks as such (Anton Clavé, 2007).

2.2.2 – Current State of Affairs

The contemporary theme park industry is of high economic significance (Van Oest, et al., 2010), with worldwide attendance continuously increasing (PricewaterhouseCoopers, 2004; TEA/ERA, 2007, 2008, 2009). Even though exact and detailed global revenue data is scarce, United States data shows that both attendance and revenue of United States theme parks has been steadily increasing over the past decade (IAAPA, 2010b).

Ownership has been a contemporary issue of debate, ever since the first signs of consolidation in the United States, with Disney Parks & Resorts, Universal Studios, Busch Entertainment Corporation, Six Flags, Cedar Fair and Paramount Parks being the major players in the U.S. theme park industry (Anton Clavé, 2007). Since then, several theme parks have changed hands, both in the United States as well as in Europe (Harrison & Bland, 2009). The largest theme park operators in the world are now The Walt Disney Company, Merlin Entertainments Group, Universal Studios, SeaWorld Parks & Entertainment (the former Busch Entertainment Corporation), Six Flags and Parques Reunidos (TEA/ERA, 2009). Theme park operators primarily operating in Europe include Compagnie des Alpes and Aspro Ocio (Harrison & Bland, 2009).

All of the recent acquisitions and mergers are, according to Deloitte & Touche analysts Harrison & Bland (2009), partially attributable to above-average performance by theme parks and solid financing arrangements. Yet not only did theme park operators invest in acquisitions, numerous new attractions were opened in the past few years as well (Cornelis, 2010b). Even when looking only at roller coasters, the Roller Coaster Database reports that worldwide 98 new roller coasters were opened in 2008 (Marden, 2010b), 100 were opened during the 2009 season (Marden, 2010c) and currently 49 new roller coasters are confirmed for the upcoming 2010 season (Marden, 2010d). In Europe, various new attractions were opened, including a new themed area and the park's first looping roller coaster at Europa-Park (Germany), a new fairytale addition to the park's fairytale forest at Efteling (the Netherlands), a wooden roller coaster at Freizeitpark Plohn (Germany) and a spectacular thrill ride at Tivoli Gardens (Copenhagen), to name but a few. This proves that investments remain high within the global as well as the European theme park industry despite the current economic downturn.

Chapter 3 – Theoretical Framework

In this chapter, the central concepts of this research report will be discussed. An introduction to the effect of new attractions on theme park performance will be given in the first paragraph, as to place the central topic of attraction characteristics in perspective. In the second paragraph, three theme park attraction categorisations will be presented and subsequently discussed and compared. Additionally, various attraction characteristics as discussed in academic literature will be presented and discussed. In the final paragraph of this chapter, a conceptual model will be presented that will serve as the theoretical foundation of the research project.

3.1 – The Impact of New Attractions

Research into the impact of new attractions ranges from being successful (Cornelis, 2009, 2010b; Van Oest, et al., 2010) to unsuccessful (Hogley, et al., 2005; Price, 2003).² Yet there is a common consensus regarding the importance of an improved insight into the effects of new attractions on theme park attendance and performance, in order to come to “a responsible and accountable investment policy” (Cornelis, 2010b, p. 3).

In an attempt to increase the insights into the effects of new attractions on theme park performance and to further explain the discovered variation in effect between various new attractions, Cornelis (2008, 2010a) introduced a so-called Attraction Response Matrix. The basic assumption behind this matrix is the following: *‘in situation A, attraction B will most likely have effect C (on target audience D)’*. According to Cornelis (2010b), in this Attraction Response Matrix, “situation variables (A) and attraction characteristics (B) were distinguished as stimuli and four levels of possible effects (C) (attraction response, park response, brand response and economic response), on a certain target audience (D) were distinguished as responses or output” (p. 10). Attraction characteristics are thus deemed not only an important element of the Attraction Response Matrix and therefore also an important factor in creating a more responsible and accountable theme park investment policy; “So if a new attraction was added to the park we should do an econometrical study to find out what the real impact of this attraction is on the attendance level, compare it with all other attractions that were added in the past, and then find an explanation by looking at the individual responses, in relation to the characteristics of the attraction” (Cornelis, 2010b, p. 11).

² A discussion of the unsuccessful attempts of Hogley, et al. (2005) and Price (2003) and an exploration into the reasons of their (partial) failure can be found in Cornelissen (2008).

Part of the future development of the Attraction Response Matrix is transforming the current post priori model into an a priori model, enabling forecasts of the impact of yet to be built attractions. A prerequisite for such a transformation is, according to Cornelis (2010a), a proper attraction categorisation that is both exhaustive as well as unpretentious. The number of categories should cover all possibilities, yet should not be so numerous that it becomes less than convenient to work with.

3.2 – Categorisations

The general concept of categorisation has been around for over two-thousand years, having first been developed by Greek and Roman philosophers (Lakoff, 1987). However, research performed in the late eighties of the twentieth century took a critical approach to the general view on categorisation, leading to the establishment of the traditional classical categorisation theory and the contemporary prototype approach (Franzen & Bouwman, 1999; Lakoff, 1987; Maurer, 2006). Both approaches will be briefly discussed in this paragraph.

3.2.1 – Classical Categorisation Theory

The main concept behind both the classical categorisation theory as well as the prototype approach, is that categorisation is the main method through which humans make sense of experience (Lakoff, 1987). According to the classical categorisation theory (as discussed by Lakoff, 1987), categories “are characterized solely by the properties shared by their members. That is, they are characterized (a) independently of the bodily nature of the beings doing the categorizing and (b) literally, with no imaginative mechanisms (metaphor, metonymy, and imagery) entering into the nature of categories” (pp. XI-XII). Lakoff identified the following views as typical of the classical categorisation theory (1987, pp. XII-XIII with original emphasis);

- Thought is the mechanical manipulation of abstract symbols;
- The mind is an abstract machine, manipulating symbols essentially in the way a computer does, that is, by algorithmic computation;
- Symbols (e.g., words and mental representations) get their meaning via correspondences to things in the external world. All meaning is of this character;
- Symbols that correspond to the external world are *internal representations of external reality*;
- Abstract symbols may stand in correspondence to things in the world independent of the peculiar properties of any organisms;
- Since the human mind makes use of internal representations of external reality, the mind is a *mirror of nature*, and correct reason mirrors the logic of the external world;

- It is thus incidental to the nature of meaningful concepts and reason that human beings have the bodies they have and function in their environment the way they do. Human bodies may play a role in *choosing* which concepts and which modes of transcendental reason human beings actually employ, but they play no essential role in *characterizing* what constitutes a concept and what constitutes reason;
- Thought is *abstract* and *disembodied*, since it is independent of any limitations of the human body, the human perceptual system, and the human nervous system;
- Machines that do no more than mechanically manipulate symbols that correspond to things in the world are capable of meaningful thought and reason;
- Thought is *atomistic*, in that it can be completely broken down into simple “building blocks” – the symbols used in thought – which are combined into complexes and manipulated by rule;
- Thought is *logical* in the narrow technical sense used by philosophical logicians; that is, it can be modelled accurately by systems of the sort used in mathematical logic. These are abstract symbol systems defined by general principles of symbol manipulation and mechanisms for interpreting such symbols in terms of “models of the world”.

This, in essence, means that categorisation is regarded as an objective process in which items are sorted into hierarchical categories based on their objectively determined characteristics (Franzen & Bouwman, 1999). In the pure classical view, all items in a category are identical with regards to the specified characteristics (Lakoff, 1987), even though the rule of thumb that ‘the internal similarity between the characteristics within a category should be maximised as opposed to other categories on the same level’ within the hierarchy (Franzen & Bouwman, 1999, p. 276) is used as well.

3.2.2 – Prototype Approach

Extensive research in the cognitive studies regarding categorisation over the past several decades has led to the development of a new categorisation theory; the prototype approach or prototype theory (Lakoff, 1987), which is now considered to be the standard categorisation theory in psychology (Franzen & Bouwman, 1999). Lakoff identified the following views as typical of the classical categorisation theory (Franzen & Bouwman, 1999; 1987, pp. XIV-XV with original emphasis);

- Thought is *embodied*, that is, the structures used to put together our conceptual systems grow out of bodily experience and make sense in terms of it; moreover, the core of our conceptual systems is directly grounded in perception, body movement and experience of a physical and social character;

- Though is *imaginative*, in that those concepts which are not directly grounded in experience employ metaphor, metonymy, and mental imagery – all of which go beyond the literal mirroring, or *representation*, of external reality. It is this imaginative capacity that allows for “abstract” thought and takes the mind beyond what we can see and feel. The imaginative capacity is also embodied – indirectly – since the metaphors, metonymies, and images are based on experience, often bodily experience. Thought is also imaginative in a less obvious way: every time we categorize something in a way that does not mirror nature, we are using general human imaginative capacities;
- Thought has *gestalt properties* and is thus not atomistic; concepts have an overall structure that goes beyond merely putting together conceptual “building blocks” by general rules;
- Thought has an *ecological structure*. The efficiency of cognitive processing, as in learning and memory, depends on the overall structure of the conceptual system and on what the concepts mean. Thought is thus more than just the mechanical manipulation of abstract symbols;
- Conceptual structure can be described using *cognitive models* that have the above properties;
- The theory of cognitive models incorporates what was right about the traditional view of categorization, meaning, and reason, while accounting for the empirical data on categorization and fitting the new view overall.

The prototype approach thus can be regarded as a far more subjective theory regarding categorisation, placing a significant emphasis on the interpreter’s influence on the process of categorisation and its outcomes. Yet, more significantly, the prototype approach also argues that not all category members need to be identical; it can even be the case that a certain category member is a better example of a category than another member.

An example often used in this context, is that of a random bird (Maurer, 2006). When thinking of a random bird, changes are that one will think of a robin or a sparrow, for example, instead of a buzzard, ostrich or goose. For some particular reason, a robin is quintessentially *birdy* whereas a goose does not appear to be an equally appropriate example of a bird. According to the definitional theory, some feature or features associated with the concept bird (such as 'has feathers,' 'lays eggs,' 'flies,' 'chirps') are both necessary and sufficient to pick out all birds and only birds. But if geese and robins are both said to be birds because they share these necessary and sufficient features, what makes the robin birdier than the goose?

According to prototype theory, the answer is that the meaning of many words is described as a whole set of features, not one of which is individually either necessary or sufficient. This concept is known as family resemblance (Franzen & Bouwman, 1999; Lakoff, 1987). Within

an average family, family members are not identical yet they share certain similarities. One family member may have a large nose, blond hair and blue eyes, while another family member may have a large nose, black hair and blue eyes and yet another may have a small nose, blond hair and blue eyes. Even though these family members are not identical, they do share a certain number of characteristics. Some family members may even feature more of these characteristics than others; these family members are regarded as prototypes, the best example of a category.

It is generally believed (Franzen & Bouwman, 1999; Lakoff, 1987; Maurer, 2006) that the concept of family resemblance is not limited to families, yet applies to other categories – such as birds – as well. Certain category members (e.g. a robin) have more characteristics in common with the prototype bird than others (e.g. an ostrich). The theory also indicates that not all category members need to possess all characteristics associated with a category; even though flying is highly associated with birds, a penguin – which cannot fly – is still considered to be a bird.

It can thus be concluded that the prototype approach leads to a far more flexible concept of a category as well as categorisation than the classical categorisation concept.

3.2.3 – Classical or Prototype?

The goal of this research project, based on existing research into the effect of new attractions on theme park performance, is to develop a categorisation for theme park attractions. As is often the case, context is of great importance when it comes to the decision whether to adhere the classical categorisation concept within this study, or whether to adopt the prototype approach.

Despite the contemporary emphasis on the prototype approach in research (Maurer, 2006), the classical categorisation concept remains in use under certain circumstances. It is, for example, often used in mathematics and mathematics-related fields due to its strict and objective nature (Lakoff, 1987). And, despite what the bird-related example in the previous paragraph may lead to believe, the classical categorisation concept remains in use in biology and related fields as well.

The main advantages of the prototype approach appear to be primarily related to the fields of linguistics, psychology (Lakoff, 1987) and even information architecture (Maurer, 2006), because of the approach's overarching concepts (as found summarised in paragraph 3.2.2's bullet point list). In these fields, the way in which the human brain operates is of the utmost

importance and the differences in assumptions regarding this matter between the classical categorisation concept and the prototype approach are vast.

However, in this particular situation, the functioning of the human brain is left out of the equation, considering that the categorisation will be developed in order to support econometric research. Factors such as objectivity and homogeneity of category members are, within this context, of greater importance than flexibility and linguistic applicability. This research project will thus implicitly utilise the classical categorisation concept due to practical considerations, without passing judgement regarding the validity of the prototype approach.

3.3 – Attraction Categorisations

The current econometric models regarding the impact of new attractions on attendance make use of attraction categorisations instead of attraction characteristics (Cornelis, 2009, 2010b; Van Oest, et al., 2010), despite the hypothesized importance of attraction characteristics expressed by Cornelis (2008, 2010a, 2010b). The use of attraction characteristics would include more variables into the model, presumably creating a greater reliability. In this paragraph, three attempts at the categorisation of contemporary theme park attractions will be presented and subsequently discussed as to highlight their strong points and illustrate their weaknesses.

3.3.1 – Theme vs. Thrill

Van Oest et al. (2010) have divided new attractions opened at de Efteling between 1981 and 2005 in two categories; theme attractions and thrill attractions. No theoretical underpinning was given for this division into two categories, apart from the statement that “our categorization [...] has been closely coordinated with the park’s management” (Van Oest, et al., 2010, p. 14). The distinction between thrill and theme attractions is often made within the theme park industry and it follows the general distinction that theme park attractions can either be slow-paced rides which revolve around theming and visual effects or high-paced white-knuckle rides based on physical stimuli and intensity. However, the world of attractions is far from black and white; many more attraction types can be distinguished, all featuring their own distinct characteristics (see, for instance, Anton Clavé, 2007). This causes one to wonder whether or not this division into two virtually undefined and theoretically and empirically unfounded categories can be used to support executive decision-making with regards to major investments.

3.3.2 – Market-Imagescape Mix

In order to categorise the various visitor attractions that can be found in the United Kingdom, a market-imagescape mix was developed by Wanhill (2008b). Apart from categorising new visitor attractions, the market-imagescape mix can, according to Wanhill, also be utilised to categorise a new activity in a current attraction or a reformulation of an existing attraction as well. The market-imagescape mix is partially based on the experience economy concept developed by Pine & Gilmore (1999).

Wanhill argues that the experience economy concept proposes a reengineering of the traditional value process (aimed primarily at function) to add value through marketing experiences (i.e. creating added value through experiences instead of pure function). “This implies producing services with attached goods rather than the traditional mass production process in which commodities are uniformly produced and sold on price. In this way customers are able to receive a package that can be tailored to their needs” (Wanhill, 2008b, p. 18). This would mean that consumption no longer revolves around pure goods, but around services or experiences surrounded by peripheral goods, moving the focus from the product itself to services and / or experiences. Based on this theory, Wanhill envisioned the attraction product where the core is the imagescape, the purpose of which is to convey the essence of the experience to the potential market. By arguing so, the intangible output of a constructed imagescape is in essence central to the visitor experience. Surrounding the imagescape are commodities, services and tangible features, which are combined to add value or support the imagescape. According to Wanhill (2008b), “the right imagescape portrays, through the functional aspect of theming, all four realms of the visitor experience ³, namely entertainment, education, aesthetics and escapism” (p. 19).

The concept of market is then added to the concept of imagescape in order to emphasize the importance of market within the visitor attractions industry. This combination of imagescape and market is then translated into the market-imagescape mix, leading to the four categories as depicted in table 3.1;

³ Wanhill hereby refers to Pine & Gilmore’s (1999) four experience domains. Pine & Gilmore argue that the difference between an activity and an experience lies in the degree of consumer involvement; so to speak, the degree of flow (an experience demanding a higher degree of involvement and flow than an activity). The two primary dimensions through which a consumer can be involved are the degree of participation of the consumer (active versus passive) and the relationship between consumer and environment (absorption versus immersion). These two dimensions were then combined to create four experience domains; entertainment, education, aesthetics and escapism. Within this context, entertainment can be characterised as passive absorption, education as active absorption, aesthetics as passive immersion and escapism as active immersion (Nijs & Peters, 2002; Pine & Gilmore, 1999).

Table 3.1 – The Market-Imagescape Mix as introduced by Wanhill (2008b, p. 26) and detailed in paragraph 3.3.2.

Market	Image / Imagescape	
	Current	New
Current	me too attraction	grand inspiration attraction
New	new version attraction	wonder attraction

A brief explanation of each of the four categories will be provided below (based on Wanhill, 2008b, pp. 26-31), including an example from the theme park industry to demonstrate its applicability to this industry (as argued by Wanhill).

ME TOO ATTRACTIONS. Me too attractions involve the least risk, which in turn has implications for finance and operational viability. The risk involved is lowest in this category of attraction since the possibility exist to look at parallel projects and to employ tried-and-tested imagescapes. Opportunities also exist to use existing market penetration data in order to reliably forecast the success of the attraction (Wanhill, 2008b). An example of such an attraction would be the Boomerang roller coaster type; approximately 45 identical roller coasters of this type were built and sold over the past 25 years (Marden, 2010f).

GRAND INSPIRATION ATTRACTIONS. Grand inspiration attractions are aimed at the current market yet utilise or feature a new imagescape or imagescape delivery approach. "The innovation process in this quadrant should make the existing imagescape delivery style obsolete and is therefore radical in approach [...], yet it deals with existing market structures. While it may build competitive advantage and take market share from others, it does not destroy the competition, which may, in any case, have the opportunity to copy the new ideas" (Wanhill, 2008b, p. 28). An example of such an attraction would be The Amazing Adventures of Spider-Man, an attraction with a price tag of over \$100 million (Hyman, 2006, in Van Oest, et al., 2010) and still voted the best dark ride in the world in 2009 (Baldwin, 2009), ten years after it first opened to the public.

NEW VERSION ATTRACTIONS. According to Wanhill (2008b), "the innovation process here involves the opening up of new market opportunities while preserving the existing imagescape in content and format, having the effect of rejuvenating the existing attraction because the current public has become too familiar with the product or the market has moved on" (p. 28). Even though Wanhill's examples of new version attractions all apply to entirely new visitor attractions or theme parks,

examples can be found in theme park attractions as well. Anubis the Ride, for example, has aided Plopsaland in reconnecting with their ageing demographic by extended their product offering to include 12-15 year olds (Taets, 2009).

WONDER ATTRACTIONS. This type of attraction is characterised by remarkably major economic impacts on their environments, high risk and the generally large scale of the project. According to Wanhill (2008b), this type of attraction only applies to relatively few developments. He further substantiates this claim with several arguments pertaining exclusively to the development of new visitor attractions that are not relevant for this research project. However, when extrapolating Wanhill's arguments to the theme park industry and the context of investments in new attractions, one could argue that wonder attractions are a rare type due to the required size and risk associated with these attractions and the limited amount of theme park operators that would in fact be capable of producing a wonder attraction successfully. An example of a wonder attraction would be the previously mentioned Wizarding World of Harry Potter, a project of such a grand scale (both spatially as well as financially) that it is announced not as a new attraction yet as a 'theme park within a theme park' (B. Barnes, 2009).

A strong point of Wanhill's (2008b) categorisation of new attractions is that it has a theoretical underpinning, yet the same argument that has applied to the work of Van Oest et al. (2010) can apply to the categorisation of Wanhill; the number of categories is too limited to provide ample guidance to management. Even though Wanhill features four distinct categories, two of his categories are, as he himself admits, very limited in scale as well as in scope. Grand inspiration attractions are a rarity that transforms the delivery of imagescapes as we know it and wonder attractions have an economic scale and impacts that go hand in hand with such high risks that only relatively few new attractions fall into this category. One might thus argue that the majority of new theme park attractions would fall into either one of two categories; me too attractions or new version attractions. Even though that is not necessarily a negative aspect of Wanhill's categorisation, it leaves us with only two categories that would be used frequently. Guidance would thus again be minimal – as is the case with the categorisation developed by Van Oest et al. (2010).

It is interesting to note that the categorisation of Van Oest et al. (2010) came about in collaboration with management – and thus can be regarded to be a categorisation based on a management perspective – whereas Wanhill's (2008b) categorisation was developed based on the experience economy and basic economic theory – and thus can be argued to have been developed from an academic or theoretical perspective. The next categorisation, developed by Anton Clavé (2007), has been based on what appears to be a combined management / consumer perspective with a heavy emphasis on the consumers perspective.

3.3.3 – Main Attraction Types

Anton Clavé (2007) argues that most theme parks, even though they differ conceptually, feature the same attractions that can be found in amusement parks and fairs. The difference between theme park attractions and amusement park attractions lies in the use of theming and a strategy to integrate the attraction into the park's concept. Despite the importance of theming and an integration strategy, Anton Clavé (2007) states that most parks "tend to give emphasis to emotions and physical impressions as a basic element of their range of attractions" (p. 375). This explains, according to him, the pre-eminence of roller coasters as the main attraction at numerous theme parks.

Anton Clavé (2007) distinguishes the following main attraction types;

ROLLER COASTERS. According to Anton Clavé, roller coasters can be considered a theme park's visual landmarks. Furthermore, roller coasters "often arouse emotion as much among those who simply gaze and perceive the sensation of risk from a distance as among those who go on them" (2007, p. 375). Roller coasters tend to be the star attractions of theme parks (Anton Clavé, 2007). Additionally, Green (1999, in Anton Clavé, 2007) argues that roller coasters are not merely an attraction but have become a sign, a metaphor, of a certain way of understanding entertainment.

DARK RIDES. Anton Clavé describes dark rides as show attractions, elaborating that they are in fact "dark circuits inside a building and [...] the scene of an attraction that combines the classical elements of movement with film and the objectives and techniques used in the theatre" (2007, p. 376). This categorisation does not merely include the traditional Tunnel of Love as could be found at many fairgrounds in the past, but also includes high-tech virtual reality attractions as well as the immersive dark rides found at Disney's theme parks, such as Haunted Mansion and Pirates of the Caribbean.

FLAT RIDES. "These involve the traditional mechanics based on monotonous, repetitive movements (from gyrating teacups to merry-go-rounds), which can also be found at other amusement parks and fairs" (Anton Clavé, 2007, p. 376). Many theme park attractions fall into this category, which is no surprise knowing that over 100,000 applications for inventions for theme parks based on this principle have been filed at the American patents office (Burns, 1988, in Anton Clavé, 2007). According to Anton Clavé, flat rides are generally family-oriented and require only a moderate investment.

WATER ATTRACTIONS. Various attractions featuring water effects and / or water as a method of transportation fall under this category. Examples are rapids, flume rides and splash rides. Water attractions are generally aimed at families and occupy a considerable amount of land (Anton Clavé, 2007).

EDUCATIONAL ATTRACTIONS. Educational attractions are, according Anton Clavé (2007), a combination of elements from the previous attraction categories aimed at informal instruction / education. Examples of educational attraction would be the pavilions at Epcot's World Showcase, the PandaDroom 4D cinema at Efteling ⁴, the larger part of Disney's Animal Kingdom and Busch Garden Africa's Rhino Rally.

Apart from the five attraction types described above, Anton Clavé also distinguishes between two show types;

ANIMATIONS. Anton Clavé (2007) has subdivided animations into shows (with live actors), street entertainment, ambient entertainment (best described as small-scale street entertainment) and technical productions such as fireworks or light shows.

AUDIO-VISUAL AND FILM PRESENTATIONS. This type of show can also be seen as an attraction. Van Oest et al. (2010), for example, incorporated PandaDroom, a 4D cinema, as an attraction in their research project whereas according to Anton Clavé's (2007) categorisation, PandaDroom would in fact not be an attraction but a audio-visual and film presentation (i.e. a show). This show category is subdivided into audio-visual presentations, innovative film technologies (including 4D cinemas), commercial film presentations, simulators and explanatory shows (providing audiences with, for instance, a backstage peek at making a motion picture).

Anton Clavé's (2007) categorisation of theme park attractions has some overlap with the categorisation of Van Oest et al. (2010). One could argue that Anton Clavé's roller coasters, flat rides and water attractions are part of the thrill category of Van Oest et al. Similarly, dark rides and educational attractions from Anton Clavé's categorisation are considered thrill attractions in the categorisation of Van Oest et al. However, this apparent fit may not be so evident, as Anton Clavé argues that both flat rides and water attractions are generally family-oriented, yet Van Oest et al. include such attractions (being, in the Efteling context, Monsieur Cannibale and Piraña) in their thrill category.

⁴ Yet PandaDroom, being a 3D / 4D attraction, could also be categorised as a audio visual / film presentation (as will be discussed later on) since Anton Clavé (2007) regards this type of attraction to be a theme park show opposed to a theme park attraction. This demonstrates an issue with this categorisation, seeing that one attraction cannot be classified both as an educational attraction due to its content as well as an audio-visual / film presentation (and, in essence, a show as opposed to an attraction) due to the manner in which the content is presented.

3.4 – Discussion of Attraction Categorisations

As Cornelis (2010a) argued, “classifying attractions has proven to be a very complex and seemingly impossible task” (p. 26). The subtle differences between theme park attractions are difficult to capture in a categorisation and the importance of creativity within the development of new attractions only complicates the development of attraction categorisations.

The vast number of factors that have to be taken into account when developing an exhaustive yet clear categorisation for theme park attractions poses a considerable challenge. [...] An appropriate categorisation should be exhaustive as well as unpretentious; the number should cover all possibilities, but at the same time should not be that numerous that it is no longer convenient to work with. The final goal of the categorisation is to use it as a tool to compare historical data of similar attractions to predict the success of new attractions (Cornelis, 2010a, p. 28).

Taking these criteria into account, the categorisations described in the previous paragraph all appear to be unusable (Cornelis, 2010a). Even though the categorisations are useful in their own right, according to Cornelis, their disadvantages range from a too narrow scope (Van Oest, et al., 2010) to a lack of true classifying power (Wanhill, 2008b).

Even though Anton Clave’s (2007) categorisation appears to be the best fit with regards to the goal at hand, it is firmly based on the prototype approach and thus lacks explicit and objective criteria for the division of attractions into the various categories. Even though it would be evident to most people that a roller coaster is just that, the criteria for an attraction to be classified as a roller coaster are unclear at best. Considering the importance of clear and objective criteria, one can only come to the conclusion that Anton Clave’s (2007) categorisation is significantly less suitable than it appears to be at first sight.

When considering that the categorisations by Van Oest et al. (2010) and Anton Clavé (2007) lack a theoretical underpinning and that all three categorisations described in the previous paragraph have little if any empirical evidence supporting the categorisation as such, it can only be included that all three categorisations are unsuitable for use in contemporary research projects regarding the effect of new attractions on theme park performance.

3.5 – Attraction Characteristics

In the development of a new attraction categorisation, some elements of contemporary attraction categorisations (as discussed in paragraph 3.3) will be taken into account. This primarily relates to main theme park attraction characteristics; distinctive elements that are

used by Wanhill (2008b), Anton Clavé (2007) and Van Oest et al. (2010) to distinguish their categories from one another. These main attraction characteristics have been listed below, substantiated by additional literature regarding theme park attractions and their characteristics.

MARKET. Based on Wanhill's (2008b) categorisation of theme park attractions, this characteristic regards the primary target market of the new attraction; in other words, this characteristic signifies whether a new attraction is aimed at a theme park's current market or a new market.

IMAGESCAPE. The second dimension of Wanhill's (2008b) categorisation of theme park attractions is imagescape, the method through which the experience is conveyed to the visitor. Primary measure is whether or not the imagescape used in a new attraction is new or already existent.

THRILL FACTOR. Based on Van Oest et al.'s (2010) categorisation into theme attractions and thrill attractions, the thrill factor of a new attraction is considered to be an important characteristics. The thrill factor also includes Brown's (2002) characteristic of movement.

DEGREE OF THEMING. The second characteristic to be based on Van Oest et al.'s (2010) categorisation into theme attractions and thrill attractions, is the degree of theming. Theming is generally believed to be an important instrument for delivering an experience (Nijs & Peters, 2002; Pine & Gilmore, 1999) and attracting both young as well as adult visitors (Anton Clavé, 2007; Bryman, 1999). It is thus considered to be a significant theme park attraction characteristic. The degree of theming incorporates Brown's (2002) characteristic of the visual landscape.

THEME. Apart from theming as such, the theme of an attraction is believed to have an influence on its effect on theme park performance (Wong & Cheung, 1999) and its importance has been discussed by various authors (Anton Clavé, 2007; Bryman, 2004; Gottdiener, 2001).

PARK FIT. Van Oest et al. (2010) argue that a new attraction's effect is influenced by the park's current attractions. This view is shared by Cornelis (2008, 2010a), who underpins the importance of an attraction's fit within a theme park related to an attraction's influence on attendance.

STORYTELLING. Research (Cornelissen, 2008; Weisscher, 2008) and industry-related literature (Nijs & Peters, 2002) on storytelling remains scarce, yet new

attractions more and more feature the inclusion of an entire story, generally as part of a larger theming effort.

SEASONALITY. Much has been written regarding the seasonal nature of the theme park industry (Cornelis, 2009, 2010b; Goulding, 2003; Kemperman, 2000; Kemperman, et al., 2000; Wanhill, 2008a). This concept can easily be applied to theme park attractions as well, as it is only reasonable to assume that, for instance, Anton Clavé's (2007) water attractions category is far more popular in summer than during a rainy autumn period and that a new water attraction is likely to have a greater influence on attendance during a warm and dry season than during a cold and wet season (cf. Cornelis, 2010b).

EDUCATION. Anton Clavé (2007) mentions educational attractions as a specific category of attractions. Research by Milman (2009) also demonstrates that educational value is a factor of importance regarding theme parks.

INTELLECTUAL PROPERTIES. The use of intellectual properties or previously known stories is being implemented more and more in theme park attractions over the past few years (Cornelissen, 2009). Moreover, research confirms the positive influence of adding intellectual properties to theme park attractions (Cornelissen, 2008; De Bruyckere, 2009).

Apart from the characteristics mentioned above, derived from literature, many more attraction characteristics can be discerned, varying from the degree of slope of a roller coaster's first drop (Backx, 2006) to the duration of a traditional dark ride or the specific subtype of a roller coaster (Cornelis, 2010a). As of yet, no comprehensive overview of attraction characteristics exists, despite the various attempts summarized above. Additionally, no empirically established categorisation of theme park attractions has yet been developed, leading to the open invitation of Cornelis (2010a) for the development of such a categorisation. As will be explained in the following paragraph, this research project attempts to fill that void.

3.6 – Conceptual Model

Several methods for determining the effect of new attractions on theme park performance have been developed in the past few years, yet these methods can only be used for post priori determinations of effect. The ideal would be a model that could be used for a priori determinations of effect (Cornelis, 2010a; Van Oest, et al., 2010). In order to develop such a model, a much deeper insight into the various factors that come into play regarding the effects of new attractions is needed (cf. Cornelis, 2010d). One underdeveloped aspect is the

categorisation of theme park attractions (Cornelis, 2010a), as discussed in the previous paragraphs.

The model depicted in figure 3.1 provides a simplified overview of the factors that influence the impact of a new attraction on theme park attendance, based on Cornelis (2008, 2009, 2010b) and Van Oest et al. (2010). Attraction characteristics are believed to have both a direct as well as an indirect influence on the effect of a new attraction on attendance. Contemporary studies indicated that there is little or no insight into the effect of these characteristics at this moment (Cornelis, 2010a, 2010b). In order to quantify the influence of these characteristics, which is a necessity in creating an a priori model for the prediction of the effect of a new attraction on attendance, a categorisation of theme park attractions is highly desirable (Cornelis, 2010a).



Figure 3.1 – Conceptual Model based on Cornelis (2008, 2009, 2010b) and Van Oest et al. (2010) detailing the position of attraction categorisation in the system of theme park annual attendance and the effects of new attractions on theme park performance. All solid lines indicate expected direct effects whereas dotted lines indicate expected indirect and / or moderator effects. The grey block marked AC denotes the influence of attraction characteristics on the system.

All current categorisations are considered to be unusable with regards to developing an a priori management tool for investments in new attractions (Cornelis, 2010a). As mentioned previously, the categorisation of Van Oest et al. (2010) is primarily based on a management perspective whereas the categorisation of Wanhill (2008b) has been developed from an academic or theoretical perspective. In contrast, as discussed in paragraph 3.3.2, the categorisation developed by Anton Clavé (2007) has a distinctively different perspective; a

consumer point of view. This demonstrates that there are several ways of categorising the same set of items (Franzen & Bouwman, 1999; Hamilton, Puntoni, & Tavassoli, 2006; Lakoff, 1987; Love, 2005). In order to remove the potential subjective nature of categorisation, a structured process is advised (Hamilton, et al., 2006), adhering to the classical categorisation concept as discussed in paragraph 3.2. In this research project, an inductive approach will be taken in order to develop a categorisation, utilising an explorative factor analysis (cf. Field, 2009; Malhotra & Birks, 2007) to explore the common factors regarding objectively determined attraction characteristics (Bryman & Bell, 2007; Levin & Fox, 2006).

Chapter 4 – Research Methodology

The research methodology of the research project at hand will be justified in this chapter. In the first paragraph, research questions based on the theoretical framework presented in the previous chapter will be presented. Subsequently, the research design will be clarified and the population and sample size will be presented. Furthermore, the data collection strategy and the analytical techniques that will be utilised during the research project will be introduced.

4.1 – Research Questions

Even though existing literature has been discussed in chapter three, no hypotheses will be posed since the research goal is primarily explorative. Instead, research questions of an explorative nature will be formulated.

1. Which attraction characteristics can be distinguished amongst European theme park attractions?
2. Which attraction categorisation(s) can be developed based on these attraction characteristics?
3. How do these attraction categorisations relate to existing attraction categorisations, as discussed in chapter three?

4.2 – Research Design

In this research project, as discussed in paragraph 3.6, an inductive research approach will be taken in order to develop a suitable categorisation, utilising an explorative factor analysis to explore the common factors regarding relatively objectively determined attraction characteristics (Bryman & Bell, 2007; Levin & Fox, 2006).

A matrix of attraction characteristics will be created with the use of desk research into currently operating European theme park attractions (for an overview of population and sampling, see paragraph 4.4). Distinguishable attraction characteristics will be added to the matrix for each attraction in a semi-iterative process. Each new characteristic that gets added to the matrix will not only be included for the attraction that introduced it to the matrix, but to all other attractions in the matrix as well. For instance, if Fata Morgana, a dark ride at the Efteling, leads to the inclusion of the characteristic indoor, all attractions currently included in the matrix will also be scored on this characteristic (and will most likely be characterised as being not indoor, i.e. outdoor).

Characteristics based on literature will be included (as discussed in paragraph 3.5), with additional characteristics added as they appear. Additional characteristics will be named and defined according to the researchers judgement, in accordance with standard exploratory research practices (Malhotra & Birks, 2007).

4.3 – Operationalisation of Attractions

Definitions of the concept of theme park attractions are scarce at best, despite the attempts at attraction categorisation described in chapter three. The plethora of different theme park attractions does, however, insinuate that the authors of these categorisations have used their own definitions of this concept. Whereas Anton Clavé (2007) felt that 3D / 4D cinemas should be considered to be shows and not attractions, Van Oest et al. (2010) did include a 3D / 4D cinema in their list of attractions. Desk research shows that theme parks themselves also appear to use various definitions of attractions, as the Statue of Liberty at Heide Park is considered to be an attraction whereas thematic / decorative elements are not considered attractions by, for instance, Disneyland Paris. On the other hand, Port Aventura lists all stations of its steam train as separate attractions whereas de Efteling lists its steam train as one attraction despite the fact that it features multiple stations as well.

Based on various insights from the theme park industry and akin to Lukas' (2008) concept of the theme park and the theme park attraction as a machine, theme park attractions are operationalised (for this research project) as follows;

Mechanical attractions located in a theme park with the purpose of entertaining theme park visitors with or without the use of thematic / decorative elements yet without relying solely or primarily on live actors.

It must be noted that this operationalisation is specifically designed to exclude solely thematic and / or decorative elements such as the Statue of Liberty at Heide Park yet includes cinematic attractions such as 3D / 4D cinemas (which were classified as shows, not theme park attractions, by Anton Clavé, 2007).

4.4 – Population and Sample Size

In this research project, the population is formed by all European theme park attractions that currently operate. The exact population size is difficult to determine due to the varying definitions of a theme park in use, yet can be estimated using data from the Roller Coaster Database. At the time of writing, the Roller Coaster Database contained records of 367

amusement parks currently operating in Europe (Marden, 2010a).⁵ According to the Roller Coaster Census Report, these 367 European amusement parks contain a total of 683 roller coasters currently operating (Marden, 2010e). Considering that roller coasters are only one of many types of theme park attractions (Anton Clavé, 2007), it is estimated that the number of currently operating European theme park attractions is in the thousands.⁶

Considering the explorative research approach, it is difficult to determine a sample size in advance (Bryman & Bell, 2007; Costello & Osborne, 2005; Veal, 2006). However, a sample size of 300 or more would suffice for a factor analysis (Field, 2009).

In creating the data file, an approach of continually adding new attractions to the matrix until no new characteristics can be added will be followed (cf. Bryman & Bell, 2007). In order to set a target and create a reliable categorisation, the aim will be to include all attractions of the top 20 European theme parks in the matrix. It is believed that the majority of theme parks in Europe looks at the top European theme parks for inspiration when it comes to new attractions (Cornelissen, 2009) and that the attractions located within the top 20 are representative of all European theme park attractions.

4.5 – Data Collection Strategy

Data will be collected through desk research of European theme park attractions. Based on the researcher's intimate knowledge of the European theme park industry and a myriad of sources varying from online resources to industry publications, data will be collected regarding the characteristics of a significant number of European attractions.

4.6 – Analytical Techniques

An explorative approach will be taken in order to detect the factors that can be derived from the attraction characteristic matrix (cf. Baarda & De Goede, 2006; Bryman & Bell, 2007; Levin & Fox, 2006). More precisely, a principle component analysis will be performed (cf. Field, 2009; Malhotra & Birks, 2007).

⁵ It must be noted that the definition of amusement park as used by the Roller Coaster Database is far from strict, including every facility that currently operates or has operated in the past at least on roller coaster (based on personal communication with the database owner).

⁶ For instance, Europa-Park, a stable top five European theme park (TEA/AECOM, 2010; TEA/ERA, 2009, 2008, 2007) features 55 different attractions (when regarding the operationalisation of theme park attractions as adhered to in this report), of which only 10 are roller coasters. Furthermore, Disneyland Park, the number one European theme park (TEA/AECOM, 2010; TEA/ERA, 2009, 2008, 2007) features 29 different attractions (when regarding the operationalisation of theme park attractions as adhered to in this report), of which only 4 are roller coasters.

Chapter 5 – Discussion of Results

The results of the research project will be presented and discussed in this chapter. The first paragraph will present details regarding the sample and sample characteristics. An overview of the attraction characteristics used during the research process will be provided in the second paragraph, with the results of the attraction categorisation being presented and discussed in paragraph 5.2. Finally, the attraction categorisation will be placed into context by comparing it to already existing attraction categorisations in the final paragraph of this chapter.

5.1 – Description of the Sample

As discussed in the previous chapter, the sample consists of all attractions (cf. the theme park attraction operationalisation as presented in paragraph 4.3) of the top 20 European theme parks. Using the attendance reports by TEA/AECOM (TEA/AECOM, 2010; TEA/ERA, 2007, 2008, 2009), the 22⁷ European theme parks presented in table 5.1 were included (in order of 2009 attendance).

As can be seen in table 5.1, ownership of the top 22 European theme parks is limited to six types of ownership. It is interesting to note that seven of these theme parks are privately owned and an equal number are owned by Merlin Entertainments Group, the largest theme park operator in Europe (TEA/AECOM, 2010). Additionally, three of the top 22 European theme parks are owned by various investors, two are owned by the Walt Disney Company, another two are owned by Parques Reunidos and one park is owned by Company des Alpes (see, also, table 5.2). Of the total of 649 theme park attractions in the sample, 34,8% are part of privately owned parks; 33,0% of the sample's attractions are owned by Merlin Entertainments Group, 10,9% are part of parks owned by various investors, 10,8% are owned by Parques Reunidos, 6,0% are owned by The Walt Disney Company and the remaining 4,5% are owned by Compagnie des Alpes.

⁷ Data from the past four attendance reports was used to establish the consistency of the top 20 theme park listing in Europe. Over this period of four years, the only changes in the top 20 were the removal of two theme parks due to stricter regulations for inclusion (a fixed entry fee has now become a prerequisite for inclusion in the European top 20). Due to this regulation, Blackpool Pleasure Beach and Bakken were removed from the list, leading to the inclusion of Attractiepark Duinrell and Chessington World of Adventures. Seeing that this prerequisite is not in place for this research project, Blackpool Pleasure Beach and Bakken were included, as were Attractiepark Duinrell and Chessington World of Adventures, leading to a sample of all theme park attractions of 22 European theme parks.

Table 5.1 – Description of the sample consisting of the top 22 European theme parks, comprised using the TEA/AECOM attendance reports from the past four years. The theme parks marked in grey have been removed from the list due to stricter regulations, as detailed in footnote seven.

Nr	Park Name	Country	Owner	#
01	Disneyland Park	France	The Walt Disney Company	29
02	Europa-Park	Germany	Privately Owned	55
03	De Efteling	The Netherlands	Privately Owned	28
04	Tivoli Gardens	Denmark	Various Investors	26
05	Liseberg	Sweden	Privately Owned	34
06	PortAventura	Spain	Various Investors	29
07	Gardaland	Italy	Merlin Entertainments Group	29
08	Walt Disney Studios Park	France	The Walt Disney Company	10
09	Alton Towers	United Kingdom	Merlin Entertainments Group	30
10	Phantasialand	Germany	Privately Owned	22
11	LEGOLAND Windsor	United Kingdom	Merlin Entertainments Group	32
12	Thorpe Park	United Kingdom	Merlin Entertainments Group	30
13	Parc Asterix	France	Compagnie des Alpes	29
14	Futuroscope	France	Various Investors	16
15	LEGOLAND Billund	Denmark	Merlin Entertainments Group	30
16	Mirabilandia	Italy	Parques Reunidos	30
17	Parque de Atracciones	Spain	Parques Reunidos	40
18	Heide-Park	Germany	Merlin Entertainments Group	40
19	Attractiepark Duinrell	The Netherlands	Privately Owned	18
20	Chessington World of Adv.	United Kingdom	Merlin Entertainments Group	23
21	Blackpool Pleasure Beach	United Kingdom	Privately Owned	37
22	Bakken	Denmark	Privately Owned	32

Table 5.2 – Summary of ownership of the top 22 European theme parks and the 649 theme park attractions found in these theme parks.

Owner	Parks	Parks	Attr.	Attr.
Privately Owned	7	31,8%	226	34,8%
Various Investors	3	13,6%	71	10,9%
The Walt Disney Company	2	9,1%	39	6,0%
Merlin Entertainments	7	31,8%	214	33,0%
Parques Reunidos	2	9,1%	70	10,8%
Compagnie des Alpes	1	4,5%	29	4,5%

In order to gain an overview of the general variety of theme park attractions in the entire sample, the sample attractions were divided into one of six main theme park attraction types, which ever suited best. The sample contains 106 roller coasters, 65 dark rides, 54 water rides, 263 flat rides, 34 cinematic attractions and 124 transportation / tour attractions. A definition of these attraction types can be found in appendix one. The distribution of attraction types among the 22 sample theme parks can be found in table 5.3.

Table 5.3 – A summary of the number of attractions that fall within one of the six main attraction types for each of the top 22 European theme parks.

Park Name	Roller Coaster	Dark Ride	Water Ride	Flat Ride	Cinematic Attraction	Transport / Tour Attr.
Disneyland Park	4	11	0	4	2	7
Europa-Park	10	10	3	18	1	13
De Efteling	4	10	1	7	2	6
Tivoli Gardens	4	2	0	17	0	3
Liseberg	4	3	2	20	1	3
PortAventura	6	0	4	13	1	3
Gardaland	5	3	3	11	1	6
Walt Disney Studios Park	2	2	0	2	3	1
Alton Towers	7	3	3	10	1	6
Phantasialand	5	3	4	8	1	1
LEGOLAND Windsor	2	1	2	14	2	11
Thorpe Park	6	0	3	18	1	2
Parc Asterix	6	2	4	12	0	5
Futuroscope	0	0	1	2	12	1
LEGOLAND Billund	2	0	4	12	1	10
Mirabilandia	6	2	6	12	0	4
Parque de Atracciones	6	2	3	19	2	8
Heide-Park	7	0	3	17	0	13
Attractiepark Duinrell	2	0	3	8	0	4
Chessington World of Adv.	4	3	1	12	0	3
Blackpool Pleasure Beach	8	6	2	12	0	9
Bakken	5	2	2	15	3	5
Totals	106	65	54	263	34	124

The attraction characteristics used in this research project will be presented and discussed in the following paragraph. Subsequently, a further analysis of the theme parks and attractions included in the sample can be found in paragraph 5.3.

5.2 – Attraction Characteristics

5.2.1 – The Model's Attraction Characteristics

Various attraction characteristics have been used in this research project, including the majority of the attraction characteristics identified in paragraph 3.5. These characteristics have been translated into universal characteristics that can be applied to any particular theme park attraction. Additionally, attraction characteristics were added to the data file for each and every unique or defining aspect of a particular theme park attraction. By doing so, a list of 113 attraction characteristics was produced. All attractions in the sample were manually scored on each of these 113 attraction characteristics, which resulted in the data file that was subsequently used for the determination of an attraction categorisation (as will be discussed in the next paragraph). A summary of the attraction characteristics can be found below. Due to the number of variables, a detailed overview of all variables has been moved to appendix one.

The first six variables relate to the five attraction classifications presented in the previous paragraph.

Variables seven through nine regard the attraction's seasonality (as discussed in paragraph 3.5), by indicating whether the attraction can be considered indoor, partially indoor / partially outdoor, or outdoor.

The minimum and maximum height for each attraction were also registered.

Variables twelve through nineteen relate to certain movements that an attraction can feature, including inversions, rotational movement, circular movement, vertical movement, swaying movement, swinging movement and extremely rapid acceleration.

Subsequently, the existing of a pre and / or post show is recorded, accompanied by information regarding the main attraction – whether the guest is seated, seated & floorless, inverted, standing, and / or walking.

Various variables pertaining to show are also recorded, included three variables relating to audio, three variables relating to lighting and lighting effects, the use of

theatrical smoke and / or smoke effects, the use of illusions, the presence of an on-ride photo, whether or not the attraction can be considered a visual landmark, the presence of animatronics and / or live actors and whether or not the attraction offers scenic and / or elevated views.

Variables 41 through 53 relate to the theme of an attraction. Theming has been divided in several categories, based on the content the theming has been drawn from, by various authors (a.o. Gottdiener, 2001). A review of these categorisations has been made by Bryman (2004), who has distilled the following main categories of theming (p. 18); place, time, sport, music, cinema, fashion, commodities, architecture, natural world, literature, and morality or philosophy. An additional category was added for attractions that had no apparent theme.

Subsequently, sixteen variables regarding the degree of theming were included, based on a suggestion by Cornelis (2010c). These variables pertained to the theming of the attraction's name, signage, landscaping, entrance, architecture, queue line, interior architecture, ride, transportation system, staff members, live entertainment, sound, music, ambient conditions and food & beverage and retail locations. Whether or not factors such as eye for detail (cf. Lukas, 2008), distraction, secondary layer of meaning, and / or explicit storytelling were met was also recorded. A conclusion was then made whether or not the attraction was considered to be themed, based on the fact if it scored five points or more on the ten dimensions of theming (Cornelis, 2010c).

Variables regarding landscaping, storytelling, intellectual properties, know characters and / or stories, interactivity, competitive effects and whether or not the attraction was educational in nature were also recorded.

Various effects used in attractions were registered in variables 85 through 91, including water effects, air effects, scent effects, pyrotechnic effects, vibration effects, scare effects and the sensation of moving air.

The final variables all regarded attraction statistics such as maximum height, maximum speed, length, duration, maximum theoretical capacity, maximum g-force, height of investment and year of opening.

More details, including definitions, of these attraction characteristics can be found in appendix one. All variables in the latter category (being maximum height, maximum speed, length, duration, maximum theoretical capacity, maximum g-force, height of investment and year of

opening) had missing cases due to a lack of available information. All other variables are available for all 649 cases.

5.2.2 – Literature-Based Attraction Characteristics

In paragraph 3.5, ten attraction characteristics were identified based on an analysis of relevant literature. Eight of these characteristics have been included. Thrill factor has been operationalised into minimum height (of guest), maximum height (of guest), number of inversions, sensation of moving air, maximum height (of attraction), maximum speed and maximum g-force. Additionally, rotational movement, circular movement, vertical movement, swaying movement, swinging movement and extremely rapid acceleration were measured as well (cf. Brown, 2002). Degree of theming has been operationalised in the ten dimensions of theming as suggested by Cornelis (2010c). Additional variables were added for micro-theming (eye for detail), secondary layer or meaning within the theming, explicit storytelling and to distinguish between theming and decoration (cf. Cornelis, 2010c). Subsequently, the nature of the theme (cf. Bryman, 2004; Gottdiener, 2001; Wong & Cheung, 1999) has been measured through twelve theme categories developed by Bryman (2004). Story and storytelling has been included as such. Seasonality has been operationalised as a measure of indoor, partially indoor / partially outdoor and outdoor. Education has been included as such. Intellectual properties has been included as such. Park fit is implicitly included since all information pertaining to the park's other attraction is also included into the data file.

Wanhill's (2008b) characteristics of market and imagescape were not included in this research process due to the amount of historical information needed to properly assess these two variables. Especially considering that the oldest attraction in the sample was opened in 1904 and over two-thirds of the sample has been in operation before 2000, including these two characteristics would have been unproportionately time consuming however valuable this information might have been.

5.3 – Attraction Categorisation

5.3.1 – Principal Component Analysis

In order to extract a limited number of components from the dataset, a principal component analysis has been performed (cf. Field, 2009; Malhotra & Birks, 2007). Even though the core assumptions underlying a principal component analysis require that the observed indicators are measured continuously, are distributed normally and that the associations among indicators are linear (Field, 2009), a principal component analysis can also be used on dichotomous instead of interval data (see, among others, Garson, 2010; Tabachnick & Fidell,

2007; Te Grotenhuis & Van der Weegen, 2009).⁸ For reasons of clarity, all variables that were measured on interval level have been recoded into dichotomous data prior to the principal component analysis.⁹

In total, 79 variables (all without missing cases) were inserted into the principal component analysis. The decision was made to omit all variables with missing cases (cf. Field, 2009) and the six variables regarding attraction classification from the principle component analysis in order to respectively maintain the integrity and explorative nature of the model. Using Kaiser's criterion (the default determination for the number of factors when using SPSS) a total of 26 components were found with an explained variance of approximately 71,8%.

Unfortunately, the Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett's test of sphericity resulted in an error indicating that the matrix was non-positive definite. This error indicates, among others, that the results from the principal component analysis could not be trusted (Field, 2009). In order to attain a reliable result, the correlation matrix was analysed and all variables with less than four correlations of ,30 or greater were removed from the principal component analysis (cf. Field, 2009).¹⁰ The variable reduction resulted in a model comprising of 30 variables.

This model featured a Kaiser-Meyer-Olkin measure of sampling adequacy of ,909 which is well within acceptable boundaries (Hutcheson & Sofroniou, 1999). Additionally, Bartlett's test of sphericity yielded a significance score of ,000 (with an approximate chi-square of 11243,414 and 435 degrees of freedom) which is more than acceptable (Field, 2009).

Using Kaiser's criterion a total of five components were found with an explained variance of approximately 59,64%. However, considering the scree plot (as depicted in figure 5.1) as well as the relatively large sample size, it would seem more appropriate to use Cattell's stricter criterion (cf. Costello & Osborne, 2005; Field, 2009). When applying the most commonly used interpretation of Cattell's criterion (Field, 2009), the scree plot (as depicted in figure 5.1 on the

⁸ Te Grotenhuis & Van der Weegen, for instance, state that "mathematically, a dichotomous variable has the same characteristics as an interval variable" (2010:14). Tabachnick and Fidell further substantiate this point by arguing that "dichotomous variables can have only linear relationships with other variables; they are, therefore, appropriately analyzed by methods using correlation in which only linear relationships are analyzed" (2007:6).

⁹ Minimum height, for instance, has been recoded from interval level (measuring the exact required minimum height in centimeters) to dichotomous level (measuring whether or not a minimum length was required).

¹⁰ Please refer to appendix two for an overview of the principal component analysis of all variables and information regarding the variable reduction. The non-positive definite error indicated that the matrix was to be considered unstable to a certain degree. This can be solved either by increasing the number of cases or by decreasing the number of variables (cf. Field, 2005). The decision was made to decrease the number of variables, due to practical limitations. By removing variables with low correlation scores, the overall matrix score and stability is increased, resolving the non-positive definite issue (cf. Field, 2005). In addition, highly correlated variables (indicating singularity) should be removed as well. However, the data set did not contain highly correlation variables, leading to the sole removal of variables with low and limited correlation scores.

right) indicated that either three or four components would be the most optimal solution. An analysis of both variants and components (cf. Field, 2009) led to the conclusion that four components would be the most optimal solution because of a larger explained variance and clearer components.

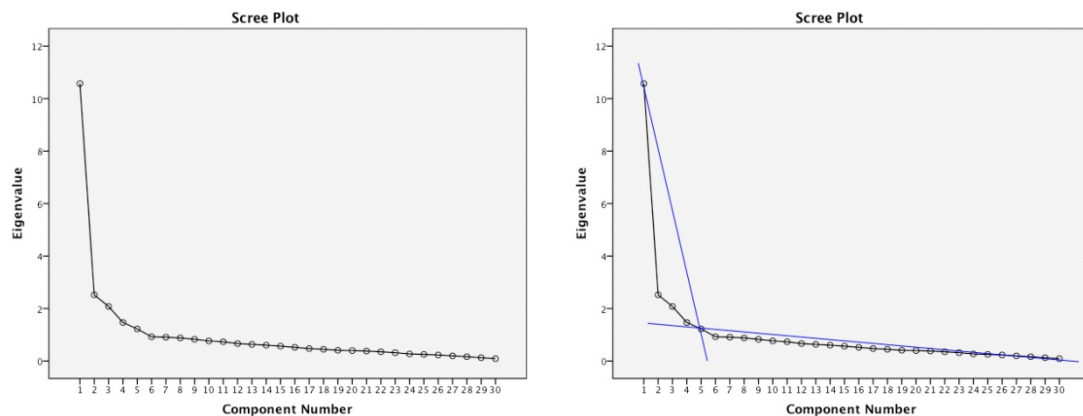


Figure 5.1 – Scree plot (left) and scree plot with Cattell's guidelines (right).

The principal component analysis with four components yielded an explained variance of 55,5% and produced the four components as shown in table 5.4 when only variables with a factor loading of ,40 or higher were included (cf. Field, 2009; Malhotra & Birks, 2007; Stevens, 2009).

The items that cluster on the same components suggest that component one represents indoor attractions with sound and lighting effects featuring animatronics and scenic views. Component two primarily represents various measures of theming. Component three represents attractions based on movies and / or known characters and stories. The fourth component represents attractions with a pre-show, advanced storytelling and various special effects. Naming the components appears to be very hard, due to several overlapping variables and a lack of distinguishing marks. The components will therefore be further explored and tested in paragraph 5.3.2. A more detailed account of the principal component analysis used to derive these components can be found in appendix four.

Table 5.4 – Four components derived from the principal component analysis. All variables with a varimax rotated loading of ,40 or higher have been included and are sorted by loading-size. All variables marked in grey load on more than one component.

Component 1		Component 2	
Ambient Lighting	,774	Theming	,863
On-Ride Music	,735	Theming 4	,790
Audio Effects	,718	Decoration	-,716
Indoor	,682	Theming 3	,653
Outdoor	-,678	Theming 9	,567
Lighting / Laser FX	,663	Eye for Detail	,558
Theming 8	,625	Theming 6	,552
Animatronics	,576	Theming 10	,497
Darkness	,531		
Scenic Views	,471		
Illusions	,428		
<i>Explained Variance</i>	<i>18,13%</i>	<i>Explained Variance</i>	<i>14,95%</i>

Component 3		Component 4	
Theme Cinema	,762	Story / Storytelling Q	,677
Known Char. / Story	,754	Pre-Show	,644
Secondary Layer	,695	Air Effects	,547
Explicit Storytelling	,624	Explicit Storytelling	,541
Story / Storytelling	,595	Story / Storytelling	,485
Use of Dialogue	,459	Illusions	,452
		Smoke / Smoke FX	,409
		Theming 10	,400
<i>Explained Variance</i>	<i>11,39%</i>	<i>Explained Variance</i>	<i>11,00%</i>

5.3.2 – Attraction Categories in Detail

The principal component analysis as detailed in paragraph 5.3.1 had yielded four components that are difficult to name and appear to overlap to a certain extent. To test the degree of exclusiveness and exhaustiveness of these components, they will be tested against seven different theme park attractions from the sample. These attractions have been selected from the sample to best display the variance in the sample and will be briefly described below;

PETER PAN'S FLIGHT. This inverted dark ride is located at Disneyland Park. The attraction is completely indoor and has no height requirements. The attraction features swaying motion. On-ride music, dialogue, animatronics, illusions, ambient lighting and lighting / laser effects are used. Scenic views are provided. The attraction's theme is cinema-based and the attraction's name & signage, entrance & architecture outside, queue & architecture inside, ride / transport system, staff members, sound / music and ambient conditions are themed. The attraction features micro-theming (eye for detail), offers a secondary layer or meaning and utilises explicit storytelling. A known character / story is used, which is also considered to be an intellectual property.

FJORD-RAFTING. This sit-down water ride, which is fully outdoor, is located at Europa-Park. The minimum height requirement for this attraction is 100 centimetres; there is no maximum height requirement. The attraction features full rotational movement. An on-ride photo is present, as are lighting / laser effects and smoke effects. The attraction's theme is location-based and the attraction's name & signage, landscaping, entrance & architecture outside, queue & architecture inside, ride / transport system and staff members are themed. The attraction features water effects and / or the risk of getting wet.

BLUE TORNADO. This inverted roller coaster is located at Gardaland. The attraction is completely outdoor and has a minimum height requirement of 140 centimetres and a maximum height of 200 centimetres. The attraction features five inversions as well as an on-ride photo. An elevated view is available and the attraction can be considered to be a visual landmark. The attraction has a theme based on commodities and its name & signage, landscaping, entrance & architecture outside and ride / transport system are themed. The attraction features water effects and provides the sensation of moving air.

FATA MORGANA. This sit-down dark ride is located at De Efteling. The attraction is completely indoor and has no height requirements. On-ride music, dialogue, audio

effects, animatronics, illusions, ambient lighting, lighting / laser effects and darkness are used. Scenic views are provided. The attraction's theme is literature-based and its name & signage, entrance & architecture outside, ride / transport system, sound / music, ambient conditions and F&B / merchandise location are themed. The attraction features micro-theming (eye for detail), offers a secondary layer or meaning and utilises a known character / story. Scent effects are in use.

ICE BLAST. This sit-down & floorless flat ride is located at Pleasure Beach, Blackpool. The attraction is completely outdoor and has a minimum height requirement of 132 centimetres. The attraction features sole vertical movement as well as rapid acceleration / a launch. The attraction provides an elevated view. The attraction has no apparent theme and is not decorated. Riders experience the sensation of moving air.

RABBIT RIVER. This sit-down transportation / tour attraction is located at Liseberg and is partially indoor, partially outdoor. No height requirements are in place. The attraction features full rotational movement. On-ride music, audio effects and animatronics are utilised. Scenic views are provided. The attraction's theme is based on the natural world and its name & signage, landscaping, entrance & architecture outside, ride / transport system and sound / music are themed.

ROCK 'N' ROLLER COASTER. This sit-down roller coaster is located at Walt Disney Studios and is fully indoor. The minimum height requirement is 120 centimetres. The attraction features three inversions and rapid acceleration / a launch. A pre-show is included and on-ride music, dialogue and audio effects are in place. The attraction utilises illusions, ambient lighting, lighting / laser effects, darkness and smoke / smoke effects. An on-ride photo is available. The attraction's theme is music-based and its name & signage, entrance & architecture outside, queue & architecture inside, ride / transport system, staff members, sound / music, ambient conditions and F&B / merchandise location are themed. The attraction features micro-theming (eye for detail) and utilises explicit storytelling. A known character / story is used, which is also considered to be an intellectual property. Riders experience the sensation of moving air.

When attempting to categorise these seven attractions into the four components presented in paragraph 5.3.1, it soon becomes apparent that several of these attractions can be divided into several components. Peter Pan's Flight, for instance, scores positive on nine out of the eleven variables contained in component one. It also scores positive on seven out of the eight variables contained in component two, all six variables contained in component three and

three of the eight variables contained in component four. Similar results can be found for all seven tested attractions, as can be seen in table 5.5.

Table 5.5 – Scores of seven theme park attractions on the four components. Scores per component indicate the number of variables in that component on which the attraction scores positive.

Attraction	Component 1	Component 2	Component 3	Component 4
Peter Pan's Flight	9 out of 11	7 out of 8	all variables	3 out of 8
Fjord-Rafting	1 out of 11	5 out of 8	none	1 out of 8
Blue Tornado	none	1 out of 8	none	none
Fata Morgana	all variables	6 out of 8	3 out of 6	1 out of 8
Ice Blast	none	none	none	none
Rabbit River	5 out of 11	1 out of 8	none	none
Rock 'n' Roller Coaster	9 out of 11	all variables	3 out of 6	6 out of 8

The results in table 5.5 clearly indicate that the categories derived from the principal component analysis are neither mutually exclusive nor exhaustive. Ice Blast, for example, did not have a single positive score for any of the variables in either four components. When using the four components as a categorisation, this would mean that Ice Blast could not have been categorised and that the categorisation thus cannot be deemed exhaustive. Two other attractions could not be categorised either, albeit for another reason entirely; they can be placed in several categories. Rock 'n' Roller Coaster has high scores on component one, component two and component four. Peter Pan's Flight has high scores on component one and component two. This clearly indicates that the model is far from mutually exclusive.

Even though the categorisation cannot be used for future research into the effects of new attractions on theme park performance, it has demonstrated the variety of theme park attractions in existence and the subsequent difficulty of successfully categorising theme park attractions. A reflection on the research results as well as recommendations for future research will be presented in the following chapter.

Chapter 6 – Discussion, Conclusions and Recommendations

This chapter contains the discussions of the results presented in chapter five as well as the conclusions and recommendations stemming from these results. Comments regarding the scientific / societal relevance of the research project as well as reflecting comments regarding the research process will be given throughout this chapter, where appropriate. A reflection on the general research questions can be found in the final paragraph of this thesis.

6.1 – Attraction Characteristics

A total of 105 attraction characteristics were included in the data file, 57 of which are based on literature (as discussed in paragraph 3.5) and a subsequent 48 were accumulated through a process of inclusion on appearance. Definitions of all variables can be found in appendix one. Analysis of the data file led to the exclusion of 28 variables based to missing cases (due to limited resources and / or limited availability of data). Another six variables were excluded to maintain the explorative nature of the analysis. A principal component analysis was performed on the 79 remaining variables, leading to unsatisfactory results. The Kaiser-Meyer-Olkin measure indicated that the number of variables was too large. Subsequently, all variables with limited correlations, leading to instability of the analysis, were removed. The following 30 variables were retained;

Indoor, Outdoor, Pre-Show, On-Ride Music, Use of Dialogue, Audio Effects, Animatronics, Illusions, Scenic Views, Ambient Lighting, Lighting / Laser Effects, Darkness, Smoke / Smoke Effects, Theme | Cinema, Theming | Entrance & Architecture Outside, Theming | Queue & Architecture Inside, Theming | Staff Members, Theming | Sound / Music, Theming | Ambient Conditions, Theming | F&B / Merchandise Location, Eye for Detail, Secondary Layer or Meaning, Explicit Storytelling, Theming, Decoration, Story / Storytelling, Story / Storytelling Q, Known Character / Story, Air Effects, Scare Effects.

Definitions of the above-listed variables (as well as information regarding the variables that were removed from the principal component analysis) can be found in appendix one. An overview of removed variables and their correlations can be found in appendix two.

In the end, 17 of the 57 variables based on literature were included in the principal component analysis, along with 13 of the 48 variables included on occurrence. It is important to note that the 75 variables that were not included in the analysis were not necessarily insignificant as a separate entity; they were removed to maintain the significance and stability of the principle component analysis as a whole. Twenty-eight variables were not included in

the analysis due to missing values, six were not included in the analysis to protect its explorative nature and the remainder of the variables were removed because they correlated insufficiently with the other variables and thus negatively influenced the strength of the principal component analysis.

Unfortunately, the necessary removal of variables appears to have led to an apparent overrepresentation of variables related to theming and / or elements of theming and thus a simultaneous underrepresentation of variables relating to other theme park attraction characteristics. Considering the emphasis on themed as well as non-themed attractions in two out of the three attraction categories discussed in paragraph 3.3 (i.e. Anton Clavé, 2007; Van Oest, et al., 2010), it appears as though the necessary removal of variables has led to a model that covers only part of the variety in theme park attractions.

This specific issue presents concrete opportunities for future research; there are three main methods in an attempt to prevent at least part of the necessary removal of variables. The first method would be to increase the sample size ¹¹, thereby improving the robustness of the model and thus most likely decreasing the need to remove variables from the principle component analysis (Costello & Osborne, 2005; Field, 2009). The second option would be to increase the number of variables pertaining to other attraction characteristics than theming. This would, however, not be advisable because this would destroy the research project's exploratory and unprejudiced nature whilst maintaining the need for a larger sample (Costello & Osborne, 2005; Field, 2009; Malhotra & Birks, 2007). The third option would be to reduce the overall number of variables in the data set while maintaining the integrity and meaning of the original variables as such. There are several clusters of variables that appear to pertain to similar concepts, such as the variables on-ride music, use of dialogue, audio effects and the presence of themed sound and / or music (which all appear to pertain to sound or the human sense of hearing). If these variables can be theoretically or empirically related, a single dichotomous measure could be developed for each concept in a manner similar to the creation of the theming and decoration variables. This would decrease the number of variables, which would in turn yield a more robust principle component analysis (Costello & Osborne, 2005; Field, 2009).

It would thus be interesting for future research to go beyond the scope of this research project and use an increased sample size in an attempt to maintain additional variables in the principal component analysis. Alternative, it would be similarly interesting to attempt to reduce the number of variables in order to increase variable variety in the principal component

¹¹ With 79 variables and 649 cases, the primary principal component analysis had a ratio of 8,22:1. Even though this is a decent and in essence sufficient ratio according to Costello & Osborne (2005), a larger sample size and thus a larger ratio would most likely be beneficial to the primary component analysis results. However, sample size regarding principle component analyses remains an area of much debate with a contemporary consensus of sample sizes of 300 or larger being sufficient (Field, 2005).

analysis. Even though neither proposed method would guarantee success in any way (as will be explained in paragraph 6.3), it will be a next step in exploring the opportunities for empirical attraction categorisation.

6.2 – Attraction Categorisation

The principal component analysis performed on the 30 variables mentioned in the previous paragraph featured a Kaiser-Meyer-Olkin measure of sampling adequacy of ,909 which is well within acceptable boundaries (Hutcheson & Sofroniou, 1999). Additionally, Bartlett's test of sphericity yielded a significance score of ,000 which is more than acceptable (Field, 2009). Based on Cattell's criterion, a division in four components was favoured above the five categories that resulted from the use of Kaiser's criterion. The principal component analysis with four factors yielded an explained variance of 55,5% and produced four components when only variables with a factor loading of ,40 or higher were included (cf. Field, 2009; Malhotra & Birks, 2007; Stevens, 2009).

Unfortunately, naming the components appears to be very hard, due to several overlapping variables and a lack of distinguishing marks. A further analysis of the four components subsequently demonstrated that the components were not simultaneously collectively exhaustive and mutually exclusive, which is a necessity in order to ensure the applicability and usefulness of the categorisation (cf. Cornelis, 2010a; Field, 2009). It should thus be concluded that the categorisation, even though statistically significant, is not applicable in future research regarding the theme park industry.

6.3 – Reflection on the General Research Question

After having answered the research questions in paragraph 6.1, it is now time to provide an answer to this research project's general research question;

Which empirically founded attraction categorisation can be developed for application in research regarding the impact of a new attraction on theme park performance?

The purpose of this research report was to develop an empirically founded attraction categorisation for use in future research regarding the impact of new attractions on theme park performance. As Cornelis (2010a) argued, "classifying attractions has proven to be a very complex and seemingly impossible task" (p. 26). The challenge was to develop an attraction categorisation that was at the same time manageable, unpretentious and both collectively exhaustive as well as mutually exclusive.

Even though extensive data collection with regards to 649 different European theme park attractions took place and extensive explorative factor analysis was performed, no categorisations meeting the objectives could be reached. This was in part due to the necessary removal of variables from the principal component analysis, which led to an overrepresentation of variables pertaining to theming and / or elements of theming, as discussed in paragraph 6.1. The proposed methods of increasing either the number of variables or the variety of variables in the principle component analysis will undoubtedly have a positive effect on our insight in European theme park attractions, however, there is no guarantee that these proposed methods would lead to a satisfactory categorisation of theme park attractions.

It must be taken into consideration that no empirically founded, mutually exclusive and collectively exhaustive attraction categorisations have been developed to date. The two category model by Van Oest et al. (2010) contained too few categories to enable generalisations to the population, Wanhill's (2008a) categorisation did not do justice to the diverse nature of theme park attractions by merely looking at market and imagescape and the prototype approach classification by Anton Clavé (2007) can not be considered collectively exhaustive and mutually exclusive nor can it be applied to research in regards to the effects of new attractions on theme park performance. Additionally, neither of these categorisations appears to have a solid empirical base.

This by no means evidences that the creation of a mutually exclusive and collectively exhaustive attraction categorisation is impossible. It does indicate that it is highly difficult to do so – with or without empirical backing. Within the theme park industry hundreds of theme park attraction typifications are in existence. There are dozens of different types of roller coasters alone (Marden, 2010e), which generally make up only a small percentage of all theme park attractions (Anton Clavé, 2007). And the number of theme park attraction typifications continues to grow, as the theme park industry has a tendency for developing new ideas and previously unthought-of concepts to continually amaze their customers (see, among others, Anton Clavé, 2007; Ford & Milman, 2000; Imagineers, 1996, 2010; Lukas, 2008; O'Brien, 2005). This tendency will also continuously challenge attraction categorisations and, in reality, makes it difficult to produce a collectively exhaustive and mutually exclusive categorisation that will withstand the test of a creative industry.

At the same time, despite the industry's continuous investments in previously un-thought of attractions – or perhaps as part of – theme parks are not immune to the broader concept of de-differentiation as described by Lash (1990). Williams (2003) aptly summarises this concept by stating that “formerly clear distinctions are eroded as cultural, social, economic and geographic spheres increasingly overlap” (p. 22). Boundaries between theme parks and other types of leisure, and even leisure and everyday working life, become ever more flexible and

unclear, leading to changing business strategies and consumer behaviour (see, among others, Bryman, 2004; Hesmondhalgh, 2007). This has, naturally, also affected the manner in which theme parks operate.

Apart from the macro and meso effects associated with de-differentiation (refer to, among others, Lash, 1990; Williams, 2003 for more information regarding de-differentiation), the concept of de-differentiation has a distinct micro-effect within the area of theme park attractions as well. In the previous years, various so-called 'hybrid attractions' have been introduced, transcending traditional attraction typification borders. Good examples would be The Flying Dutchman at Efteling, TH13TEEN at Alton Towers or Universal Studios' The Mummy attractions (D. Barnes, Young, Hutson, & Linder, 2010). These attractions feature elements of several general attraction typifications. The Flying Dutchman, for instance, features elements from a roller coaster, a walk-through section as well as a water ride section. TH13TEEN features elements from a roller coaster, a dark ride as well as a drop ride.

Additionally, shifting boundaries have led to the addition of attractions previously only sparsely encountered in the theme park industry, such as the recent addition of a SEA LIFE aquarium to Alton Towers. At the same time, midway attractions incorporate theme park attractions such as roller coasters (Amsterdam Dungeon) or dark rides (LEGOLAND Discovery Centres), indoor theme parks expand outdoors (Toverland) and water parks plan to include roller coasters in their offer (Siam Park). All these developments have led to an ever more unclear view of the theme park industry and its differentiation from other leisure industries as well as everyday life.¹²

These developments, and the subsequent new attraction types that are introduced based on these developments, only add to the already existing difficulty of categorising theme park attractions.

6.4 – Closing Remarks

All in all, this attempt to achieve an attraction categorisation meeting all previously formulated demands was – to a certain extent – unsuccessful. As argued in this final chapter, various factors are suspected to have at least partially caused this situation. With regards to theme park research, acquiring reliable and extensive data sets is seen to be a considerable challenge (see, among others, Hogley, et al., 2005). With regards to this study and as argued

¹² Think of, for instance, the introduction of consumer 3D televisions, providing 3D experiences, that were once exclusive to leisure locations, to the consumer's living room.

in paragraph 6.1, an increase in the number of cases and / or the creation of a greater variety within variables could significantly improve results.

At the same time, the theme park industry's continuous development of unique and previously un-thought of attractions has created a situation in which it appears to be nearly impossible to develop a collectively exhaustive and mutually exclusive categorisation that will withstand the test of a creative industry. One must also take into consideration the effects that macro trends such as de-differentiation have on the leisure industry in general and new theme parks in particular. The recent appearance of so-called 'hybrid attractions' (i.e. attractions that incorporate characteristics of various traditional attraction typifications) would be a good example of eroding traditional borders and distinctions that complicate the development of an attraction categorisation, yet many more examples are in existence, as argued in the previous paragraph, significantly complicating the contemporary leisure landscape.

Despite the unsuccessful nature of this study's attempt to formulate an empirically founded attraction categorisation, it was successful in adding to the contemporary academic research relating to the theme park industry and it was successful in creating a deeper insight into this industry. Additionally, it has argued in favour of and served to demonstrate an empirical method of developing an attraction categorisation, as opposed to the current attraction categorisations that appear to be largely unfounded and thus cannot be used in future research projects. The author cordially invites researchers to build on this study, or to explore other aspects of the theme park industry.

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Appendix 1 – Definitions of Attraction Characteristics

For this research project, attractions have been operationalised as follows;

Mechanical attractions located in a theme park with the purpose of entertaining theme park visitors with or without the use of thematic / decorative elements yet without relying solely or primarily on live actors.

Please note that an attraction's queue line is not treated as part of the attraction but as a separate entity.

Roller Coaster – The attraction features a gravity-driven ride vehicle (that is, in some occasions, supported by a propulsion system) that traverses a fixed and constrained course, designed to evoke a thrilling sensation amongst guests. Roller coasters need to be listed as such on the Roller Coaster Database.

Darkride – An indoor attraction relying heavily on theming to convey a certain atmosphere or story. Darkrides may have various transport systems, themes and levels of theming.

Water Ride – A water-propelled, water-based or water-focussed attraction that generally (though not always) features a risk of getting wet for the guest. A water ride's prime feature involves – in one manner or another – water.

Flat Ride – A common type of theme park attraction, often also referred to as a thrill ride, which features certain types of movement. Flat rides need not rely on thrills but can be family attractions as well.

Cinematic Attraction – An attraction based around a movie or other cinematic form of media. Various subtypes such as 360-degree films, 3D or 4D films and ride simulators are in existence.

Transportation / Tour Attraction – A type of attraction that primarily serves to either transport guests from point A to point B or back again, or that primarily provides a scenic tour of the park or a part thereof.

Indoor – The attraction is located completely indoor or covered from exposure to sunshine, precipitation and other weather influences.

Indoor & Outdoor – The attraction is located partially indoor or covered from exposure to sunshine, precipitation and other weather influences and partially outdoor. Also: The attraction is only partially covered from exposure to sunshine, precipitation and other weather influences.

Outdoor – The attraction is located completely outdoor, unshielded from exposure to sunshine, precipitation and other weather influences.

Min Height – The guests' minimum height required to gain access to the attraction. *Recoded into whether (1) or not (0) a minimum height requirement is in place.*

Max Height – The maximum height for guests, above which no entrance can be gained to the attraction. *Recoded into whether or not a maximum height requirement of 160 cm or less is in place (Max Height Kiddie) and whether or not a maximum height requirement of 190 cm or more is in place (Max Height Thrill). No values in between 160 cm and 190 cm were registered.*

Number of Inversions – The number of times a guest is inverted or turned completely upside down and back again during an attraction. Should the number of inversions vary per attraction cycle, 99 will be input into the model. ¹ *Recoded into whether or not the attraction features inversions.*

Swinging Movement – The attraction features a swinging or pendulum movement.

Swaying Movement – The attraction features a swaying motion (from left to right or vice versa) during the course of the attraction.

Rotational Movement [Full] – The attraction features full 360-degree rotational movement of the guest.

Rotational Movement [Limited] – The attraction features limited yet easily discernable rotational movement of the guest.

¹ This would be the case for attraction types that are partially gravity-driven, such as, for instance, a Top Spin attraction. These attraction feature a different number of inversion per attraction cycle, depending highly on the total passenger weight, the passenger weight distribution and weather conditions.

Circular Movement – The attractions features circular movement.

Vertical Movement (Only) – The attraction features vertical movement (up, down or both) without any additional movements at the time of the vertical movement. This would exclude, for example, a roller coaster since this type of attraction generally features both vertical motion as well as forward motion at the same time.

Launch / Extremely Rapid Acceleration – The attraction features either a launch or another type of extremely rapid acceleration.

Pre-Show – An experience is provided to the guest prior to the beginning of the actual advertised attraction. A pre-show differs from a queue line in that the pre-show offers an added value, generally in the form of an introduction to the attraction or the attraction's story, to the attraction experience-wise.

Sit-Down – The guest is seated during the attraction.

Sit-Down & Floorless – The guest is seated during the attraction, with no floor available.

Inverted – The guest is inverted below the ride track or attraction during the ride.

Standing / Stand-Up – The guest is standing or held in a stand-up position during the attraction.

Walk Through – The guest is required to traverse the ride track by him- or herself without the use of a ride vehicle.

Post-Show – An experience is provided to the guest after the ending of the actual advertised attraction. A post-show is relatively similar to a pre-show in the sense that it adds to the attraction experience-wise. Post-shows are generally sponsored and interactive in nature.

On-Ride Music – Music is played during the ride cycle and can be clearly heard by guests currently on the ride.

Use of Dialogue – Dialogue is used during the attraction.

Audio Effects – Audio effects other than on-ride music or dialogue (as defined above) are used during the attraction.

Visual Landmark – The attraction can also be regarded as a visual landmark in the sense that it is a recognisable and recognized landmark observable from outside of the park boundaries.

Animatronics – The attraction incorporates audio-animatronic figures.

Live Actors – The attraction incorporates live actors on a regular basis.

Illusions – The attraction utilises large-scale illusions involving the guest. An example of such an illusion would be the madhouse illusions or a pepper's ghost effect.

Elevated Views – The attraction provides guests with relatively unrestricted (i.e. above tree line) elevated views over the park or the park's surroundings during the ride cycle.

Scenic Views – The attraction provides guests with (unobstructed) scenic views of tableaux, scenery or theming.

On-Ride Photo – The attraction incorporates an on-ride photograph that can be purchased by the guest after riding.

Ambient Lighting – The attraction features ambient lighting during normal operations, not including special operating seasons (e.g. nocturnal openings, the Halloween or holiday season or midsummer night openings).

Lighting / Laser Effects – The attraction features lighting and / or laser effects during normal operations, not including special operating seasons (e.g. nocturnal openings, the Halloween or holiday season or midsummer night openings).

Darkness – The attraction incorporates the use of artificially created and intentional darkness independent of daylight circumstances as well as during normal operations, not including special operating seasons (e.g. nocturnal openings, the Halloween or holiday season or midsummer night openings).

Smoke / Smoke Effects – The attraction features smoke and / or smoke effects during normal operations, not including special operating seasons (e.g. nocturnal openings, the Halloween or holiday season or midsummer night openings).

For the purpose of this research project, theming has been operationalised as follows;

The concept of theming consists of the application of a narrative to theme parks or theme park attractions. Typically, the source of the theme is external to the theme park or theme park attraction it is applied (cf. Bryman, 2004).

Theming has been divided in several categories, based on the content the theming has been drawn from, by various authors (a.o. Gottdiener, 2001). A review of these categorisations has been made by Bryman (2004), who has distilled the following main categories of theming (p. 18);

Place – Nations, cities or even planets.

Time – Past, present and future. Images of the past are mined particularly for the sense of *nostalgia* they are frequently designed to evoke.

Sport – Sport generally, as well as individual sports.

Music – Rock music and genres, such as Motown or country and western.

Cinema – The movies generally, as well as particular genres or influential figures.

Fashion – Clothes and models.

Commodities – Such as cars and motorbikes.

Architecture – Iconic buildings.

Natural World – Symbolic natural environments, such as the rainforest and savannah, as well as volcanoes.

Literature – Well known literary figures, such as Sherlock Holmes, Jekyll and Hyde, as well as fairy tales.

Morality or Philosophy – Such as notions of conservation.

All attractions that appear to have either theming or decoration will be divided into the most suitable of the categories listed above. They will subsequently be scored on the measures of theming listed below. Attractions that do not appear to have a theme will be scored as such and will not receive a score for the measures of theming (Cornelis, 2010) listed below.

Theming | Name & Signage – The name of the attraction and all signage relating to the attraction are consistent with the attraction's theme.

Theming | Landscaping – The surroundings of the attraction and the attraction's queue line are landscaped in accordance with the attraction's theme.

Theming | Entrance & Architecture Outside – The entrance of the attraction as well as the outside of the attraction's buildings (including station building and / or show building), as far as it is observable from guest areas, is themed in accordance with the attraction's theme.

Theming | Queue & Architecture Inside – The queue line and the inside architecture of the attraction (excluding the ride itself) are themed in accordance with the attraction's theme.

Theming | Ride / Transport System – The attraction itself is themed in accordance with the attraction's theme. The attraction's transport system is themed in accordance with the attraction's theme.

Theming | Staff Members – The attraction's staff members are themed (through uniforms / costumes or other methods) in accordance with the attraction's theme.

Theming | Live Entertainment – Within the attraction or the attraction's queue line, live entertainment is used to further develop the attraction's theme.

Theming | Sound / Music – Within the attraction or the attraction's queue line, sound and / or music is used which is in accordance with the attraction's theme.

Theming | Ambient Conditions – "Ambient conditions include background characteristics of the environment such as temperature, lighting, noise, music, scent and color" (Zeithaml & Bitner, 2003, p. 297). The attraction's ambient conditions are in accordance with the attraction's theme.

Theming | F&B / Merchandise Locations – Food & beverage and / or merchandise locations in the near vicinity of the attraction are used to further develop and sustain the attraction's theme.

Eye for Detail – The attraction's theming is not limited to the macro level as detailed in the above listed ten criteria, but exist on a micro level ("the nuances of details that might be noticed by a patron in the most obscure and unexpected places") as well (Lukas, 2008, p. 79).

Distraction – Whether (1) or not (0) distractions exist with regards to theming that interrupt the escapism or experience created through theming. Distractions are generally found in one or more of the ten dimensions of theming listed above.

Secondary Layer or Meaning – Whether (1) or not (0) a secondary layer or meaning is present within the theming for guests with pre-existing knowledge of the story, character or other element the theming is based upon.

Explicit Storytelling – The attraction utilises explicit storytelling to convey a structured and concise story (consisting of a beginning, [spanningsboog] and a plot).

Theming – The attraction is themed, meaning that it complies with the above stated definition and scores at least five points based on the above ten measurements of theming.

Decoration – Decoration can be distinguished from theming by the lack of application of a narrative; decoration merely serves as to improve the visual attractiveness of an object or location without the pretention of conveying a narrative. For this research project, decoration has been operationalised as a score of four or less on the ten dimensions of theming listed above.

Landscaping – The landscape surrounding the attraction and the attraction's queue line has been artificially enhanced through landscaping (i.e. modifying the visible features of an area of land).

Story / Storytelling – The attraction utilises storytelling to convey a structured and concise story (consisting of a beginning, [spanningsboog] and a plot).

Story / Storytelling Q – The attraction's queue line utilises storytelling to convey a structured and concise story or to provide a background to the attraction's storyline.

Intellectual Property – The attraction features an intellectual property. In this context, the term intellectual property refers to a well-known character or story, generally part of popular culture, which has gained great popularity and forms a strong brand. Such intellectual properties generally originate from the film, television, cartoon or video games industry.

Educational / Learning Experience – A major goal of the attraction is to educate the guests that ride it. An educational message is carried within the attraction.

Known Character / Story – The attraction features a known character and / or story, which does not fit the definition of an intellectual property. Examples would be general fairytales (the Walt Disney adaptations are considered intellectual property) or stories passed down for generations.

Interactivity – The guest is enabled to influence the attraction in any possible way thus changing the attraction experience (as compared to the attraction experience when no guest input is provided).

Interactivity Q – The guest is enabled to influence the queue line experience in any possible way (as compared to the queue line experience when no guest input is provided).

Competition / Competitive Effects – The attraction features the element of competition or competitive effects which enable and / or entice guests to compete against themselves, each other or any other third party.

Competition / Competitive Effects Q – The queue line features the element of competition or competitive effects which enable and / or entice guests to compete against themselves, each other or any other third party.

Water Effects / Risk of Getting Wet – The attraction features water effects (either artificially created or natural) and / or incorporates the risk of getting wet.

Air Effects – The attraction features air effects (e.g. wind blowing in one's face or a gust of air coming from the rear).

Scent Effects – The attraction incorporates scent effects, through which scents are exposed to the guest.

Pyrotechnic Effects – The attraction incorporates pyrotechnic effects (for instance, yet not limited to, fire).

Sensation of Moving Air – The attraction features the natural (meaning non-artificial) sensation of moving air coming into contact with the guest's body, as one would experience on a roller coaster. This does not include air effects and artificially created moving air.

Vibrating Effect – The attraction incorporates a vibrating effect, which is used to provoke movement as well as a reaction in the guest. An example would be seat vibrations at 4D cinemas.

Scare Effects – The attraction features effects that were specifically designed to elicit scares from guests.

Subsequently, various variables regarding attraction statistics were registered yet not included into the principal component analysis due to multiple missing values. These variables pertained to maximum speed, maximum height, maximum g-force, length of attraction, duration, height of investment and year of opening.

Appendix 2 – Principal Component Analysis Variable Reduction

The detailed information regarding the variable reduction of the principal component analysis, as discussed in paragraph 5.3.1. Detailed information regarding the definitive principal component analysis can be found in appendix four. Variables were removed from the principle component analysis if they had less than four correlations of ,30 or higher in the correlation matrix. A complete list of removed variables including the (number of) correlations these variables had in the first principal component analyses can be found below;

FIRST RUN. Indoor & Outdoor (1 → Outdoor), Minimum Height (2 → Outdoor, Sensation of Moving Air), Max Height – Kiddie Attractions (none), Max Height – Thrill Attractions (1 → Inversions), Inversions (2 → Max Height – Thrill Attractions, Sensation of Moving Air), Swinging Movement (none), Swaying Movement (2 → Sit-Down, Inverted), Full Rotational Movement (none), Limited Rotational Movement (none), Circular Movement (1 → Scenic Views), Sole Vertical Movement (3 → Sit-Down, Sit-Down & Floorless, Elevated View), Launch / Extremely Rapid Acceleration (none), Sit-Down & Floorless (2 → Sole Vertical Movement, Sit-Down), Inverted (2 → Swaying Movement, Sit-Down), Standing / Stand-Up (2 → Sit-Down, Walk Through), Walk Through (2 → Sit-Down, Standing / Stand-Up), Post-Show (2 → Theme | Morality or Philosophy, Educational / Learning Experience), Visual Landmark (none), Live Actors (1 → Theming | Live Entertainment), Elevated View (1 → Sole Vertical Movement), On-Ride Photo (1 → Sensation of Moving Air), Theme | Place (none), Theme | Time (none), Theme | Sport (none), Theme | Music (none), Theme | Commodities (none), Theme | Architecture (none), Theme | Natural World (none), Theme | Literature (none), Theme | Morality or Philosophy (2 → Post-Show, Vibrating Effect), Theming | Name & Signage (3 → Theme | No Apparent Theme, Theming | Entrance & Architecture Outside, Theming | Ride / Transport System), Theming | Landscaping (3 → Scenic Views, Theming | Entrance & Architecture Outside, Landscaping), Theming | Ride / Transport System (2 → Theme | No Apparent Theme, Theming | Name & Signage), Theming | Live Entertainment (1 → Live Actors), Distraction (2 → Theming | Entrance & Architecture Outside, Theming | Landscaping (1 → Theming | Landscaping), Intellectual Property (2 → Theme | Cinema, Known Character / Story), Educational / Learning Experience (2 → Pre-Show, Post-Show), Interactivity (1 → Competition / Competitive Effects), Interactivity Q (1 → Competition / Competitive Effects Q), Competition / Competitive Effects (1 → Interactivity), Competition / Competitive Effects Q (1 → Interactivity Q), Water Effects / Risk of Getting Wet (none), Scent Effects (2 → Air Effects, Scare Effects), Pyrotechnic Effects (none), Vibrating Effect (3 → Theme | Morality or Philosophy, Story / Storytelling, Air Effects).

SECOND RUN. Sit-Down (none), Theme | No Apparent Theme (2 → Theming | Entrance & Architecture Outside, Decoration), Sensation of Moving Air (1 → Outdoor).

The detailed results of the reduced variable principal component analysis can be found in appendix three.

Appendix 3 – Final Principal Component Analysis

Table A4.1 – The results from the KMO and Bartlett's tests.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,909
Bartlett's Test of Sphericity	Approx. Chi-Square	11243,414
	df	435
	Sig.	,000

Table A4.2 – The total variance explained for the four components.

Total Variance Explained									
Comp onent	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Varianc e	Cumula tive %	Total	% of Varian ce	Cumulat ive %	Total	% of Varianc e	Cumula tive %
1	10,573	35,242	35,242	10,573	35,242	35,242	5,440	18,132	18,132
2	2,521	8,405	43,646	2,521	8,405	43,646	4,484	14,946	33,079
3	2,078	6,926	50,573	2,078	6,926	50,573	3,418	11,393	44,471
4	1,470	4,900	55,473	1,470	4,900	55,473	3,300	11,001	55,473

Extraction Method: Principal Component Analysis.

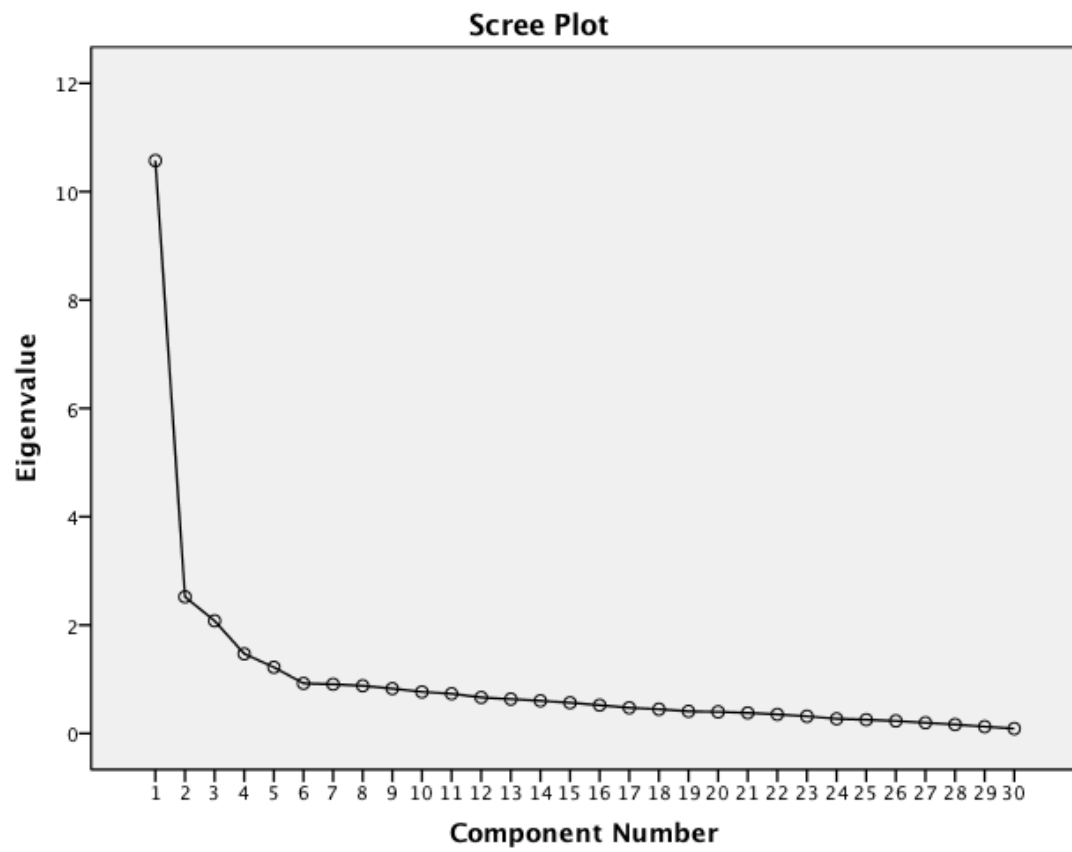


Figure A4.1 – Scree Plot

Table A4.3 – The rotated component matrix.

Rotated Component Matrix ^a				
	Component			
	1	2	3	4
Ambient Lighting	,774			
On-Ride Music	,735			
Audio Effects	,718			
Indoor	,682			
Outdoor	-,678			
Lighting / Laser Effects	,663			
Theming Sound / Music	,625			
Animatronics	,576			
Darkness	,531			
Scenic Views	,471			
Theming (Recalculated)		,863		
Theming Queue & Architecture Inside		,790		
Decoration (Recalculated)		-,716		
Theming Entrance & Architecture Outside		,653		
Theming Ambient Conditions		,567		
Eye for Detail		,558		
Theming Staff Members		,552		
Theming F&B / Merchandise Location		,497		,400
Theme Cinema			,762	
Known Character / Story			,754	
Secondary Layer or Meaning			,695	
Explicit Storytelling			,624	,541
Story / Storytelling			,595	,485
Use of Dialogue			,459	
Story / Storytelling Q				,677
Pre-Show				,644
Air Effects				,547
Illusions	,428			,452
Smoke / Smoke Effects				,409
Scare Effects				

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 9 iterations.

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