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Original Article

Heritage branding orientation: The case of Ach. Brito and the dynamics between corporate and product heritage brands

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ABSTRACT

The notion of heritage branding orientation is introduced and explicated. Heritage branding orientation is designated as embracing both product and corporate brands and differs from corporate heritage brand orientation which has an explicit corporate focus. Empirical insights are drawn from an in-depth and longitudinal case study of Ach. Brito, a celebrated Portuguese manufacturer of soaps and toiletries. This study shows how, by the pursuance of a strategy derived from a heritage branding orientation, Ach. Brito – after a prolonged period of decline – achieved a dramatic strategic turnaround. The findings reveal how institutional heritage can be a strategic resource via its adoption and activation at both the product and corporate levels.
Moreover, the study explains how the bi-lateral interplay between product and corporate brand levels can be mutually reinforcing. In instrumental terms, the study demonstrates how heritage can be activated and articulated in different ways. For instance, it can reposition both product and/or corporate brands; it can be meaningfully informed by product brand heritage and shape corporate heritage and can be of strategic importance to both medium-sized and small enterprises.


**Keywords:** heritage brand; corporate heritage; brand heritage; brand orientation; heritage branding orientation; materiality

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**INTRODUCTION**

Our article introduces the notion of an organisation-wide *heritage branding orientation*. Corporate heritage has received increased interest in the literature recently and it has been defined generally as unique institutional traits of an organisation that concurrently embrace the three timeframes of past, present and future (Balmer et al., 2006; Urde et al., 2007; Balmer, 2013a; Burghausen and Balmer, 2014b). It constitutes a potential or actual corporate asset that can be leveraged for brand management purposes such as corporate brand positioning and differentiation (Urde et al., 2007; Balmer, 2011a, 2013a). To be of strategic efficacy, a corporate heritage brand requires the appropriation and valorisation of the corporate past into corporate heritage for brand strategy purposes by a company over time. Consequently, heritage brands constitute a distinct brand category defined by specific characteristics (Urde et al., 2007).

Extant contributions in the literature have focused on heritage at the corporate level (for example, Balmer et al., 2006; Urde et al., 2007; Balmer, 2011a, 2013a; Burghausen and Balmer, 2014b) or – to a lesser degree – on heritage as a phenomenon related to product/service brands in consumer marketing (for example, Hakala et al., 2011; Wiedmann et al., 2011a, b). Yet, while the literature on corporate heritage brands has articulated various normative frameworks for the successful management of corporate heritage brands, little empirical insights exist pertaining to the adoption process of corporate heritage *at both product and corporate levels*. To address these gaps we have set a twofold purpose for our research:

1. To explore and illuminate the interplay between heritage branding at the corporate level and the level of product brands.
2. To address the way in which a latent corporate heritage (that is, the not yet appropriated and not yet valorised corporate past) can be strategically adopted and articulated at both levels.

This article builds upon a longitudinal case study of the company Ach. Brito, a small manufacturing company of soaps and toiletries in the North of Portugal that for many years had endured prolonged decline. While moving through different stages of corporate heritage adoption, the company used its latent corporate heritage not only for the strategic repositioning of an ailing domestic product brand – turning it into an internationally successful premium product heritage brand (Claus Porto) – but also achieving a strategic turnaround for the entire company and accomplishing a significant market success in its domestic market as well as overseas, entering 50 countries, in just 10 years.
Our findings indicate that corporate heritage-based branding can simultaneously span the product and the corporate levels. More specifically, our case shows that the interplay between these levels in terms of heritage articulation can be self-reinforcing and create a valuable dynamic for strategic change driven by heritage branding. On basis of Ach. Brito’s different stages of corporate heritage adoption we illustrate that the corporate past can be uncovered and successfully activated as corporate heritage for product brands and the corporate brand alike; both being of strategic efficacy for the firm.

In theoretical terms, our findings are consistent with the notion of corporate heritage – as a potential strategic resource for branding (Balmer et al., 2006; Urde et al., 2007) – and the idea of brand orientation, where brands are seen as taking on an organisation-wide strategic significance (Urde, 1994, 1999). As such, this article underlines the empirical and conceptual efficacy of combining corporate heritage scholarship with the concept of product/service brand orientation as suggested by Balmer (2013a) who noted the prospective importance of corporate heritage brand orientation. However, based on our findings this article goes beyond the extant literature in that it contributes the notion of what we suggest to label an organisation-wide and holistic heritage branding orientation. This company-wide and holistic orientation, we argue, at once embraces the institutional corporate heritage as a unified strategic resource relevant for branding at both the product and the corporate level.

We define heritage branding orientation as a particular organisation-wide shared understanding and disposition that is informed by and accords central strategic and cultural significance to corporate heritage as a basis for an integrative and holistic brand strategy at the product and corporate level, which functions as a focal point of reference for an organisation’s strategy, identity and culture.

We continue with an overview of the relevant literature before we outline the methodology and report our findings and their implication for theory and practice in the subsequent sections of this article.

RELATED LITERATURE

Heritage branding at the corporate and the product level

The corporate marketing literature on heritage branding

The first and most prominent stream of research is an emerging subfield vis-à-vis heritage within the broader research domain of corporate marketing (see Balmer, 1998, 2001, 2009b, 2011c; Balmer and Greyser, 2003, 2006) and has mainly discussed the instrumental relevance and conceptual efficacy of corporate heritage in particular and different types of historical references in general (for example, Urde et al., 2007; Blombäck and Brunninge, 2009; Balmer, 2011b, 2013a; Burghausen and Balmer, 2014b).

As such, extant work has variously focused on corporate heritage brands (for example, Balmer et al., 2006; Urde et al., 2007; Balmer, 2009a, 2011a; Hudson, 2011; Hudson and Balmer, 2013; Schroeder et al., 2015) and more recently discussed the notion of corporate heritage identity management (Balmer, 2011b; Burghausen and Balmer, 2014a, 2015; Balmer and Chen, 2015) and corporate heritage communication per se (for example, Balmer, 2013a; Blombäck and Brunninge, 2013; Blombäck and Scandelius, 2013).

The nascent field of corporate heritage scholarship has burgeoned recently, not least with a number of important contributions in this journal (Balmer et al., 2006; Urde et al., 2007; Balmer, 2011a; Wiedmann et al., 2011b; Balmer and Chen, 2015; Balmer and Burghausen, 2015b;
Bargenda, 2015; Cooper et al., 2015a, b; Rindell et al., 2015; Schroeder et al., 2015; for a recent overview see Balmer and Burghausen, 2015a).

The general argument, which has been advanced by corporate marketing scholars in particular, is that corporate heritage is a unique institutional trait – or collection of traits – of an organisation (Balmer et al., 2006; Balmer, 2011a, 2013a; Burghausen and Balmer, 2014b). This particular institutional trait, which concurrently embraces the three timeframes of past, present and future, is imbued with contemporary meaning and future relevance because of a degree of perceived ‘timelessness’ and it constitutes a potential or actual corporate asset and strategic resource that can be leveraged for – among others (for example, corporate communication/corporate heritage communication) – brand management purposes such as, for instance, corporate brand positioning and differentiation (Urde et al., 2007; Balmer, 2011a, 2013a). As such, the corporate marketing literature has suggested that corporate heritage brands have the potential to enhance business competitiveness (Urde et al., 2007; Balmer, 2011a; Hudson, 2011; Wiedmann et al., 2011b).

Corporate heritage scholarship has detailed to date general characteristics of corporate heritage brands (see Balmer et al., 2006; Urde et al., 2007; Balmer, 2011b, c, 2013a) in terms of:

1. their omni-temporality and apparent relative invariance despite continuous change,
2. the multiple roles and meanings they accrete over time,
3. their perceived authenticity,
4. the multi-generational stakeholder affinity and reciprocal trust they engender.

While the earlier literature has provided the foundations and outlined key precepts of corporate heritage and corporate heritage brands, advances have been made more recently in a number of conceptual and empirical directions (for a recent overview see Balmer and Burghausen, 2015a).

The consumer marketing literature on heritage branding
A second stream of enquiry is affiliated with consumer marketing and has so far received less attention but has nonetheless intrigued a number of scholars. This area of heritage brand scholarship is concerned either with brand heritage at the product/service level and its impact on brand management and consumer responses (for example, Ballantyne et al., 2006; Beverland, 2006; Simms and Trott, 2006; Alexander, 2009; Hakala et al., 2011; Wiedmann et al., 2011a, b; Balmer and Chen, 2015) or interested in product/service heritage brands per se (for example, Liebrenz-Himes et al., 2007). In this literature brand heritage has been shown, for example:

- to be an important driver for customers’ perceived value of a product/service brand which has a positive impact on cognitive, affective, and intentional consumer responses (Wiedmann et al., 2011a, b; Wuestefeld et al., 2012; Rindell, 2013; Balmer and Chen, 2015; Rindell et al., 2015)
- to be linked to the notion of product/service brand authenticity (Beverland, 2006; Alexander, 2009; Gundlach and Neville, 2012)
- to be associated with stronger emotional and symbolic ties between consumers and a brand (Ballantyne et al., 2006; Simms and Trott, 2006)
- to be particularly pertinent for product/service brands with a premium or luxury value position (Beverland, 2006; Fionda and Moore, 2009).
Two key issues not yet addressed in the heritage branding literature

Our scrutiny of these contributions has identified two important aspects that have not yet been adequately addressed within the extant literature.

First, probably because of their nascent status as areas of enquiry, both streams of research have so far almost exclusively focused on either the corporate level or the product/service level respectively. Yet, an academic concern with the dynamics between both levels (that is, corporate and product) as it relates to corporate heritage and its adoption and activation for brand strategy is largely absent in the extant literature. A relevant exception is Hudson’s (2011) recent empirical study based on a case history of Cunard, where it was shown how an ailing service heritage brand can be given new strategic impetus by drawing on the corporate heritage dimension.

Second, albeit especially the extant literature on corporate heritage brands has articulated various instrumental, cultural and cognitive prerequisites and normative frameworks for the successful management or rejuvenation of usually already established corporate heritage brands (see Urde et al., 2007; Balmer, 2009a, 2011a) little empirical insights have been garnered to date in relation to other process-related aspects of adopting corporate heritage as a strategic priority in branding terms.

Especially the notion of uncovering and activating a latent corporate heritage, while being included in the extant normative frameworks (Urde et al., 2007; Balmer, 2009a, 2011a), requires further empirical scrutiny beyond established corporate heritage brands (Hudson, 2011). We define latent corporate heritage as the not yet uncovered and/or appropriated corporate past which is not yet valorised into corporate heritage (see Burghausen and Balmer, 2014b for the distinction between corporate past and corporate heritage). We see the transformation of latent into ‘actualised’ corporate heritage as a necessary prerequisite for its successful adoption as a strategic resource for branding purposes. Our understanding builds on the notion of a corporate brand with a heritage as espoused by Urde et al (2007).

Heritage brand stewardship as a management orientation

The notion of heritage brand stewardship

In order for corporate heritage brands to be successfully managed, Urde et al (2007) – when further elaborating the notion of heritage brands (Balmer et al., 2006) in a business context – also alluded to a need for heritage brand stewardship based on a particular shared managerial ‘mindset’. This notion of corporate heritage stewardship as a specific managerial ‘mindset’ – a shared understanding among the management team – within an organisation has been conceptually advanced and discussed in subsequent studies as a fundamental prerequisite for the successful establishment and management of corporate heritage-based brands (Balmer, 2009a, 2011a) and identities (Burghausen and Balmer, 2014a; Balmer and Burghausen, 2015a). More recently Balmer (2013a) suggested that such organisations imbued with corporate heritage are characterised by a company-wide corporate heritage brand orientation that also includes employees (as much as the management team). As such, it has recently been suggested that corporate heritage always also constitutes organisational heritage in terms of its relevance for organisational identification (Balmer and Burghausen, 2015b).

To us, this notion is to some degree closely associated with the broader idea of a company-wide brand orientation (Urde, 1994, 1999) to which we turn next.
Brand orientation as a strategic imperative

The idea of brand orientation was first developed in the early 1990s (Urde, 1994) and subsequently advanced by Urde (1999). On the basis of these early foundations, brand orientation as a marketing concept has attracted the interest of a growing number of academics over the last 10 years or so (for example, Hankinson, 2000, 2001, 2002; Wong and Merrilees, 2005, 2007, 2008; Napoli, 2006; Baumgarth, 2010; Gromark and Melin, 2011; Urde et al, 2013; Wallace et al, 2013) and has been probed within diverse sectoral and organisational settings (for an overview see Evans et al, 2012; Baumgarth et al, 2013; Balmer, 2013b).

This particular type of strategic orientation denotes ‘the extent to which the organization [sic] embraces the brand at a cultural level and uses it as a compass for decision-making’ (Evans et al, 2012, p. 1471). In this way, the brand functions as a strategic platform for the alignment of external market demands with internal resources and capabilities (Urde, 1999) within the guiding framework of the brand’s core values and the brand’s identity both imbuing the organisation with strategic integrity (Urde et al, 2013). As such, brand-oriented organisations accord strategic relevance to brands as a strategic asset that needs to be developed, carefully managed and protected (Urde, 1999). It represents both a ‘mindset’ and a management approach (Hankinson, 2002) and, as such, combines aspects of management philosophy and management behaviour (Evans et al, 2012).

There is potential for further conceptual differentiation into different types of brand orientation. For example, Balmer (2013b) formally introduced the notion of corporate brand orientation while Baumgarth et al (2013) called for further empirical work within different contexts per se. Consequently, a cross-fertilisation with other marketing concepts, such as, for instance, corporate marketing (Baumgarth et al, 2013) or corporate heritage branding (Balmer, 2013a) has been suggested recently.

These observations lend further support to the purpose of our article, because, often the literature is not only ambiguous as to whether brand orientation is centred on product brand portfolios or the corporate brand (Balmer, 2013b) but also in regard to the dynamics between both levels. Consequently, the formal introduction of the notion of a corporate brand orientation as being distinct from the (implicit) product brand focus of the traditional brand-orientation canon (Urde, 1994, 1999) heralds a more specific treatment of branding at the corporate and product level (and the interactions between both), which is also relevant for corporate heritage scholarship (Balmer, 2013a).

METHODOLOGY

In our study we largely followed the methodological precepts of the qualitative and interpretative research paradigm (Denzin and Lincoln, 2011). For that purpose we employed a case study-oriented approach (Stake, 1995; Yin, 2009; Piekkari and Welch, 2011). Such studies are thought to be relevant and effective especially during the earlier stages of conceptual development and critical for the validation of a concept as well as allow the investigation of complex phenomena where context is essential (Yin, 2009). In addition, our methodology was informed by the recent work of Hudson (2011) in that it was partially informed by the principles of historically informed research with a more longitudinal time horizon scrutinised.

We adopted a single-case design because of the lack of extant empirical research as well as the nascent character of the notion of heritage brand orientation in conceptual terms (Stake, 1995, 2005; Gummesson, 2000;
In this respect our study is exploratory (Yin, 2009) yet instrumental (Stake, 2005) for the further development and refinement of this emerging concept within the context of brand management. Our unit of analysis is Ach. Brito and its approach to brand management. The case was purposively chosen for its informational richness, and because we deem it to be a critical case for the aforementioned purpose of our study. A key aspect of case selection is the quality of access to potential data (Yin, 2009). To that end, we gained broad and prolonged internal access to the company’s facilities, archives and key informants.

The process of collection of empirical material started in August 2007 and lasted until July 2014 and was characterised by periodic visits to the field. During our fieldwork data were collected with the help of non-participant observations, interviews, as well as document and archival research. We also collected secondary data about the company (for example, press releases, news in the media). The variety of sources of data and the continued interaction with the literature allowed for multiple forms of triangulation (Flick, 2009; Yin, 2009).

The fieldwork took place at the company headquarters and at different points of sale in the North of Portugal. Owing to the quality of access granted by the company, we were able to conduct formal in-depth interviews with the company’s managers as well as informal ad-hoc interviews with others (for example, employees) in order to corroborate managerial claims. In total, we conducted 25 personal interviews. Interviews with management ranged from 1 to 3 hours while interviews with others lasted between 10 and 40 min. We also had follow-up talks with the company’s managers and maintained contact by email – posing additional questions, exploring emerging issues and preparing the next stages of collection of empirical material. The main purpose of formal and ad-hoc interviews was to gauge the interpretations of interviewees in terms of the relevance of corporate heritage for them and the firm and to investigate how the process of corporate heritage adoption and activation has been unfolded.

By adopting the general logic of interpretive qualitative research, our collection, analysis and interpretation of empirical material took place simultaneously in an iterative way; gradually increasing our theoretical sensitivity ( Alvesson and Sköldberg, 2009; Welch et al, 2011). The prolonged engagement with the data and the field enabled a gradual expansion of the temporal horizon of the research, which facilitated the development of a storied sequence of past events based on historical archives and corroborated and enriched by contemporary accounts. Interpretive content analysis allowed us to thematise the empirical material accordingly (Miles and Huberman, 1984).

**THE CASE: ACH. BRITO AND THE CLAUS PORTO BRAND**

**Growth and decline**

Ach. Brito was founded in 1918, although its origins are closely linked to the first Portuguese factory producing soaps and perfumes from the end of the nineteenth century. Over the years Ach. Brito successfully expanded its business and, up to the 1970s, the company was the market leader in Portugal. However, from the late 1970s to the late 1990s Ach. Brito entered a period of persistent gradual decline in its business which eventually threatened the financial and strategic viability of the company. By the mid-1990s, Ach. Brito had no relevant assets, except some antiquated production machines and a vast archive of materials that included posters, packages and other design materials, as well as formulas and technical documents.
Table 1: Growth and decline (1887–1993)

<table>
<thead>
<tr>
<th>Period</th>
<th>Description</th>
<th>Selected interview quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1887–1925</td>
<td>1887 – Claus &amp; Schweder, the first Portuguese soap factory, was founded by</td>
<td>‘During the epoch, the market for this type of products – soaps and hygiene products – was embryonic. In fact, this type of market in Portugal was non-existent: it was a market with great potential’. (José Fernandes)</td>
</tr>
<tr>
<td>Origin</td>
<td>two Germans living in Portugal.</td>
<td></td>
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<tr>
<td>1914</td>
<td>1914 – Claus &amp; Schweder closes its operations due to the outbreak of the</td>
<td></td>
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<tr>
<td></td>
<td>First World War.</td>
<td></td>
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<tr>
<td>1918</td>
<td>1918 – The former accountant of Claus &amp; Schweder – Achilles de Brito –</td>
<td></td>
</tr>
<tr>
<td></td>
<td>opens the company Ach. Brito, together with his brother.</td>
<td></td>
</tr>
<tr>
<td>1925</td>
<td>1925 – The assets of Claus &amp; Schweder, which included the brand Claus Porto,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>are bought by Ach. Brito in a public auction.</td>
<td></td>
</tr>
<tr>
<td>1926–1973</td>
<td>1953 – Ach. Brito opens its own lithography. The labels and packages</td>
<td>‘The company reached 400 workers. It was a perfectly “vertical company”: it produced everything. The company bought raw materials and produced the base for the soap. [Ach. Brito] produced the crates, developed the design and even had a lithography workshop’. (José Fernandes)</td>
</tr>
<tr>
<td>Growth and</td>
<td>produced in-house for the company’s numerous products and brands, some of</td>
<td></td>
</tr>
<tr>
<td>market leadership</td>
<td>them hand painted, were of such quality that the company started to develop</td>
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</tr>
<tr>
<td></td>
<td>and supply lithographic products to other organisations.</td>
<td></td>
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<tr>
<td></td>
<td>Until 1973 – Ach. Brito thrived as the market leader in Portugal and</td>
<td></td>
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<tr>
<td></td>
<td>developed a complex portfolio of differentiated brands.</td>
<td></td>
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<tr>
<td>1974–1993</td>
<td>1974 – Democratic revolution in Portugal. The company quickly lost access</td>
<td>‘It was a long period, a period with scarce resources … difficulties … we had to close departments, close the lithography … and at the same time trying to maintain the sales … the company had been virtually stagnant since 1974/1975 … there had been no great progress since then …’ (Aquiles de Brito).</td>
</tr>
<tr>
<td>Changing business</td>
<td>to the Portuguese overseas territories, which Ach. Brito had become</td>
<td></td>
</tr>
<tr>
<td>environment and</td>
<td>increasingly reliant on for its sales. After 1974 – As a small manufacturer,</td>
<td></td>
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<tr>
<td>gradual decline</td>
<td>with vertically integrated operational structure and excessive labour costs,</td>
<td></td>
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<tr>
<td></td>
<td>the company was not able to face the fierce competition from multinationals with their mass-produced soaps.</td>
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</table>

Table 1 provides further details and selected quotes about this period.

**Reaching a turning point**

In 1994 Sonia and Aquiles de Brito (the great-grandchildren of the founder) entered the company as the new family owners and management team. At that time, the opportunity arose to cooperate with an American distributor (Lafo) interested in the corporate heritage of the company. As such, the Claus Porto brand was re-launched as a heritage-based product brand for the North American and later the UK markets. Despite the success of this approach, there was no fundamental reorientation within the company throughout the 1990s. Around 2002, Ach. Brito was in an impossible financial and competitive situation. In search of a new strategy and in a last attempt to save the company, Sonia and Aquiles de Brito turned their attention to the inside of the organisation in search of a possible way out of this strategic quagmire. José Fernandes, who is still managing the company today, was hired as the new General Manager in 2002. While taking stock of the few assets the company still possessed, together they began to realise that Ach. Brito was imbued with a unique potential strategic asset: its corporate heritage. As such, Ach. Brito managers started crafting an overall new strategy for the company, based on its corporate heritage, which was to be first centred on a renewed and re-launched Claus Porto product that was already successful in foreign markets. Table 2 provides further details and selected quotes about this period.
Implementing a brand strategy based on corporate heritage

Ach. Brito’s heritage comprehensively informed the re-launch of Claus Porto. For example, inspiration was sought in the past for new product development. Claus Porto’s new products were developed with the best manufacturing processes available in the organisation, with parts of the processes still being manual. The heritage of craftsmanship and high quality of the products’ ingredients was enhanced in the renewed brand. The products became organised by collections, which generally presented some of the following products: solid soaps (with different weights and shapes), liquid soaps, body wash, body cream, aromatic candles and bath salts. Liquid soaps, as well as candles and bath salts were introduced gradually throughout the years to complement the traditional solid soaps that had for long been at the core of Ach. Brito business.
All these products were inspired by some aspect of the corporate past and reinterpreted for contemporary markets.

Further, all brand communication became inspired by the corporate heritage of the company’s graphic and material design. Reinterpreting the company’s rich legacy of design provided constant sources for developing a contemporary brand identity based on that heritage. Product packages, in particular, became a means to articulate the strategic intent defined for the brand. The connection with the heritage of the company is reinforced in the packages of Claus Porto not only through design elements but also with different details that emphasise the singularity of the brand offer. All packages, for instance, were carefully hand wrapped and this creates small irregularities, which would not exist if the products were automatically wrapped in a machine. Also, some packages are sealed with a wax signet applied by hand.

Owing to the scarce financial resources available, the company managers needed to be inventive. For example, Ach. Brito managers personally distributed product samples to a few selected interior design stores that represented an untapped potentially alternative distribution channel. Gradually, Ach. Brito managers realised that products and their distinct packages could gain a central role in the promotional activities of Claus Porto.

Word-of-mouth and media coverage were essential to disseminate Claus Porto to the most diverse geographical markets without the need for investment in expensive advertising campaigns. The brand was introduced to key opinion leaders (for example, TV hosts, fashion and design columnists) some of whom eventually started to promote and recommend the brand, without any financial incentive from Ach. Brito. Claus Porto products started appearing in lifestyle, fashion and interior design magazines all over the world. The scale of the international success of Claus Porto and the turnaround of Ach. Brito as a company generated increased media attention in Portugal as well. This helped Ach. Brito to regain some lost ground in its home market albeit as a niche player with a premium offering rather than as the market leader of yesteryear.

The renewed Claus Porto brand strategy was characterised by being inspired by the corporate heritage (and evidenced in its brand identity) and by its premium positioning. As part of the new branding strategy, the company decided that Claus Porto products were only to be sold at a very select number of points of sale worldwide, many of them interior design stores (after the initial success with that approach). Table 3 provides illustrative quotes for the various aspects mentioned above.

### Heritage and internal change

Initially, the new corporate strategy was met with a lot of scepticism from disillusioned and disaffected employees, who had witnessed the long period of decline of Ach. Brito. There was also a degree of inertia that had built up over many years of stagnation within the organisation. As such, most of the internal stakeholders could not see yet the potential relevance of Ach. Brito’s corporate heritage for the company’s future.

The uncovering of the latent corporate heritage and the purposive employment of this heritage to craft a new corporate strategy had as an underlying second objective the internal reorganisation of the entire company. The production processes were gradually improved, in accordance with the new production demands that resulted from the repositioning of the company’s brands. Also, overcoming employee demotivation and turning their scepticism into involvement with the new heritage-focused strategy was formulated as a central
The participation of internal stakeholders at commercial trade fairs, for example, was one of the means used to influence employees and instigate identification and commitment towards the company and its corporate heritage. The success of Claus Porto, both in Portugal and in international markets; the Ach. Brito managers’ persistent enthusiasm and expressed respect for the corporate heritage, and the continuous internal communication activities emphasising the uniqueness and richness of the corporate past were determinant for engaging internal stakeholders and gradually convincing them of the new strategic direction.

During the fieldwork we observed and recognised that there is now a much higher sense of commitment to the corporate heritage and a growing common purpose within the organisation compared with some years ago. Today, managers and employees seem to regard the company’s corporate heritage as something that they

<table>
<thead>
<tr>
<th>Table 3: Implementing a brand strategy based on corporate heritage</th>
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<tr>
<td><strong>Issue</strong></td>
</tr>
</tbody>
</table>
| New product development | ‘These soaps were the result of a vast internal research work because we used our archives to do everything … all images are true images of what existed here. Concerning the development of formulas… [they] were internally developed by us. Our value cannot rely only on the image. Our objectives are to develop products from scratch, focusing on creating difference. In fact, we have several projects under study in order to develop more products. Always with traditional methods and traditional methods of production’. (José Fernandes)  
‘Our products are the result of a large internal research work because we went to our archives to search for all that is there … not only the package design is inspired by our history but so this happens with some fragrances and other characteristics of the products’. (Mónica Vieito) |
| Distribution       | ‘In a first phase we simply started going to interior design stores in Lisbon and showed the new Claus Porto products. We realised, by reading interior design magazines that these stores where places were journalists would look for new things. It was a personal work, really a door-to-door presentation. We left the soaps and things worked out well…’ (José Fernandes) |
| Communication      | ‘The graphic design, namely of the packages, is one of the fundamental elements of our brand strategy (…). Our design is always inspired by the brand’s history. We have a great richness in our archive that we always try recreating in our design (…). Design allows us to congregate a series of elements that we want to transmit’. (Manager).  
‘The cheapest thing that we have to communicate is the product itself. From a certain moment we realised that by using the product we could communicate – with very low costs to Ach. Brito and accomplishing a strengthening of the brand positioning (…). We wanted to create an impact by doing something that definitely will not be usual: to send soaps to the address of magazine editorial rooms. The usual thing to do would be to place an introduction card. But we didn’t do that. We made people further investigate, if they wanted to. They came to us and started asking questions’. (José Fernandes). |
are responsible for in order to perpetuate it into the future. Informal conversations indicate that a majority within the organisation express now a high degree of respect and affection for the corporate heritage and seem to jointly perceive it as something ‘bigger than we are’; worth to be nurtured and protected for the future. As such, the past of Ach. Brito is cherished with an orientation to the future.

Table 4 provides additional illustrative quotes for the issues mentioned above.

Just a decade after the crafting of the new corporate strategy, Claus Porto is being sold in more than 50 countries, accounting for 40 per cent of Ach Brito’s sales, which have more than tripled within that period reaching 5.5 Mio Euros in 2013. Moreover, following Claus Porto’s re-launch, the corporate brand was repositioned as a corporate heritage brand. Also, different product brands and products lines were launched throughout the years – always with a positioning and identity that is inspired by the corporate heritage.

DISCUSSION
In our scrutiny of the case we focus on three related areas relevant for the main purposes of our article: (i) The adoption of a latent corporate heritage at the product and corporate level and (ii) the developmental stages towards what we eventually (iii) identify as heritage branding orientation.
Corporate heritage adoption and activation for branding purposes

The articulation of corporate heritage through product branding

Ach Brito’s corporate past as the oldest company in the soap and toiletries business in Portugal was essential for the renewal of the Claus Porto brand. For that purpose the company archives were scrutinised and utilised to draw on a miscellaneous mix of elements from the past that were reinterpreted to reposition the Claus Porto brand as a product heritage brand. Although the new identity of the brand was framed as a new brand positioning – with selective distribution and a premium price – it was the latent corporate heritage that was essentially articulated at the product brand level.

Ach Brito’s latent corporate heritage was uncovered through a myriad of material artefacts, for instance, production machines, moulds, tools, furniture, technical documentation that included products formulae, packages, communication displays and the products themselves. Many of these materials were not specifically derived from the Claus Porto brand legacy (that is, product brand heritage) but were rather general elements of the company (that is, corporate brand heritage) or otherwise related to the corporate brand or other different product brands. Claus Porto’s product brand identity and communication resulted from different heritage references from within the company, and articulated as a mesh of corporate traits in a coherent heritage-based proposition to the markets. Thus, material artefacts from the past might assume a critical relevance in terms of heritage adoption and activation (see Hudson, 2011; Burghausen and Balmer, 2014a).

Our study shows that the relevance of corporate heritage activation is not confined to corporate-level concerns but can have utility at the product level as well. In abstract terms, our study shows a relevant ‘downward’ move from the corporate to the product level, which is predicated on reinterpretations and the selective valorisation of more general corporate heritage traits (those of Ach. Brito), which then manifest in concrete product brand elements (those of Claus Porto).

The corporate-level relevance of product heritage branding

Around 2002, the product heritage brand Claus Porto assumed a primary and central role for the activation of the company’s heritage. As such, the tangibility of its products and the successfully communication of the heritage via the product brand Claus Porto became a highly accessible reference point for the organisation. As a strategic reference point Claus Porto proved to be invaluable for the further adoption of a full-fledged company-wide strategy based on the institutional heritage throughout the following years. The product brand was of strategic pertinence at the corporate level because Claus Porto translated and made accessible in an immediate way the more complex and not yet fully uncovered latent corporate heritage of the firm per se. This was relevant inside the organization, as well as externally. Claus Porto stood at the forefront of the renewed commercial offer of Ach. Brito in the early 2000s, leading the way to a further repositioning of the brands of the company and successfully representing in the market the richness of Ach. Brito heritage and its strategic intent. Thus, the case of Ach. Brito illustrates the strategic relevance that a product brand can assume in relation to corporate heritage.

Although there are tentative conceptual discussions (Balmer, 2013a) and limited empirical evidence (Hudson, 2011) in terms of the relationship between the corporate level and the product level, our study provides a compelling example of the potential of a product brand to activate the corporate past as heritage and sustain subsequent processes of articulation of heritage at the corporate level.
The materiality of product brands may more easily embody the tripartite timeframe of past, present and future in a tangible and experiential way. And this might assume a relevance not only for consumers of the product *per se* but – in light of our focus on the strategic relevance of corporate heritage in branding terms – may also be highly meaningful for internal stakeholders. Our study suggests that heritage brands with a positioning characterised by the articulation of corporate heritage at the product level, provide a tangible anchorage for the activities and interests of all stakeholders. The stakeholders’ engagement with the corporate heritage at the material level through the product brand fosters a sense of authenticity, belonging, purpose and relevance that may be even more direct and immediate than through corporate-level branding alone (cf. Balmer, 2011a).

In theoretical terms, in addition to the above mentioned ‘downward’ move from the corporate to the product level in terms of corporate heritage adoption and activation, the identified relevance of the materiality of corporate heritage articulated at the product brand level indicates towards a reverse implication that has strategic pertinence beyond a product heritage brand *per se*. This suggests, that the adoption and strategic activation of corporate heritage is not necessarily a direct one (from corporate heritage to corporate brand/identity) but can also take on significance for the corporate level in an indirect way – via the a product brand that feeds back into strategic branding issues at the corporate level.

**The dynamics between corporate and product heritage brands**

The initial success of the Claus Porto brand repositioning on corporate heritage provided strategic legitimacy for this approach within the firm and also tangible evidence for the efficacy of the corporate heritage as enhancer of business competitiveness. Thus, corporate heritage has gradually taken on a new strategic significance for the entire company.

This new business orientation facilitated the repositioning of the corporate brand Ach. Brito and other product brands of the organisation by fully embracing corporate heritage as the key strategic asset and the one platform for strategic change of the entire company. Concurrently, the success of the Claus Porto branding strategy facilitated cultural change and renewed staff commitment within the firm, which further supported the corporate-level relevance of corporate heritage for the firm.

Over time, the interplay between the heritage-based corporate brand and the different product heritage brands became self-reinforcing and potentiating the relevance of the corporate heritage for the company and its strategic position in different markets. The organisation managed to create synergies within the brand portfolio in terms of communication and distribution.

Moreover, Ach. Brito gradually articulated and utilised the richness and uniqueness of its heritage, for different purposes, for instance, investor relations and engagement with the media and human resources management. The basis for these activities has been the purposive interplay between the heritage-based corporate brand Ach. Brito and the product heritage brands. The repositioned product heritage brands are imbued with authenticity derived from the corporate heritage of Ach. Brito that provides coherence and legitimacy to the entire brand portfolio while the product heritage brands make the corporate heritage immediately accessible in a material form to stakeholders (see above).

Our study shows that corporate heritage is not confined to be utilised for corporate brands or product brands separately, but also that an interplay between the strategic
articulation of corporate heritage both at a corporate and at a product level can be advantageous. In contrast to extant research that has articulated the relevance of heritage for individual brands (corporate or product), our study indicates that corporate heritage can have a much broader relevance for a portfolio of product brands as much as the corporate brand per se.

The use of heritage to craft a new brand positioning was discussed by Hudson (2011), who empirically showed that heritage might be purposively employed to change the positioning of a service brand. The case of Ach. Brito illustrates this process not only in regard to a product brand but also in terms of a corporate brand. Following the repositioning of Claus Porto, Ach. Brito was later also repositioned as a heritage brand and the changes in the positioning of product and corporate brands mutually reinforced each other.

In theoretical terms, the relation between the corporate and product level became a bi-directional one, through the concurrent downward adoption and activation of corporate heritage for product branding and the upward impact of the product heritage brands for corporate-level purposes.

Figure 1 graphically depicts the bi-directional dynamic between corporate heritage adoption/activation at the corporate and product level outlined in the preceding paragraphs.

**Three stages and forms of corporate heritage adoption/activation**

The case of Ach. Brito is particularly insightful in terms of the different ways heritage can be articulated in a corporate setting. We have identified three specific ways of corporate heritage adoption for branding purposes. We regard the stages and the particular form of corporate heritage activation as indicative conceptual lenses that may facilitate future inquiries, rather than as a definitive framework of theoretical and empirical categories.

**Stage 1: Accidental corporate heritage adoption/activation**

The uncovering of Ach. Brito’s latent corporate heritage was very much based on serendipity through the venture of an American entrepreneur that challenged the company managers to develop a few product lines of the Claus Porto brand with an identity based on the historical archives of the organization. At the time, corporate heritage was not seen as a strategic asset but rather as a tactical tool for the relation with a distributor. This kind of articulation of heritage is essentially incidental and although it might contribute to the uncovering of a latent corporate heritage, it is not a full activation of heritage as a strategic resource in the way this notion has been
discussed in the literature (Urde et al., 2007; Balmer, 2009a, 2011a). Nonetheless, in circumstances like those illustrated by the Ach. Brito case it might constitute an important pre-strategic stage in the adoption and activation of corporate heritage over time. As such, the degree of perceived strategic relevance of heritage vis-à-vis external stakeholders and the level of cultural relevance of heritage vis-à-vis identification and commitment within the firm are both low.

**Stage 2: Instrumental corporate heritage adoption/activation**

On a second stage, corporate heritage was utilised in a strategic and purposeful way. Ach. Brito’s corporate heritage became the basis for the new positioning of the Claus Porto brand assuming a broader strategic role for the entire business. With this generic approach, the adoption of corporate heritage for branding purposes is very much a strategic concern for the organisation based on cognisant deliberations in regard to the perceived instrumental purpose of corporate heritage for brand management and strategy (for example, corporate heritage informs a product brand’s positioning and brand identity in light of the strategic objectives of the firm). The activation of corporate heritage at this stage becomes intrinsically motivated based on strategic insight in light of external market conditions and the activation of corporate heritage as a strategic resource. As such, the degree of perceived strategic relevance of corporate heritage for the organisation is higher than it is with the first approach while the cultural relevance of heritage is also increased (because of the commitment of management) but not yet a company-wide orientation.

**Stage 3: Cultural corporate heritage adoption/activation**

Finally, the case of Ach. Brito has also shown that corporate heritage can be approached as a company-wide strategic asset that has pertinence for product branding and corporate-level concerns at once (high strategic relevance of heritage vis-à-vis external stakeholders). As such, this approach is the broadest and most inclusive strategy where corporate heritage assumes the function of a reference point and platform for strategising at both levels. Heritage becomes central to the culture and identity of the company, engaging internal stakeholders and pervading the way the future is envisioned (high cultural relevance of heritage vis-à-vis identification and commitment within the firm). This final approach is a prerequisite for what we label heritage branding orientation, which we address in the final section of our discussion.

Figure 2 summarises the three different stages outlined before.

**The central strategic and cultural relevance of corporate heritage: Heritage branding orientation**

On the basis of the evolution of Ach. Brito we suggest that the adoption of corporate heritage as an all-embracing strategic platform and the concurrent affinity towards corporate heritage as a strategic asset that gradually emerged within the firm is reminiscent of what the literature refers to as brand orientation in general terms or what Balmer (2013b) refers to as corporate brand orientation or more specifically as corporate heritage brand orientation (2013a). This notion, is also consistent with the notion of a shared managerial ‘mindset’ as advanced in the corporate heritage literature.

- **First**, both areas refer broadly to a company-wide shared ‘mindset’ and management approach that is instrumental for the successful management of either heritage brands or brands per se. This is clearly the case with Ach. Brito where the managerial strategic intent was gradually translated
into a company-wide orientation predicated on the strategic appropriation and valorisation of its past as corporate heritage, as the Ach. Brito company fully embraced the corporate heritage as something valuable and valued in the present but also for the future. Especially the notion of heritage brand stewardship has close conceptual affinity with the idea of brand-oriented management, yet with corporate heritage constituting the key asset and resource underpinning the product brands as much as the corporate brand in the case of Ach. Brito.

- **Second**, both areas stress the saliency of the brand identity for the entire organisation and its role as a strategic point of reference. In the case of Ach. Brito, again, this is true for branding at the product but also at the corporate level.

- **Third**, the brand-orientation literature has so far shown to be relevant in diverse empirical contexts and there is – to us – no *a priori* conceptual barrier for its pertinence in terms of heritage branding. More importantly, our case study suggests that the notion of a heritage branding orientation is of efficacy in explicating the empirical phenomena illustrated by the case of Ach. Brito.

Ach. Brito utilised its corporate heritage for internal and external strategic change, based on a clear branding strategy cutting across the product and corporate levels, and it finally adopted corporate heritage as its central strategic point of reference. This adoption of corporate heritage as a strategic asset and platform for branding was predicated on a shared management ‘mindset’ that accorded strategic relevance to the corporate heritage for branding purposes and resulted over time in a company-wide orientation. As such, we argue that the Ach. Brito case represents an empirical exemplar of heritage branding orientation. In this case the strategic orientation of management and the firm is guided by corporate heritage and concurrently articulated through the corporate brand and product brands. The interplay between the levels of corporate and product brands reinforces a central unifying organisational and management orientation that values corporate heritage as the main asset of the company for the present and future.

Our notion of heritage branding orientation expands extant scholarship *vis-à-vis* (product) brand orientation (Urde, 1994), corporate brand orientation (Balmer, 2013b).
and the suggestion that further research could focus on the corporate brand heritage orientation notion (Balmer, 2013a). Moreover, our study is significant in that heritage branding orientation – in contrast to corporate (heritage) brand orientation or product brand orientation per se – represents a particular type in that several heritage brands at the product and the corporate-level assume a strategic relevance. The adoption of corporate heritage as a pervasive and legitimate strategic reference point facilitates the development of a company-wide strategic orientation which is informed by and accords importance to heritage branding within an organisation (Balmer, 2013a).

CONCLUSION

Theoretical insights

Insight 1: The dynamics between product and corporate level
Our study shows that a latent corporate heritage can be successfully leveraged for strategic brand management purposes at the product level and the corporate level. More importantly, our study reveals the various dynamics between both levels (that is, downward, upward and bi-directional influences). This insight speaks to and – more importantly – validates at the product and corporate level the important distinction between (corporate) heritage brands and (corporate) brands with a heritage (Urde et al, 2007).

Insight 2: The three stages of corporate heritage adoption and activation
Our study identifies three distinct stages of corporate heritage adoption and activation (that is, accidental, instrumental and cultural adoption/activation); each characterised by variances in regard to the motivational/situational context and perceived strategic/cultural relevance of corporate heritage adoption and activation. This expands our understanding of the processes that underpin the appropriation and valorisation of the past into heritage for strategic branding purposes.

Insight 3: Heritage branding orientation as a company-wide issue
Our study reveals a conceptual link between the bi-directional dynamics of corporate heritage adoption and activation, and the degree of perceived corporate heritage relevance at the three different stages identified. The final stage, where corporate heritage assumes a strategic and cultural relevance for the firm, indicates a particular type of management orientation adopted by a firm, viz. heritage branding orientation. This lends further support to the efficacy of brand orientation as a relevant theoretical perspective within corporate heritage scholarship as suggested by Balmer (2013a).

Managerial implications

Implication 1: Heritage can be activated and articulated in different ways
As discussed earlier, heritage can be activated in different ways and this opens up possibilities for considering the adoption of corporate heritage articulation according to the goals and contingencies of a given organisation. Moreover, and as the case of Ach. Brito vividly exemplifies, the stages of adoption and activation of heritage can evolve throughout time in alignment with the strategic purposes defined at different points in time.

Implication 2: Heritage can serve the repositioning of product brand or/and corporate brands
Corporate heritage can be selectively employed to reposition brands, and in
particular, a product brand. Thus, the corporate heritage is not necessarily bounded up to the corporate brand and can also sustain changes in the positioning of product brands, providing meaningful shifts to new intended market positions. Furthermore, corporate heritage can provide an underlying logic that allows repositioning several brands in a wider product portfolio, as well as the corporate brand.

Implication 3: The materiality of product brands can be valuable to articulate heritage
Heritage traits can be materially embodied in a product brand and this enables an immediacy that can be advantageous to the effective articulation of corporate heritage (in addition to other modes of corporate heritage implementation). Product brands might articulate corporate heritage in an immediate, direct and simple way, which can be valuable, both to internal and external audiences.

Implication 4: Heritage can be effectively articulated by small to medium-sized enterprises
As the case of Ach. Brito illustrates, the corporate past can be uncovered, appropriated and valorised into corporate heritage and as such strategically activated even by SMEs with no relevant financial resources. Strategic corporate heritage adoption implies, most of all, a shared understanding and a sense of stewardship and respect for the past which can unlock the potential of corporate heritage in the present. Moreover, corporate heritage articulation can be an enabler of business competitiveness and this might be regarded by SMEs as a potential strategy to be pursued, at the corporate and/or product level of brands.

Recommendations for future research
Our findings are limited because of the exploratory character of our single-case study research. However, the insights of our work may be theoretically generalisable in a tentative way by illuminating linkages and revealing perspectives that can nonetheless be used as sensitising conceptual lenses in future conceptual and empirical inquiries.

First, our study has shown that there can be a dynamic interplay between heritage-based branding at the corporate and the product level which has been shown to be relevant and central for the success of Ach. Brito. However, our study also identified different stages of corporate heritage adoption that revealed different aspects of this dynamic between the corporate and the product level (downward, upward and bi-directional). Further research is needed to ascertain whether there are other relevant dynamics and forms of corporate heritage adoption and activation, and whether empirical context moderates their strategic relevance and impact.

Second, our study indicates towards a particular form of brand orientation that we have tentatively labelled ‘heritage branding orientation’ in order to highlight the relevance of corporate heritage as a multiple point of reference for a brand strategy that cuts across the product and corporate level, and that bridges the internal and external realm of a firm. Further research is required to develop and refine this notion vis-à-vis various empirical contexts. Our study also stresses the conceptual overlap between the notion of corporate heritage stewardship and brand orientation per se, and future conceptual and empirical work is needed in order to ascertain the scope for conceptual cross-fertilisation between both scholarly domains.

Third, our research indicates that the strategic relevance and value of a product brand with a positioning based on corporate heritage may rest on its ability to materially articulate the corporate heritage in an immediate and accessible way; in that it
embodies and signals the organisation’s strategic intent and capability to internal and external stakeholders. Also, our study shows that the material heritage of a company can present a great potential to inspire and sustain the adoption and activation of corporate heritage, assuming a critical value for strategic renewal. Future research may scrutinise the notion of materiality in heritage strategies in the context of different stakeholder groups, strategic purposes, as well as product category and industry contexts.

Fourth, and related to materiality, design emerged in our study as an important aspect of the articulation of corporate heritage. Urde et al. (2007) have suggested that the use of symbols is vital to heritage brand communication and Hudson’s (2011) study of the Cunard brand has highlighted the role of interior design as a critical element of its heritage strategy. Our research strengthens this connection between heritage and design by shedding light on the role of design to translate the strategic intent embedded in a heritage brand strategy. Future research should further explore the link between corporate heritage and design either with a focus on corporate heritage through design or corporate heritage as design.

Fifth, the Ach. Brito case reveals the strategic-instrumental efficacy of corporate heritage adoption and activation for a product brand strategy per se. In this respect, our study indicates that corporate heritage can facilitate strategic repositioning of a product brand not only in terms of its brand identity (as a product heritage brand) but also in terms its geographical reach (from domestic to international) and its value position (from basic to premium). Future studies could expand on how and why corporate heritage facilitates geographic and value repositioning of brands at the corporate and the product level.

Finally, our work addresses the case of a small company where corporate heritage facilitated a successful turnaround and illustrates the particularities of this specific business setting, standing apart from much of the existing research on heritage brands that has focused mostly on well-known organisations or well-established brands. The case of Ach. Brito suggests that future research may focus, in addition, on less well-established and ailing brands that have either successfully utilised their corporate heritage in different empirical contexts or have failed to do so successfully.

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REFERENCES


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