More Than Skin Deep: A Service Design Approach to Making the Luxury Personal Care Industry More Sustainable

R. Wakefield-Rann

Abstract The core values of both luxury and sustainability are at odds with a consumer culture characterised by cheap, disposable products and undervalued natural resources. Although some product categories within the luxury goods sector have upheld the values of quality and durability, others, such as personal care, have come to rely on materials and processes that are harmful to ecosystems and human health. The luxury personal care industry trades on qualities of purity, freshness, beauty and the 'natural'. However, the industry remains unsustainable through its continued use of single-use plastic packaging and particular synthetic chemical additives. For this to change, the way in which personal care products are delivered and administered must be fundamentally redesigned. This chapter presents a case study of luxury personal care company LUSH, and examines how its innovative approach to service design could provide a genuinely sustainable model for luxury personal care companies, and potentially the broader industry. The central elements of this model include local production, 'naked' products, short expiry dates, and innovative retail design.

Keywords Service design · Sustainable luxury · Personal care products · Social practices · Endocrine disruption · Plastic pollution

1 Introduction

The luxury goods sector is under increasing pressure to reform its core practices and values to align with sustainability principles. The concept of luxury has been accused of being incompatible with sustainability, as it has come to be associated with waste, greed and social inequality. Reports on business sustainability have also found that luxury companies have lagged behind other sectors in improving their

Faculty of Design, Architecture and Building,

R. Wakefield-Rann (🖂)

University of Technology Sydney, Sydney, Australia e-mail: rachaelwakefieldrann@gmail.com

[©] Springer Nature Singapore Pte Ltd. 2017

M.A. Gardetti (ed.), Sustainable Management of Luxury,

Environmental Footprints and Eco-design of Products and Processes, DOI 10.1007/978-981-10-2917-2_10

business practices to make them more sustainable (Bendell and Kleanthous 2007). However, there is a compelling case that core luxury values are aligned with the values of sustainability, including quality, durability, expert craftsmanship, and the importance of precious natural resources. For a business to be genuinely sustainable, it must emphasise quality over quantity and a reduced rate of consumption: two of the core values that characterise luxury. Some luxury brands have begun to successfully make this connection and transition to a genuine model of sustainable luxury (Tutty 2016). Yet, as this chapter will demonstrate, a number of brands have attempted to become sustainable while maintaining a business model that still depends on cheap resource procurement, disposable products and/or packaging and rapid turn-around. A business cannot be considered sustainable unless it accounts for its social and environmental impacts across the supply chain, in a way that is able to meet the needs of current consumers without inhibiting the capacity of future generations to meet their needs.

Despite the commensurate vales of luxury and sustainability, it has been particularly difficult for luxury personal care brands to make the necessary changes to become sustainable. Unlike other luxury product categories, personal care products (PCPs) are non-durable and are intended to be consumed on a regular basis. These product qualities contribute to two key barriers currently preventing personal care businesses from becoming more sustainable: their dependence on disposable plastic packaging, and their use of certain chemicals for product preservation, fragrance and texture. This is not to say personal care businesses do not face other sustainability challenges, but that these obstacles have been the most difficult to overcome. A number of brands have made positive efforts to source more ingredients from organic and fair-trade producers, use more recycled packaging, reduce their carbon footprint and exclude some harmful chemicals from their products (Kessler 2015; Matusow 2010). However, their continued use of plastic and harmful chemicals means the core requirements of genuine sustainability have not yet been met by any medium or large-scale personal care brands.

This chapter contends that the key sustainability challenges faced by personal care companies cannot be resolved unless the daily personal care routines of consumers can be reformed. Everyday personal care routines for most adult individuals in wealthy industrialised countries will generally involve combinations of products, including: anti-bacterial liquid soap and body wash, shaving gel, exfoliators, face cleanser, shampoo, conditioner, hair spray, deodorant, toothpaste, dental floss, mouth wash, moisturizer, face wipes, and for many, numerous kinds of cosmetics, make-up removal wipes and liquid, nail-polish and anti-aging creams. This sheer number of products, and the amount of materials, energy and chemicals required to produce them, are unprecedented in history and result in significant human and ecological harm. For a brand to be sustainable it cannot contribute to and proliferate these practices. It must offer a new way of practicing personal care that does not require an excess of chemicals, energy, materials and packaging.

Sustainability has been difficult to achieve because current market expectations regarding the shelf life of products, their price, sensual qualities, and ease of use necessitate the use of durable plastic containers and numerous chemicals. The

majority of PCPs sold are packaged in disposable plastic containers (Matusow 2010). These not only require non-renewable resources such as petroleum to manufacture, the products and their packages often contain chemicals that have been identified as carcinogens, mutagens, allergens or endocrine disrupting chemicals (EDC) (Liboiron 2015; Kessler 2015; Zoeller et al. 2012). EDCs, for example, interfere with the development and functioning of the hormonal system, which has been correlated with numerous health conditions in animals and humans, including obesity, diabetes and cancer, among others (Diamanti-Kandarakis et al. 2009; Schug et al. 2013). Plastic packaging and the plastic microbeads often contained in PCPs also end up in the environment, where they have been shown to cause various forms of harm, including choking and starving animals via ingestion, and altering the reproductive development of marine species.

This chapter proposes that to become sustainable, luxury personal care companies must employ a new service design model that enables the removal of disposable plastic packaging and toxic chemicals from their products. Service design has the unique capacity to effectively reform both the organisational structures of luxury personal care businesses and the expectations consumers have of their products. 'Service design' refers to the way that people, infrastructures, communications and material components of a service are arranged to produce certain outcomes within an organisation, or to orient customer behaviour a desired way (Blomkvist et al. 2010). Unlike product design, service design delivers a constellation of ingredients that work adaptively in unison to support an outcome. In the case of luxury PCPs, a service design approach offers the ability to re-evaluate and re-design better ways of coordinating supply chain logistics, organisational structures, digital customer interfaces, customer support, retailing environments and product design in support of more sustainable outcomes. Service design could therefore enable a new way of selling and practicing personal care that attends to the key pleasures and practical functions people require from their products, without relying on plastic packaging or toxic preservatives, fragrances and colors.

To determine how luxury personal care businesses can successfully develop a more sustainable service design model, the complex role of PCPs in people's daily lives must first be understood. The first section of this chapter will therefore examine the numerous functions that PCPs commonly fulfill. If a business fails to recognise the essential needs or aspirations consumers seek to satisfy through PCPs, such as cleanliness, beauty and relaxation, it is not likely to succeed on the market. To determine the most significant targets for sustainable change within businesses, the subsequent section will analyse the types of harm associated with current PCP use. This is important because the criteria currently used by personal care companies to define and measure harm have excluded significant variables, most notably plastic packaging and toxic chemicals.

The following section will examine how the adoption of new models for designing, manufacturing and retailing personal care by luxury businesses could have the potential to improve the sustainability of the personal care industry more broadly. There are two reasons for this: first, as public awareness of the negative impacts of PCPs has increased, demand has increased for products that exclude potentially

harmful ingredients (Transparency Market ResearchTMR 2015). This has prompted more consumers to purchase luxury products, which are perceived to be of greater quality and more trustworthy (Bendell and Kleanthous 2007). Second, luxury brands play a significant role in establishing the aspirations and standards of other market sectors, from premium to budget (Kapferer 2010). This means that the sustainable practices adopted by luxury companies could catalyze change across the industry.

To demonstrate how this may be achieved, the final section will examine the service design model employed by luxury personal care brand LUSH. The LUSH model offers a new way of delivering personal care that has broad appeal, does not compromise on luxury and does not require synthetic plastics and chemical additives. Notable elements of their approach include the use of 'naked', or package-free, products, 'delicatessen' style retailing, and customer connectivity with producers and product manufacturers along the supply chain.

2 Why We Use Personal Care Products

Consumer motivations for buying personal care products are intimately linked to contemporary cultural definitions of beauty and cleanliness, and the personal hygiene practices we perform to achieve them. The way hygiene and beauty are measured and understood changes over time, necessitating different products and routines. Hygiene is defined as the "conditions or practices conducive to maintaining health and preventing disease, especially through cleanliness" (OED 2016). However, the modern practices that have evolved to achieve cleanliness and prevent disease are actually contributing to the rise of certain diseases and the contamination and depletion of the ecosystems upon which we depend.

Historically, ideas about how the body becomes infected by disease, and the associated programs of hygienic reform, have transformed the meaning of cleanliness and how it should be achieved. For example, in sixteenth century Europe it was widely believed that the body was porous and able to be penetrated by heat and water. As such, bathing was seen as important to restore perceived imbalances in bodily 'humours' (Shove 2003: 86). This transmuted into a belief that opening the pores to water and the air could let in various maladies and allow vital substances to seep out. As a result, bathing came to be socially frowned upon. Failure to conform to contemporary hygiene norms, even if they contradict those that have recently preceded them, consistently results in individuals being labelled as disgusting and morally reprehensible (Smith 2007). Conversely, if the prescribed hygiene practices are performed well, they can actively contribute to what Bourdieu refers to as 'beauty capital', benefiting the individual socially and professionally (Ross-Smith and Huppatz 2010; Shove 2003).

In addition to disease prevention, insurance against social exclusion, and a desire to enhance one's 'beauty capital', PCPs are now expected to nourish and restore the mind and soul. Although rationales for hygiene and personal care rituals are still well grounded in discourses of germ eradication and aesthetic standards, they have been overlaid by narratives espousing the benefits of bathing for relaxation and stress relief (Shove 2003: 105). PCPs, particularly in the luxury category, offer to reconnect urban consumers to nature through the use of scent, often invoking forests, fruit, flowers and beaches. The role of personal care rituals in replenishing the mind and spirit is supported by the function of the modern bathroom as one of the few places many people can be truly alone. Bathrooms are often the only room in modern houses that have a lock (Penner 2013). In this sense, the bathroom is both a sanctuary in which products are administered for relaxation and a place where the body is cleansed and prepared according to social expectations.

The multifunctional role that PCPs play in peoples' lives means that sustainable reform programs based simply on reducing the number of products currently consumed is unlikely to produce the required reduction in harmful activity. The social and personal consequences would be too great. The role of PCPs in enabling people to simultaneously meet social standards of cleanliness and appearance, while allowing them to feel relaxed and pampered cannot be ignored. Rather, the challenge will be to create, and make available, an alternative set of products that cater to the diverse functions served by current PCPs without the associated harm to humans and ecosystems.

3 Forms of Harm

To adequately assess how luxury personal care companies can become more sustainable, the nature and extent of the harm they cause must be adequately characterised. To do this, the following section examines the scientific literature that addresses the negative impacts of PCPs on the environment and people. This examination will reveal the types of change necessary for the luxury personal care industry to become more environmentally sustainable and safe and why the majority of current interventions are insufficient.

3.1 Ecological Impacts

The impact of PCP production, use and disposal on global ecosystems alters the course of numerous environmental processes, some of which cause explicit harm, while others are more challenging to quantify and trace. Two forms of harm will be discussed here: harm linked to product packaging made from plastic polymers, and harm associated with the chemicals that are added to plastics and the products they contain. These are not the only aspects of the PCP industry that cause damage to ecosystems and communities, there are also concerns relating to resource use and greenhouse gas emissions produced by globalised PCP supply chains (Sayer et al. 2012; Pereira de Carvalho and Barbieri 2012). These issues are already well documented in other papers (Sayer et al. 2012; Tan et al. 2009). The impact of plastic

and chemical pollution from PCPs on ecosystems and human health has been largely neglected in existing attempts to develop sustainable PCPs. The following paragraphs will demonstrate why these issues must be addressed for a genuinely sustainable PCP industry to exist.

The plastic packaging used in the majority of hygiene products is cited in the literature as the product component likely to pose the greatest long-term risk to global ecosystems (Liboiron 2015: 9; Gabrys 2013). There are now numerous scientific studies demonstrating that plastic polymers from product packaging are responsible for choking and entangling animals (Moore 2013) and limiting oxygen transfer in soils (Barnes et al. 2009). As plastic enters waterways and marine environments it breaks down into microplastics (5 mm or less), which are ingested by marine organisms such as fish and birds, and even animals as small as mussels and plankton (Avio et al. 2015; Browne et al. 2008; Cole et al. 2013).

In addition to plastic packaging, many PCPs contain synthetic plastic polymers in their formulas in the form of microbeads. The 2015 United Nations Environment Program (UNEP) report *Plastic in Cosmetics: Are we polluting the environment through our personal care?*, noted that plastic ingredients are included in a range of product types, including: "deodorant, shampoo, conditioner, shower gel, lipstick, hair colouring, shaving cream, sunscreen, insect repellent, anti-wrinkle creams, moisturizers, hair spray, facial masks, baby care products, eye shadow (and) mascara" (Leslie 2015). Plastic ingredients from these products regularly enter the environment from urban areas because they do not decompose in wastewater treatment systems and are released into waterways via raw sewage, treated effluents, and as sludge applied as fertiliser to agricultural land.

Research has also found that chemicals that are added to, or accumulate in, plastic as it moves through the environment, leach out into animal bodies when ingested (Rochman et al. 2013). This is problematic because most plastic chemical additives, or plasticizers, are classified as endocrine disrupting chemicals (EDC). The endocrine disrupting effects of these plasticizers have been observed in mammals, birds, reptiles, fish, and molluscs in both wild populations (Vos et al. 2000) and in laboratory settings (Oehlmann et al. 2000). A review conducted by Vos et al. (2000) notes that the causal links between impaired reproduction and EDCs are now well documented for a number of species, resulting in local or regional population changes. Examples include: severe population declines in certain raptor species in Europe and North America due to egg-shell thinning and impaired reproduction and immune function in Baltic grey and ringed seals.

Despite the existence of strong correlative and laboratory evidence of harm caused by EDCs, the literature highlights that regulation and remediation are challenging for a number of reasons. First, the precise causative pathways through which organisms are affected by plastics and their EDC additives are difficult to trace and quantify. A key reason for this is that EDCs can often have stronger effects at low doses (Vandenberg et al. 2012). Second, plastics are ubiquitous, which makes it difficult to regulate and monitor the distribution of harmful EDCs (Bushnik et al. 2010; Bergman et al. 2013; Liboiron 2015). As a result, it is no longer possible to establish uncontaminated control groups for experimental

scientific research. Evidence of impact, as measured against such control groups, is required within the current regulatory paradigms of most countries to definitively establish that a substance is causing harm and act on it. Consequently, the World Health Organization (WHO) and the UNEP, claim that approximately 800 chemicals that are known or suspected to be endocrine disruptors are still produced and circulated in everyday consumer goods, including PCPs (UNEP/WHO 2013).

In addition to the chemicals used in plastic packaging, a number of studies have found that chemicals used in the PCPs themselves, include EDCs (Wolff et al. 2010; Ferrer et al. 2012; Routledge et al. 1998; Stoker et al. 2010; Clayton et al. 2011). Other chemicals in hygiene products have been linked to different forms of harm, such as carcinogenic formaldehyde, and quaternium-15 and DMDM hydantoin, the 'donor' preservatives that enable it to be released (Kessler 2015; Health and Services 2014).

Many of these problematic chemicals are washed down drains with products such as body wash and shampoo. There is research to suggest that they could potentially be adversely affecting the chemistry of marine ecosystems, particularly if they are picked up and carried by plastic polymers (Leslie 2015). A 2015 study by Carbajo et al. examined the aquatic toxicity of eight preservatives frequently used in PCPs, finding that they all showed considerable toxicity in the studied biological assessments, with differing levels of potency (Carbajo et al. 2015). In addition to ecological impacts, PCP chemicals can have an impact on humans through the ingestion of effected marine products or direct application to the body (Diamanti-Kandarakis et al. 2009). The following section will briefly examine what is known about the impact of chemicals in PCPs on human health.

3.2 Health Impacts on Humans

An increasing body of research suggests that chemicals in many hygiene products can have endocrine disrupting effects in humans via direct use. There is strong correlative and laboratory evidence to suggest that EDCs are involved in a number of health conditions, including feminization of male foetuses, early-onset puberty and menopause and senility, obesity, diabetes, stunted brain development, miscarriage, and cancer, among others (Grün and Blumberg 2009: 20; Reuben 2010: 40; Bergman et al. 2013; Di Renzo et al. 2015). In Nordic countries, research suggests that the adverse effects on male reproductive systems from regular exposure to EDCs, including the use of hygiene products, could be costing up to ϵ 36 million for each year of exposure (Olsson 2014: 55). However, assessing harm to humans is beset with the same issues faced when establishing harm in ecological settings. In both cases there is difficulty in determining linear, clear, repeatable causation pathways between a chemical and a specific form of harm (Liboiron 2015). For this reason, the harm caused by EDCs is commonly compared with that caused by smoking: both are strongly correlated with particular health effects, but

neither can be shown to directly *cause* harm (Pasqualotto et al. 2004; Liboiron 2015: 3).

Despite the strong correlative evidence that EDCs are involved in promoting certain diseases, the experimental conditions required to prove this, and support decisive action, cannot be obtained (Liboiron 2015). The issue is not lack of correlative evidence between EDCs and health effects, but that the evidence does not provide a definitive picture of which chemicals produce which effects and at what levels. Endocrine disruption can manifest differently in different bodies depending on the hormones and receptors affected and the age of the person (Huang et al. 2015). Young children, pregnant women and foetuses are more susceptible to certain manifestations of endocrine disruption (Diamanti-Kandarakis et al. 2009; Reuben 2010). In addition, there are no test bodies against which exposure effects can be measured, as all bodies already have active hormones, and all bodies tested globally contain traces of synthetic EDCs (Meeker et al. 2009; Bushnik et al. 2010). This presents a problem for regulation and other forms of action to mitigate potential harm.

One of the most important considerations highlighted in the literature is that when assessing the potential harm of hygiene products no chemical product can be examined in isolation, as aggregate exposures, or what is commonly termed 'the cocktail effect', influences how chemicals interact and behave in bodies (Loretz et al. 2008; Meeker et al. 2009). Consider how many PCPs the prototypical modern woman in an industrialised country may use each day. She might begin her day with a shower using exfoliating body wash, shampoo, conditioner, and foaming face cleanser, to be followed immediately by the application of moisturiser, make-up, hairspray and deodorant. Preservatives and fragrances commonly used in all of these product types have been identified as EDCs (Biesterbos et al. 2013; Kessler 2015). The effects of EDCs in PCPs are also influenced by EDCs used in other everyday products, for example water bottles and food tins containing BPA. Gosens et al. (2014) argue that the aggregation of exposure to a substance from different sources via different pathways is not adequately addressed in common risk assessments of chemical substances, leading to a significant underestimation of risk.

Many of the chemicals in consumer products that have been tested and banned are replaced by other untested chemicals that behave in the same way, and are often subsequently also banned (Lakind and Birnbaum 2010; Blum 2016). Johnson & Johnson are currently in the process of reformulating hundreds of their products to find substitutions for a number of ingredients that have attracted safety concerns (Kessler 2015). Because the company wishes to retain the colour, scent and texture of many of these products they are seeking chemicals that behave in the same way as the old ones. However, one of their research development managers acknowledged that tinkering with the formula of a product often has unintended consequences, and that fixing one problem often creates another (Kessler 2015). This process of substituting one harmful chemical with another that behaves in a near identical way has been likened to a game of "whack a mole" by the former commissioner of the US Food and Drug Administration (FDA) (Kennedy 2007).

In response to the enduring problems associated with chemical substitutions in consumer products, scientists are increasingly advocating a ban on entire classes of chemicals. For example, the Green Science Policy Institute, is calling for a 50% reduction over the next five years in the use of six families of chemicals used in consumer products: highly fluorinated chemicals, flame retardants, organic solvents, certain metals, antimicrobials, bisphenols, and phthalates (GSPI 2016). The latter three of these classes are commonly used in PCPs. A number of scientists, including The Endocrine Society, are also calling for the Precautionary Principle to be instituted more rigorously in business practices, which would require industry, and society more broadly, to ask if we need particular chemicals, given their potential for harm (Zoeller et al. 2012; Diamanti-Kandarakis et al. 2009).

Even if problematic classes of chemicals were banned, the way that PCPs are manufactured and used must be fundamentally redesigned if equally damaging substitutions are to be avoided. The dominant structure of PCP supply chains at present necessitates the use of strong yet flexible packaging to ensure easy product transport and use, and preservatives to prolong shelf life (Kessler 2015). Liquid products generally require more preservative than solid or dry ones to prevent microbial growth (LUSH 2016b). If the dominant supply chain model is to be maintained, it is likely that the problem of substitution will continue, as its functionality depends on products continuing to behave in the same way. The following section will address public and PCP industry responses to these concerns and why the luxury sector is important for broader change across the PCP industry.

4 How Luxury Can Improve the Sustainability of the Personal Care Industry

The luxury sector of the personal care industry has the capacity to affect positive change beyond the regular luxury consumer market. Consumers who have not traditionally participated in the luxury market are increasingly turning to luxury PCPs because they are perceived to be more trustworthy, unadulterated, pure and concerned with quality than other product categories. The demand for luxury products, particularly those with 'organic' or 'natural' attributes, has increased as public awareness about the health and environmental impacts of chemicals in PCPs has improved. According to a market report published by Transparency Market Research, the demand for organic PCPs globally is expected to experience a growth rate of 9.6% from 2012 to 2018 (TMR 2015). In a comprehensive survey reported by Statista the most commonly reported reason for purchasing luxury PCPs was "I believe luxury personal care products are better for my body" (Statista 2012). This trend towards purchasing luxury PCPs for health reasons is represented in numerous places around the world (Bendell and Kleanthous 2007).

Consumers are also turning to the luxury sector because it is increasingly perceived as an avenue to express one's deepest values, including care for the environment. According to recent WWF report *Deeper Luxury* on the sustainability performance of luxury brands, one's capacity to purchase products that reflect personal values and aspirations for a better world are now key defining features of personal success (Bendell and Kleanthous 2007). They report that this is not only the case for Western luxury consumers but also the wealthy and middle classes of Latin America, Asia and Eastern Europe. It is therefore logical to infer that as luxury brands increasingly position themselves as avenues through which one can express ethical values, consumers would view luxury PCPs as a viable solution to their sustainability and health concerns. The increasing market share of luxury personal care brands, due to their perceived health and ethical benefits, has afforded the luxury sector a greater capacity to reduce the harmful impacts of personal care practices.

The reach of luxury brands has also been extended with the rise of 'new luxury'. Luxury brands are broadening their product ranges with 'masstige' (prestige for the masses) products that are more accessible to middle-class consumers (Truong et al. 2009; Kapferer and Bastien 2009). This masstige approach is now one of the major growth strategies for luxury brands (Truong et al. 2009). While this strategy has increased the influence of luxury brands, it has made it harder to appeal to consumers on the basis of exclusivity. Rather, value is more often being added through the improvement of environmental and social performance (Bendell and Kleanthous 2007). This confluence of broad appeal and a greater concern for the values that brands represent, mean that the luxury sector of the PCP market is well positioned to lead change.

The increasing popularity of luxury PCPs and their association with sustainable values potentially provide important opportunities to reduce the harmful impacts of PCP production and use. However, the types of reforms that are currently being made to create more sustainable and healthy brands have largely been tokenistic or misguided. The following section examines the ways in which PCP brands have been reforming their products and business models to become more safe and sustainable, and why these attempts have not been sufficient.

5 Addressing Ineffective Sustainability Strategies

In recognition of the increased demand for natural products, many luxury and other PCP brands have changed aspects of their production, branding and retailing strategies. The methods employed by companies to increase the 'green' credentials of their brands can be loosely grouped into five broad strategies: first, the substitution of chemical preservatives or fragrances that are thought to be harmful, with

others that serve the same function; second, the addition of organic ingredients; third, the use of post-consumer recycled packaging or 'eco-packaging'; fourth, marketing the 'natural' attributes of products; and fifth, supporting charities or initiatives that align with the values they aspire to represent.

The removal of particular chemicals that have attracted public disapproval is one of the key ways companies attempt to improve their health and sustainability credentials. For example, Avon have reportedly vowed to stop using the anti-bacterial chemical triclosan, while Johnson & Johnson have vowed to eliminate both triclosan and Diethyl phthalate (DEP) from all products (Kessler 2015). It is now common to see brands labeled as paraben-free, such as Jurlique and Clinique, or exclude the chemicals from some of their products, such as Estee Lauder, Lancôme and Elizabeth Arden, as part of their natural marketing strategies.

The addition of organic ingredients is another common strategy used. By sourcing some organic ingredients companies are able to use the term in their marketing. A number of brands, including L'Occitane, Burt's Bees, Aveda and Dr. Hauschka have glossaries for their natural or organic ingredients on their websites, but omit details about their synthetic ingredients. The terms 'natural' and 'organic' have no legal definitions, so can be used in marketing without adhering to specific criteria. Some companies seek to add credibility to their brand by joining labelling schemes that require them to meet certification criteria (Hartlieb and Jones 2009). This provides more certainty for the consumer that companies can be held accountable to their claims. However, many of these schemes only relate to one aspect of sustainability, such as the organic production of raw materials or the use of sustainable palm oil (Alves 2009; Teoh 2010). This, plus the lax certifications on labels can be deceptive to consumers (Alves 2009: 6).

A number of brands also make appeals to the concept of recycling to improve their sustainability credentials. Burt's Bees, L'Occitane, and Estee Lauder, among many others, advertise that at least a portion of their products are sold in post-consumer recycled plastic. The first problem with recycling is that people often do not recycle recyclable products. The second is that the process of recycling is still very resource intensive: it consumes energy, requires virgin materials, and creates pollution (Liboiron 2009). At best it can marginally minimise the impact of a product, and at worst, it can encourage the use of disposables even further. The notion that a product is recyclable, or made from recycled materials, gives the impression that the product causes less environmental damage. This allows our unsustainable reliance on disposable products to continue without acknowledging the high energy and material costs still associated with the routine use of recycled, or recyclable, single-use products. Plastics are particularly inefficient to recycle as there are many types of plastic, each of which has a different melting point, set of plasticizing chemicals, and density (MacBride 2011). This makes recycled plastics harder to use as raw stock material. As a result, the recycling of recovered plastic cannot be considered a sustainable solution to plastic waste.

The terms 'Sustainable' and 'Eco-packaging' also represent a form of 'green washing'. Forecasters have predicted that the sustainable packaging sector will grow faster than the packaging industry overall (Matusow 2010). They also predict that the fastest-growing segment of the sustainable packaging sector will be plastic-based packaging. Davide Nicosia of design firm NiCE Ltd. promoted the fact that they had developed a way to reduce the amount of plastic in a shampoo bottle by 13%, as a way to achieve a more sustainable product (Matusow 2010). The remaining 87% plastic is still an unsustainable amount of plastic for a disposable product to contain, and therefore should not be considered 'Sustainable' packaging.

Companies use green marketing strategies not only to promote or exaggerate natural elements of their products, but to grow the market demand for products with these attributes. Since a number of large companies have invested in natural product ranges, or acquired brands situated in the natural and organic sector, it is in their interest to further promote 'natural', 'organic', 'sustainable' and 'toxic-free' qualities as key attributes that consumers should consider when purchasing PCPs (TMR 2015; GVW 2015). Examples of companies that have sought to increase their presence in the natural product market, and thereby expand it, include L'Oreal, which acquired Kiehl's in 2000 and The Body Shop in 2013, and Clorox which acquired Burt's Bees in 2007 (GVW 2015).

Another common strategy, employed by luxury personal care companies in particular, is to associate the brand with a social or environmental cause that is unrelated to the operation of the business. An exemplary case is *Crème de la Mer* by Le Mer, an Estee Lauder brand, which donates a portion of sales revenue to National Geographic to promote ocean conservation. However, *Crème de la Mer* is packaged in small jars with plastic lids. The product is therefore contributing to the production and distribution of disposable plastic packaging, one the greatest threats to the world's oceans. This type of strategy is not necessarily harmful, but it has the capacity to be if the brand using it is undermining the values it is espousing.

The identification of these strategies does not suggest that personal care brands are not genuinely committed to making their products more safe and sustainable. The ethos of many luxury brands such as L'Occitane and Aveda have resulted in them making changes that are less tokenistic, and have positive impacts on the environments and communities from which ingredients are sourced. However, their continued use of plastic packaging precludes their products from being classified as genuinely sustainable and safe.

The substitution of problematic ingredients, the sustainable sourcing of some materials, and the use of recycled or recyclable materials are not sufficient interventions to make a product sustainable. To understand how more meaningful change may be created, the following section will examine how an intervention at the service design level might provide opportunities for meaningful change to occur.

6 Intervening in Personal Care Practices

Current expectations about what products should be able to do, and the ways collective personal care routines are performed, necessitate the use of plastic containers and chemical additives. As certain products enter our daily lives, become normal and alter the way we conduct certain activities, they shape our expectations around what it means to do those activities well (Shove 2003: 79-91). For example, the introduction of liquid soap and body wash in plastic pump-packs and squeeze bottles is replacing the use of bar soaps in daily washing practices around the world (Mintel 2015). The introduction of this new technology has influenced what we expect from washing, via the marketing of these products and how we have come to use them. Liquid soaps are touted by marketers to be more hygienic than soap bars, as they are contained in sealed, impenetrable packages and cannot accumulate dirt and other particles. They also do not leave a sticky residue where they are stored. Additives to liquid soap and body wash also influence our expectations about what a body-cleansing product should accomplish. They will often include exfoliating microbeads, vitamins, anti-bacterials, anti-perspirants, moisturisers, fragrances that evoke nature, and foaming surfactants to make users feel like they are cleaning more effectively. The normalisation of multi-functional body care products has created new expectations around the functions that products should fulfil and ultimately what it means to be clean (Shove 2003: 79-91). To create more sustainable PCPs, our routines and the functions that PCPs perform within them, must be reassessed.

The majority of PCP brands proclaiming to be sustainable are intended to integrate into current routines are consequently unable to challenge and resist some of the most unsustainable elements of personal care practices. Influential systems theorist Donella Meadows proposed a hierarchy of effective points to intervene in a system. According to this hierarchy, interventions involving chemical substitutions and the addition of organic ingredients could be placed at the bottom, as they involve tinkering with numbers, or 'diddling with details', but do not affect the positive feedback loops that reinforce unsustainable behaviours (Meadows and Wright 2008: 148). What is required, then, are products that encourage people to practice personal care differently, but in a way that is attractive and viable for individuals currently engaged in unsustainable consumption practices.

7 LUSH: Fresh, Handmade Cosmetics

The British luxury cosmetics company LUSH have pioneered a new service model for the manufacturing and retailing of PCPs. LUSH are a private company founded in Dorset, England in 1994 that exclusively produces handmade PCPs (Buchwalter 2007). They currently have over 900 stores globally in 49 countries (LUSH 2016a). LUSH occupy a unique place in the luxury personal care market, as they appeal to

traditional values of superior quality, beauty, bespoke products, and indulgence, they are also known for their social and environmental activism.

The reason LUSH has been selected as a case study, rather than a smaller luxury company connected to a single location, is specifically because they have demonstrated their global appeal and the capacity to influence trends in multiple cultural contexts. This means that they, or other luxury brands following this model, could have a greater potential to effect change in collective practices and conventions.

It must be noted that LUSH still engages in some of the practices that have been identified as concerning throughout this chapter. Despite selling 46% of their products without packaging, they still use containers for the remainder (LUSH 2016e). Like other brands, they have attempted to reduce their impact by only providing packages made from post-consumer recycled plastic, recyclable or biodegradable materials, and incentives are provided to return recyclable packages to stores for recycling. For example, LUSH Australia states that customers can bring back 5 empty black pots to receive a free 'Fresh Face Mask' (LUSH 2016e). They also continue to use synthetic preservatives, fragrances and colours in a number of products. This is because they have made the decision to continue selling product types, such as liquid gels, moisturisers, perfume and make-up that require these ingredients to function as intended. However, LUSH's innovative service model is not undermined by the continued sale of these products, because it is not dependent on them, and could remove them if desired.

Concerning products notwithstanding, this chapter proposes that there are four notable elements of LUSH's service design which could provide a basis for luxury personal care companies to become genuinely environmentally sustainable and safe without compromising on luxury and ease of use.

7.1 Service Elements

The first important element of LUSH's Service Design is the use of packaging-free, or 'naked', products. Nearly half of LUSH's products have no packaging. This amounts to over 100 products including soaps, bath bombs, shampoo bars, bubble bars, massage bars, body butters and solid facial cleansers. According to LUSH's Fresh Thinking catalogue, their first shampoo bar weighed 55 g, was one fifth the size of a 250 g bottle of shampoo but lasted three times as long. These bars not only omit plastic, but often do not require anti-microbial preservatives because they do not contain water. LUSH have since increased their packaging-free range and in 2007 launched a global campaign called Get Naked. This involved employees removing as much clothing as they dared in protest against extra packaging. This promotional activity was reinforced through a mini-website called The Naked Truth, which provided information on the harms associated with packaging and offered a "buy two, get one free" deal for all products without packaging. The use of this strategy demonstrates that 'naked' products are perceived as something that could actually improve the popularity of their brand, rather than detract from it.

Far from being a disincentive, some research suggests that products with less packaging actually reinforce consumer trust. According to research conducted by Di and Arbajian (2014) the exclusion of packaging enables people to conduct a sensory evaluation of a product rather than having to rely on the claims made on its packaging. The sensory recognition of products is being increasingly promoted as an important component of brand recognition and success (Lindstrom 2005). The ability to experience a product before buying offered by packaging-free retailing means the removal of packaging is not necessarily a concession to sustainability, but an asset.

The second important element of LUSH's service design model is their use of an attractive 'delicatessen style' retailing environment. The interactive sensory experience offered by naked products is amplified at the store level. Stores are designed to have different sections that invite customers to experience products in various ways. Unwrapped slabs of colourful soaps are stacked in one area, ready for sales staff to cut off custom-sized chunks on a wooden board, which are then wrapped in greaseproof paper. In another corner there may be a bar of fresh skin care products where facemasks can be ladled out of pots. When LUSH began, its target market was young, however the 'delicatessen' approach appeals to a wider market and now their fastest growing sector is the 35–50 age group (Buchwalter 2007). This is potentially because the 'deli' approach allows customers to have products before selecting which one they want, much like choosing the nicest looking apple at the grocer. This element of choice holds significant appeal and potential to expand retail models that do not rely on packaging.

Third, LUSH have a relatively transparent approach to ingredient sourcing and customer relations. Unlike a number of the other companies discussed in this chapter, LUSH publishes their full ingredient list online, and attempts to justify their use (LUSH 2016d). This is not to suggest that all elements of their business practice are transparent, only to illustrate their transparency is superior to other comparable brands. With respect to their strong ethical stance against animal testing, they not only refuse to buy raw products from companies that test on animals, but have actively helped raw material suppliers convert to no-animal testing policies throughout their business (Buchwalter 2007). This approach of actively lobbying producers to change practices that contradict company values should be an integral aspect of an ethical business. LUSH also allow themselves to be held accountable by the public if they fail to meet their ethical, or any other, standards. This is done through the use of online forums such as the LUSH North American online forum, which has a section titled Rants and Raves, under which customers can express their thoughts on any aspect of the brand without it being censored (Buchwalter 2007).

Fourth, LUSH involves customers in the production of their products. There are two notable ways this is done. The first involves the identification of the person that handmade the product. The majority of LUSH products are handmade within relatively close proximity to the point of sale, partially because of the preservation requirements of some products. Every item has a sticker on it with an image of the person who made it, the date it was made and when it will expire. According to Buchwalter (2007), customers get to know the products made by certain makers and even become fans of particular producers. The second is a newer initiative called LUSH Kitchen which provides customers with an insight into the production process via short videos regularly uploaded online, and even allows them to order the exact products they see being created (LUSH 2016c). This is part of a digital strategy, created in collaboration with Method, that won a User Experience Award in 2014 (UXAwards 2014). Both of these methods serve to reconnect customers with producers in innovative ways that do not depend on enterprises being small scale and locked into a single location. By engaging individuals with the contents of their products and how they are made, they become more aware and better equipped to scrutinise such processes.

7.2 Further Steps

There are crucial areas for improvement that must be addressed for the LUSH service design model to function in a comprehensively sustainable and safe way.

The first is the discontinuation of liquid products that require plastic packaging and synthetic preservatives. The continued use of these products not only has direct environmental impacts, but perpetuates personal care practices that necessitate their use.

The second consideration is the local sourcing of ingredients. Although much of the product production takes place in close proximity to stores, raw ingredients are still sourced globally. This not only has an impact in terms of resources and greenhouse gas emissions associated with transport, but in terms of the packaging required for transporting goods long distances. Companies could therefore emulate the model proposed but focus on developing formulas that are based on ingredients that can be sourced or grown local to the stores.

The final point that must be considered is the accessibility and convenience of the products. In order to have the greatest impact, products should not only be available to the wealthy. This means that product prices should be less than standard luxury products, without compromising on luxury attributes, as with other brands that fit the new 'democratised' luxury model.

7.3 Management Implications

The way that businesses redesign their supply chains, retailing strategies and products to meet the basic criteria for sustainability specified in this chapter can be successfully conducted in a number of ways. The LUSH model does, however, suggest some valuable ways that particular management structures and strategies could be used. LUSH have noted that their flat organisational structure has contributed to their capacity to be responsive to local needs while ensuring that decisions reflect the core ideals and values of the head management team (LUSH 2016a). Although a close connection is maintained between retail employees and the guiding values of company directors, LUSH has allowed the makers of their handmade products a considerable degree autonomy over how they are made. This contributes to a sense of bespoke product creation and fosters customer connection and loyalty to individual makers.

8 Conclusions

Plastics and manufactured chemicals afford luxury PCPs the temporal qualities and multi-functionality needed for individuals to conveniently clean, adorn, pamper and relax themselves according to current cultural norms and expectations. These qualities also determine the post-consumer life of these products as they breakdown in environments and bodies, and integrate into these natural systems in complex ways. Their biological effects can be seen over generations, and their ecological effects over centuries.

The way that sustainability and harm are understood and measured influences where the boundaries around the problem are drawn and what is defined as a matter of concern. If companies were to acknowledge that the continued use of plastics and particular classes of chemicals are crucial elements of environmental and human health problems, they must also acknowledge that change cannot simply be achieved by substituting certain ingredients. Change must involve a restructuring of the dominant ways of manufacturing, transporting, retailing and using PCPs in everyday life.

The luxury ethos provides a promising basis for an intervention to reverse the positive feedback loops that reinforce unsustainable behaviours. The luxury sector has the power to and to transform the values that underpin how and why personal care practices are performed. If this new model is to be sustainable, it must also be widely accessible. Changes made in businesses that only a few have access to will minimise damage, but cannot hope to alter collective personal care practices at the scale required. The increasing appeal of luxury across a broader market and the tendency for practices in the luxury sector to flow into other sectors makes luxury businesses a promising intervention point for change across the industry.

The version of the LUSH service design model presented in this chapter offers a new way of provisioning personal care that has global reach, yet does not necessitate long-lived synthetic plastics and their chemical additives. The use of 'naked' products, sensory engagement, 'delicatessen' style retailing, and connectivity with raw ingredient and product producers, enhance product appeal, consumer trust and connectivity along the supply chain. The transformative capacity of this model depends on it being implemented in a way that maintains a commitment to sustainability, while recognising the pressure on individuals to conform to particular hygiene and beauty norms, and the time pressures that govern personal care routines within modern life. Luxury personal care brands have an important opportunity to set new sustainability standards and practices for the personal care industry and consumers. This chapter has provided insight into the shortcomings of current attempts to implement sustainable business models and establish the basic criteria required for any personal care business to be considered sustainable. Looking to the future of luxury personal care, the best way for each business to meet sustainability criteria and implement a new service design model will differ depending on their current supply chain structure, organisational structure, scale and customer base. Further research must therefore be undertaken by each business to ensure the service design model they adopt is appropriate for the operational context, without compromising on essential sustainability requirements.

References

- Alves I (2009) Green spin everywhere: how greenwashing reveals the limits of the CSR paradigm. J Glob Change Governance 2(1):1–26
- Avio CG, Gorbi S, Milan M, Benedetti M, Fattorini D, d'Errico G, Pauletto M, Bargelloni L, Regoli F (2015) Pollutants bioavailability and toxicological risk from microplastics to marine mussels. Environ Pollut 198:211–222
- Barnes DK, Galgani F, Thompson RC, Barlaz M (2009) Accumulation and fragmentation of plastic debris in global environments. Philos Trans R Soc Lond B: Biol Sci 364(1526):1985–1998
- Bendell J, Kleanthous A (2007) Deeper luxury: quality and style when the world matters. WWF, UK
- Bergman Å, Heindel JJ, Jobling S, Kidd K, Zoeller TR, Organization WH (2013) State of the science of endocrine disrupting chemicals 2012: summary for decision-makers. World Health Organization, Geneva
- Biesterbos JW, Dudzina T, Delmaar CJ, Bakker MI, Russel FG, von Goetz N, Scheepers PT, Roeleveld N (2013) Usage patterns of personal care products: important factors for exposure assessment. Food Chem Toxicol 55:8–17
- Blomkvist J, Holmlid S, Segelström F (2010) This is service design research: yesterday, today and tomorrow
- Blum A (2016) Tackling toxics. Science 351(6278):1117
- Browne MA, Dissanayake A, Galloway TS, Lowe DM, Thompson RC (2008) Ingested microscopic plastic translocates to the circulatory system of the mussel, mytilus edulis (L.). Environ Sci Technol 42(13):5026–5031
- Buchwalter C (2007) Living a LUSH life. Available: http://www.carriebuchwalter.com/uploads/2/ 7/6/6/2766408/cb_lush_paper.pdf
- Bushnik T, Haines D, Levallois P, Levesque J, Van Oostdam J, Viau C (2010) Lead and bisphenol A concentrations in the Canadian population. Health Rep 21(3):7
- Carbajo JB, Perdigón-Melón JA, Petre AL, Rosal R, Letón P, García-Calvo E (2015) Personal care product preservatives: risk assessment and mixture toxicities with an industrial wastewater. Water Res 72:174–185
- Clayton EMR, Todd M, Dowd JB, Aiello AE (2011) The impact of bisphenol A and triclosan on immune parameters in the US population, NHANES 2003–2006. Environ Health Perspect 119 (3):390
- Cole M, Lindeque P, Fileman E, Halsband C, Goodhead R, Moger J, Galloway TS (2013) Microplastic ingestion by zooplankton. Environ Sci Technol 47(12):6646–6655

- Di Y, Arbajian P (2014) Understanding alternative choices of handmade cosmetics in the postmodern consumer society
- Di Renzo GC, Conry JA, Blake J, DeFrancesco MS, DeNicola N, Martin JN, McCue KA, Richmond D, Shah A, Sutton P (2015) International federation of gynecology and obstetrics opinion on reproductive health impacts of exposure to toxic environmental chemicals. Int J Gynecol Obstet 131(3):219–225
- Diamanti-Kandarakis E, Bourguignon J-P, Giudice LC, Hauser R, Prins GS, Soto AM, Zoeller RT, Gore AC (2009) Endocrine-disrupting chemicals: an endocrine society scientific statement. Endocr Rev 30(4):293–342
- Ferrer A, Hidalgo C, Kaps R, Kougoulis J (2012) Revision of European ecolabel criteria for soaps, shampoos and hair conditioners. Market analysis for the joint research center of the European Union & the institute for prospective technological studies
- Gabrys J (2013) 12 Plastic and the work of the biodegradable. Accum: Mater Polit plast:208
- Gosens I, Delmaar CJ, ter Burg W, de Heer C, Schuur AG (2014) Aggregate exposure approaches for parabens in personal care products: a case assessment for children between 0 and 3 years old. J Eposure Sci Environ Epidemiol 24(2):208–214
- Grün F, Blumberg B (2009) Endocrine disrupters as obesogens. Mol Cell Endocrinol 304(1):19–29
- GSPI (2016) Six classes. http://greensciencepolicy.org/topics/six-classes/. Accessed 20 Feb 2016
- GVW (2015) Organic personal care market worth \$15.98 billion by 2020. http://www. grandviewresearch.com/press-release/global-organic-personal-care-market. Accessed 24 Jan 2016
- Hartlieb S, Jones B (2009) Humanising business through ethical labelling: progress and paradoxes in the UK. J Bus Ethics 88(3):583–600
- Health UDo, Services H (2014) 13th report on carcinogens. Polycyclic aromatic hydrocarbons national toxicology program http://ntp.niehs.nih.gov/ntp/roc/content/profiles/ polycyclicaromatichydrocarbons.pdf
- Huang H-B, Chen H-Y, Su P-H, Huang P-C, Sun C-W, Wang C-J, Chen H-Y, Hsiung CA, Wang S-L (2015) Fetal and childhood exposure to phthalate diesters and cognitive function in children up to 12 years of age: Taiwanese maternal and infant cohort study. PLoS ONE 10(6): e0131910
- Kapferer J-N (2010) All that glitters is not green: the challenge of sustainable luxury. Eur Bus Rev:40-45
- Kapferer J-N, Bastien V (2009) The specificity of luxury management: turning marketing upside down. J Brand Manage 16(5–6):311–322
- Kennedy D (2007) Toxic dilemmas. Science 318(5854):1217
- Kessler R (2015) More than cosmetic changes: taking stock of personal care product safety. Environ Health Perspect 123(5):A120
- Lakind JS, Birnbaum LS (2010) Out of the frying pan and out of the fire: the indispensable role of exposure science in avoiding risks from replacement chemicals. J Eposure Sci Environ Epidemiol 20(2):115–116
- Leslie H (2015) Plastic in cosmetics, are we polluting the environment through our personal care? Liboiron M (2009) Recycling as a Crisis of Meaning. eTopia
- Liboiron M (2015) Redefining pollution and action: the matter of plastics. J Mater Cult:1359183515622966
- Lindstrom M (2005) Broad sensory branding. J Prod Brand Manage 14(2):84-87
- Loretz L, Api A, Babcock L, Barraj L, Burdick J, Cater K, Jarrett G, Mann S, Pan Y, Re T (2008) Exposure data for cosmetic products: facial cleanser, hair conditioner, and eye shadow. Food Chem Toxicol 46(5):1516–1524
- LUSH (2016a) Fresh thinking: summer catalogue Australia
- LUSH (2016b) Liquid soap vs. solid soap. https://www.lushusa.com/Liquid-Soap-vs.-Solid-Soap/ Article_Liquid-Soap-Vs-Solid-Soap,en_US,pg.html?fid=tips-tricks. Accessed 23 Mar 2016
- LUSH (2016c) LUSH kitchen. https://uk.lush.com/products/kitchen. Accessed 22 Feb 2016

- LUSH (2016d) LUSH: fresh, handmade cosmetics. https://www.lush.com.au. Accessed 22 Feb 2016
- LUSH (2016e) Reducing landfill. https://www.lush.com.au/shop/info/23/naked. Accessed 5 Jan 2016
- MacBride S (2011) Recycling reconsidered: the present failure and future promise of environmental action in the United States. MIT Press, Cambridge
- Matusow J (2010) Sustainable packaging: the beauty Industry's Perfect Storm? http://shows. beautypackaging.com/articles/2010/04/sustainable-packaging-the-beauty-industrys-perfect. Accessed 27 Jan 2016
- Meadows DH, Wright D (2008) Thinking in systems: A primer. chelsea green publishing, Vermont
- Meeker JD, Sathyanarayana S, Swan SH (2009) Phthalates and other additives in plastics: human exposure and associated health outcomes. Philos Trans R Soc Lond B: Biol Sci 364 (1526):2097–2113
- Mintel (2015) Annual soap & shower market overview-International-2015
- Moore C (2013) Rapidly increasing plastic pollution aquaculture threatens marine life. Tul Envtl LJ 27:205
- OED (2016) Hygiene. http://www.oxforddictionaries.com/definition/english/hygiene. Accessed 31 Mar 2016
- Oehlmann J, Schulte-Oehlmann U, Tillmann M, Markert B (2000) Effects of endocrine disruptors on prosobranch snails (Mollusca: Gastropoda) in the laboratory. Part I: bisphenol A and octylphenol as xeno-estrogens. Ecotoxicology 9(6):383–397
- Olsson M (2014) The cost of inaction: a socioeconomic analysis of costs linked to effects of endocrine disrupting substances on male reproductive health. Nordic council of ministers, Copenhagen
- Pasqualotto FF, Lucon AM, Sobreiro BP, Pasqualotto EB, Arap S (2004) Effects of medical therapy, alcohol, smoking, and endocrine disruptors on male infertility. Rev Hosp das Clínicas 59(6):375–382
- Penner B (2013) Bathroom. Reaktion books, UK
- Pereira de Carvalho A, Barbieri JC (2012) Innovation and sustainability in the supply chain of a cosmetics company: a case study. J Technol Manage Innov 7(2):144–156
- Reuben S (2010) Reducing environmental cancer risk: what we can do now. President's cancer panel, Annual report 2008–2009
- Rochman CM, Hoh E, Hentschel BT, Kaye S (2013) Long-term field measurement of sorption of organic contaminants to five types of plastic pellets: implications for plastic marine debris. Environ Sci Technol 47(3):1646–1654
- Ross-Smith A, Huppatz K (2010) Management, women and gender capital. Gender Work Organ 17(5):547–566
- Routledge EJ, Parker J, Odum J, Ashby J, Sumpter JP (1998) Some alkyl hydroxy benzoate preservatives (parabens) are estrogenic. Toxicol Appl Pharmacol 153(1):12–19
- Sayer J, Ghazoul J, Nelson P, Boedhihartono AK (2012) Oil palm expansion transforms tropical landscapes and livelihoods. Glob Food Secur 1(2):114–119
- Schug T, Abagyan R, Blumberg B, Collins T, Crews D, DeFur P, Dickerson S, Edwards T, Gore A, Guillette L (2013) Designing endocrine disruption out of the next generation of chemicals. Green Chem 15(1):181–198
- Shove E (2003) Comfort, cleanliness and convenience: the social organization of normality, vol 810. Berg, Oxford
- Smith V (2007) Clean: a history of personal hygiene and purity. OUP, Oxford
- Statista (2012) Consumers' motivational factors for purchasing luxury personal care products in the United States in 2012. http://www.statista.com/statistics/251649/us-consumers-reasons-tobuy-luxury-personal-care-products/). Accessed 17 Jan 2016
- Stoker TE, Gibson EK, Zorrilla LM (2010) Triclosan exposure modulates estrogen-dependent responses in the female wistar rat. Toxicol Sci:kfq180

- Tan K, Lee K, Mohamed A, Bhatia S (2009) Palm oil: addressing issues and towards sustainable development. Renew Sustain Energy Rev 13(2):420–427
- Teoh CH (2010) Key sustainability issues in the palm oil sector. a discussion paper for multi-stakeholders consultations (Commissioned by the world bank group)
- TMR (2015) Organic personal care products market—global industry analysis, size, share, growth, trends and forecast, 2014–2020. Transparency market research
- Truong Y, McColl R, Kitchen PJ (2009) New luxury brand positioning and the emergence of masstige brands. J Brand Manage 16(5):375–382
- Tutty J (2016) 2016 Predictions for the luxury industry: sustainability and innovation. Positive luxury
- UNEP/WHO (2013) State of the science of endocrine disrupting chemicals—2012. WHO-UNEP, Geneva
- UXAwards (2014) 2014 UXies. http://userexperienceawards.com/ux-awards-2014-winners/. Accessed 7 Mar 2016
- Vandenberg LN, Colborn T, Hayes TB, Heindel JJ, Jacobs DR Jr, Lee D-H, Shioda T, Soto AM, vom Saal FS, Welshons WV (2012) Hormones and endocrine-disrupting chemicals: low-dose effects and nonmonotonic dose responses. Endocr Rev 33(3):378–455
- Vos JG, Dybing E, Greim HA, Ladefoged O, Lambré C, Tarazona JV, Brandt I, Vethaak AD (2000) Health effects of endocrine-disrupting chemicals on wildlife, with special reference to the European situation. Crit Rev Toxicol 30(1):71–133
- Wolff MS, Teitelbaum SL, Pinney SM, Windham G, Liao L, Biro F, Kushi LH, Erdmann C, Hiatt RA, Rybak ME (2010) Investigation of relationships between urinary biomarkers of phytoestrogens, phthalates, and phenols and pubertal stages in girls. Environ Health Perspect:1039–1046
- Zoeller RT, Brown T, Doan L, Gore A, Skakkebaek N, Soto A, Woodruff T, Vom Saal F (2012) Endocrine-disrupting chemicals and public health protection: a statement of principles from the endocrine society. Endocrinology 153(9):4097–4110