

Multisensory perception of cuteness in mascots and zoo animals

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Abstract

Cuteness, as dealt with in the existing semiotic and product design literatures, is often regarded as a purely visual perception. This paper provides an alternative to existing lines of thinking by offering a more holistic, multisensory approach to humans' perception of cuteness with regard to animal mascots and animals themselves. We adopt a biosemiotic approach to cuteness and product design studies with the employment of *Umwelt* theory and associated concepts of multisensory perception. Additionally, we analyze *Kindchenschema*, that is different visually perceivable characteristics that are considered to be properties of cute animals, in order to establish the multisensory aspect of the affective dimension of cuteness. In explicating the interaction between the senses, we analyze cases of sensory incongruence that can affect one's perceptual experience of animal characters and animals. We then argue for the need of a multisensory approach to the study of cuteness and the implications such an approach has for marketing research and applied products'/services' design.

Keywords: biosemiotics, cuteness, *Umwelt*, product design, animal mascots.

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0. Introduction

Marketing semiotics constitutes a research field that is largely informed by cultural and semiotic theories in addressing communicative and consumer behavior phenomena (e.g. Barthes 1967; Solomon 1988). However, little attention has been paid to biosemiotics. We suggest that biosemiotics, when dealing with cuteness studies, has much to offer to both theoretical and applied marketing semiotic research. Therefore, the aim of this paper is to offer a biosemiotically grounded approach to perceived cuteness of animal mascots and animals themselves. We argue that this approach is more holistic than existing perspectives, as it stems from the idea that cuteness is perceived in a multisensory way.

Taking into account that humans are not purely cultural beings, but also biological beings with specific communication capabilities, is particularly important in perceiving other animals and animal characters. The role performed by biological factors in our perception of and communication with other species in general, as well as in the perception of cuteness and youth more specifically, has been underscored by the ethologist Konrad Lorenz (1943) and the biologist Charles Darwin (1872).

Building on existing biosemiotic theories, we consider *Umwelt* as the key concept in the discussion of cuteness perceptions. *Umwelt* is a concept that was established by the Estonian-German biologist Jakob von Uexküll (1982) to describe the meaningful world of an animal. *Umwelt* refers to an animal's subjective world: it consists of *Merkwelt*, which is the specific perceptual field of a given organism, and the *Wirkwelt*, which is the field of interaction. More specifically, *Umwelt* is the totality of an animal's meaning relations, i.e. the only perceivable reality for the animal, based on its perceptual and operational organs (Uexküll 1982). Here, it is important to stress that an animal's point of view is what matters, i.e. something can be meaningful only from the point of view of the perceiver. The way that an animal perceives others and his/her surroundings is dependent on its body structure and is thus highly species-specific, which means that communication channels (also including the range and receptivity of the senses) employed by different species differ significantly. It follows that the communicative abilities of different species depend on the structure of their *Umwelt*. The more similar the body structure of different species (i.e. the more similarly they can perceive and act upon the world), the greater the overlap between their *Umwelten* and the more possibilities there will be for communication. Overlaps in *Umwelten* enable the communication of complicated matters between different species such as selecting a mating partner, as is the case with lions and tigers in some zoos that in the past have produced offspring (ligers and tigons). We apply the notion of *Umwelt* not to other species, but to humans and our specific communication system. Thus, our

approach stems from the realization that humans, in addition to other animals, have a species-specific *Umwelt*, encompassing the perceptual senses, concrete communication channels, as well as methods for social communication and interacting with the environment; our *Umwelt* overlaps to different extents with the *Umwelten* of other animal species, thus enabling us to communicate with and ascribe meaning to them.

More precisely, given the topic of this paper, we employ *Umwelt* as it pertains to the perception of cuteness in other animals and animal mascots. We argue that the perceptions of cute animals, animal mascots, and the way that people interact with them creates an affective relation. Affection, in relation to cuteness studies, can be defined as the outcome of positive sentiments through sensory perception (Gn 2016). This definition is not limited to emotion, but refers to the whole bodily experience (physiological, emotional, etc.) in which one's capacity to act in certain ways is diminished or enhanced (Spinoza 2001; Gn 2016). To elaborate, by affective relation we mean that people have a certain attitude towards what they encounter and, in the case of cuteness, they display a tendency for interacting in a multisensory fashion.

The current study, although dealing with marketing issues, falls within the field of biosemiotics, and more precisely under anthropological zoosemiotics and its subcategory of representational zoosemiotics, which deals with animals as sources of representation and meaning (see Martinelli 2010). In addition to employing Uexküll's *Umwelt* theory, we recruit Lorenz's¹ (1943) *Kindchenschema*, i.e. the different, visually perceivable characteristics that are considered to be properties of cute animals. By building on *Kindchenschema* and the affective dimension of cuteness we propose to rethink the methods of studying cuteness in marketing. We argue that visual perception has been overemphasized in cuteness studies, as well as in marketing and design studies in general. By offering a multisensory approach to the perception of cuteness, we are able to address both the potential problems and the benefits that stem from sensory incongruence. We further argue for the relevance of such an approach in the design and testing of products and services both within the field of cuteness related industries and species conservation marketing, as well as in the broader marketplace.

1. General approaches to cuteness

Cute is not a straightforward term, and its metamorphosis is a proof of that. In English, it derives from the word *acute*, denoting a cunning, clever, or shrewd perception (Brzozowska-Brywczyńska 2007; Cross 2004; Dale 2016). Thus, its connotations elicit a sense of a sharp and keen understanding of something or someone. However, because of this connotative

¹ Lorenz was Uexküll's student (Maran et al. 2011: 51).

transformation of the concept, cute may also evoke sensations of warm-heartedness and affection.

Around 1830, the term cute was used to describe *objects* that were attractive, charming, or pretty (Cross 2004). An early recorded example taken from *Virginia Illustrated* shows the term being used to refer to a pair of small socks for a doll: ““What cute little socks!” said the woman regarding the work of interest” (Strother 1857: 166). Nowadays, however, we also use this word to characterize both humans and other animals.

Cute or cuteness has several definitions that emphasize different nuances. Cuteness may be defined as “a characteristic of a product, person, thing, or context that makes it appealing, charming, funny, desirable, often endearing, memorable, and/or (usually) non-threatening” (Marcus et al. 2017: 8). More common definitions see cuteness as a set of attractive infantile features (see, for example, Morreall 1991; Sanders 1992). Some semantic uses of the term cute refer to small objects or to a sense of smallness (Marcus et al. 2017). Cuteness, as a generalized concept, is most directly tied to the physical characteristics of humans, animals, and objects. However, cuteness has also been identified with a style, language, gender, or cultural marker (Ngai 2005), and, as above mentioned, historically it has been used as an indication of perceived mental abilities. The Japanese adjective *kawaii*, which denotes the affective feelings often elicited by babies and young animals, is often translated into English as ‘cute’ (Nittono et al. 2012). However, some authors also employ the concepts of cute and *kawaii* for describing a certain social context in Japan (see, for example, Madge 1992). We can infer that the conceptualization of cuteness is similar in different cultures. Some sources contend that the connotations of cuteness render the term difficult to define and simply state that cuteness “[...] has multiple meanings ranging from “someone who is sweet and nice” to “something that you want to squeeze”” (Wang and Mukhopadhyay 2016: 150). Some studies have also proposed the term *whimsical cuteness* (Nenkov et al. 2008; Nenkov and Scott 2014), stating that “whimsical cuteness is not characterized by the vulnerable nature inherent in the cuteness of a helpless baby or child; it is instead associated with fun and playfulness” (Nenkov and Scott 2014: 327), e.g. a purse that is designed to look like a book or a hotdog outfit made for a dachshund are whimsically cute. In general, there seems to be two different types of cuteness — one that is largely based on the aforementioned whimsicality and the other, more prevalent one, on the theory that baby-like features, which elicit warm and caring feelings², are cute.

² It is worth mentioning that some animal documentaries have captured scenes that indicate that caring for babies of other species is more widespread than we might assume, e.g. in the movie *Eye of the leopard* (2006) a leopard cares for a baby baboon, whose mother she has killed (and the leopard was not lactating)

Cuteness, as dealt with in the relevant literature, places considerable emphasis on the visual aspect, i.e. cuteness is mainly seen as something experienced through our visual sense (see Miesler et al. 2011; Morreall 1991). This might be the reason why the relevant literature compares the notion of cuteness to other aesthetic experiences that elicit positive emotions. For example, cute may often be juxtaposed with pretty, attractive, and beautiful, to discover whether or not they could be synonymous or what kind of semantic preferences are present in using these words (see Ly and Jung 2015; Geldart 2010). However, we argue that experiencing affective feelings³ also plays a great role when depicting cute objects and subjects. For example, books like *Pure cute* (West and Bergund 2009) or *So cute you could die!* (Summers 2017) feature predominately pictures of baby animals that are meant to elicit affection and caretaking reactions. In addition, picture books like *Hot guys and baby animals* (Khuner and Newman 2011) feature solely baby animals in conjunction with human caretakers. In either case, whether aesthetically appealing or eliciting affection, the physical characteristics as perceived through the visual sense, usually not accounting for other senses, are used as a means for eliciting a desired response from an audience. Since we are dealing with cuteness in animal mascots (who are depicted as having biological attributes) and to a lesser extent with zoo animals (that are biological beings), we consider cute as a more widely known concept that stems from the biological approach and is based on the criterion of youthful features (not the type of cuteness which is based on whimsicality).

2. The biological approach to cuteness

Research into the notion that physical traits influence the perception of cuteness and that cuteness can generate a caregiver response from adults has a well-established history. Charles Darwin (1872), in *The expression of emotions in man and animals*, explains that there is likely an adaptive force in both humans and many mammals that encourages adults to take care of infants. In his discussion of the affection of cats and dogs towards their young, Darwin claims that “there is every reason to believe that the gestures both of hostility and affection are innate or inherited [...]” (1872: 57).

In offering a theory to explain the driving force behind this inclination for caregiving, Konrad Lorenz (1943), who studied the parenting behavior of several species, proposed a series of characteristics in infants that promote nurturing and caregiving responses and suppress

herself at the time); and in the documentary *Spy in the wild* (2017) a male chimpanzee adopts a baby genet.

³ Also called the aww factor (Dale 2016).

aggressive responses in human adults. Lorenz's contemporaries synthesized the list of features to include: "(a) large head relative to body size, rounded head; (b) large, protruding forehead; (c) large eyes relative to face, eyes below midline of head; (d) rounded, protruding cheeks; (e) rounded body shape; (f) soft, elastic body surfaces; (g) elastic body movements"⁴ (Cupchik and László 1992: 124). Originally entitled the *Kindchenschema* (Lorenz 1943), this theory is also referred to as *baby schema* (see Borgi et al. 2014), *child schema* (see Dale 2016), or *neotenus features* (see Archer and Monton 2011). In contemporary teachings, the guidelines for cute character design also emphasize the given features, with the addition of using light colors and keeping the character simple (Marcus et al. 2017: 25–26). Psychological and behavioral research examining the *Kindchenschema* has found that adults form more positive aesthetic judgments of infants with a higher incidence of these features (Hildebrandt and Fitzgerald 1978; Sternglanz et al. 1977; Gardner and Wallach 1965). Thus, in cuteness studies the concept's biological principles are often referred to, emphasizing the babyish features that cause the innate releasing mechanism of caregiving and affection towards the very young: cuteness is *inviting* (Genosko 2005; Morreall 1991).

There is "considerable agreement (and evidence [...]) that humans respond in a parental way to certain sets of facial and bodily features found in human infants. These features make most of us go "ah" and "coo" regarding their owner as "cute" or "sweet"" (Archer 1997: 249). For example, in zoo marketing it is common to depict endearing animals, who are usually large charismatic mammals, to evoke positive emotions (Cushing and Markwell 2011). Baby animals, especially, are credited for zoos' mounting revenues due to the rise in visitor numbers (see, for example, Clark 2008; Kawata 2013). There is also a general loss of interest following the aging of the animals (Mullan and Marvin 1987). This phenomenon can be easily explained by the fact that animal babies, as human babies, possess youthful characteristics described by *Kindchenschema* which decrease once they reach sexual maturity.⁵

In animals, this is not only evident in the changes of their visible features, but also in their movements and interactions with their surroundings, such as when their clumsiness disappears. It is also important to note that although young animals possess these youthful features naturally, when it comes to animal designs some features are often exaggerated, e.g. the eyes are enlarged, the heads are designed as non-proportionate to the body size, etc. However, there

⁴ In some cases, 8 features are named with the substitution of elastic movements for clumsiness or weakness (e.g. Morreall 1991) and the addition of "[s]hort, stubby limbs with pudgy feet and hands" (Genosko 2005: 5).

⁵ There seem to be two exceptions to this phenomenon, namely giant panda bears, and koala bears who retain their youthful features and thus their cuteness.

is a limit to this exaggeration, meaning that at some point the *cutified* animal mascot or toy will no longer be perceived as cute, indicating that there are certain proportional aspects that need to be accounted for. Lorenz himself said, “The Kewpie doll represents the maximum possible exaggeration of the proportions between cranium and face which our perception can tolerate without switching our response from the sweet baby to that elicited by the eerie” (Lorenz 1981: 164–165). We accept that in addition to biological roots, there are also cultural factors that influence the perception of cuteness, e.g. cuteness has been viewed, in general, more positively in Japan as compared to the United States of America where it often has more negative connotations, such as helplessness and distraction from responsibilities (Ngai 2005). However, in this article, we concentrate for analytical clarity on the biosemiotic aspects that are under-represented in cuteness studies; thus, we shall not analyze cultural aspects. We explore the importance of a multisensory approach to cuteness perception, especially regarding animal mascots and zoo animals, and how this biosemiotically based approach can be a viable marketing tool.

3. Anthropomorphism in cuteness and *Kindchenschema*

Anthropomorphism is a well-studied area across disciplines, e.g. literature, religion studies, computing, psychology, biology, marketing, and very important in evaluating the cuteness of animal characters and animals. Anthropomorphism denotes attributing human characteristics to non-humans, with an emphasis on attributing animals with human mental and behavioral characteristics (see, for example, Serpell 2002) (and especially in cases where this characterization is erroneous (Horowitz and Bekoff 2007)). A great example of anthropomorphism is that of a zoo panda, who “[...] becomes an animal imbued with human personality, with human needs, and subject to similar emotions. So closely does it resemble the soft toys which are made in its image that the toy is played back into the perception of the real animal and thus even adult pandas become soft toys” (Mullan and Marvin 1987: xv).

Lorenz (1970[1951]) extended the cuteness response beyond human infants and young animals to inanimate objects such as dolls, toys, and stuffed animals by means of an anthropomorphic analogy, thus widening the scope of attributing human characteristics from living animals to non-living objects. In perceiving other animals besides humans, analysis of anthropomorphism often indicates that animals from certain species are more likely to be anthropomorphized. This applies to the species that are physically more similar to us (e.g. primates) (Horowitz and Bekoff 2007; Connell 2013). The focus here is on the species resembling ourselves as the target of anthropomorphization. Additional research reinforces this

claim by showing that people ascribe to different species various mental states (e.g. sentience, affect, cognition). Top positions, once again, are occupied mostly by species who are biologically similar to us (Herzog and Galvin 1997). It may be argued that this is due to the shared or overlapping *Umwelten* between humans and other mammals (see also Mäekivi, Maran 2016).

This mammalian *Umwelt*, or precultural basis for anthropomorphization, also infuses bias when we interpret other animals or even animal characters and mascots. In research looking at the perception of cuteness in animal characters and mascots (Dydzynski 2017), it was shown that inherent biases towards given species could lead to more positive aesthetic judgements (e.g. towards mammals) or negative aesthetic judgments (e.g. towards fish) as regards animal characters and mascots.

This bias is also encountered in the diversity of species represented as animal mascots in sports. In the *National Hockey League*, out of the 29 currently used mascots 16 are depicted as mammalian species, with only 3 being invertebrates, also heavily anthropomorphized (NHL 2018)⁶. This bias against invertebrates has been labeled as *vertebrate chauvinism* (Kellert 1985). In zoos these vertebrates are referred to as *charismatic megafauna* and zoos are sometimes accused of bias against mammals, because they seem to “spotlight cute animals, fuzzy animals, “charismatic megafauna”” (Malamud 2012: 116). In species conservation, these species are referred to as *flagship species*, denoting a “popular, “cute”, charismatic animal that is used as a symbol to arouse public interest in the animal and its habitat [...]” (Smith and Sutton 2008: 127).

Although anthropomorphism targets mainly mental and behavioral characteristics, there is another kind of anthropomorphism, which is especially important for and evident in marketing. In marketing, emphasizing human physical (as opposed to mental) characteristics in different products is a customary method that is used to increase sales and the likeability of goods (Wang and Mukhopadhyay 2016). These physical characteristics, for example in animal mascots, are exactly the same as those that abide by the features of *Kindchenschema* and make the mascots and other animal characters more neotenous. For example, Mickey Mouse’s head and eyes have grown larger and he has gotten sclerae resembling human eyes (Gould 1979). This physical aspect of anthropomorphism is also a link to cuteness, since, as discussed previously, physical characteristics are directly tied to the perception of cuteness.

⁶ A listing of the current mascots of the National Hockey League can be found here: <http://www.thehockeynews.com/news/article/nhl-mascot-rankings-the-good-the-bad-and-the-cuddly>.

Traces of anthropomorphizing can be found in animal characters' design, as people respond more positively to anthropomorphic portrayals of animal characters compared to non-anthropomorphic depictions (Connell 2013). We can see this trend in the depictions of non-mammalian species in a variety of animated movies and their licensed merchandise: in *Finding Nemo* (Pixar 2003) and *Finding Dory* (Pixar 2016), many fish and aquatic species are ascribed front facing eyes instead of their lateral facing ones among many other anthropomorphic characteristics, while in movies like *A bug's life* (Pixar 1998) insects are made bipedal and their limbs are reduced from six to four. In a similar fashion, *Lucas the spider*⁷ is portrayed with large eyes, relatively clumsy movements, with a childish voice. By rendering something that should be feared or repulsive, cute and adorable, *Lucas the spider* manages to override a quite common inherent bias against spiders or even arachnophobia, a widespread biologically induced fear and a psychological response to spiders especially in Western cultures (Davey 1994).

4. Cuteness as design factor

We briefly discussed that often the affective responses towards youthful features are manipulated for artistic or commercial reasons. In Western markets, the shift away from traditionally ornate toys towards porcelain dolls and figures can be traced in the emergence and rapid popularity of the teddy bear in 1902 (Hinde and Barden 1985). The development and market research of this aesthetic did not fully develop until well after WWII (Ngai 2005). During this period, many products and related media underwent a rapid aesthetic transformation. Similarly to Mickey Mouse, the teddy bear design assumed neotenic traits (Hinde and Barden 1985). While this trend can be seen globally, its emergence can be traced in 1970's Japan with the establishment of Gakken Publishers and Sanrio, which featured cute characters, such as Hello Kitty, on stationery and greeting cards (Madge 1997). By 1990, Sanrio was earning an estimated \$90 million annually in Japan (Shimamura 1991: 60). Companies both in Japan and in other parts of the world soon began utilizing cuteness in an attempt to mirror their success (Shimamura 1991: 58–61).

Nowadays, cuteness as a dominant aesthetic in Western media is exemplified in Disney and Pixar's commercial success with cute anthropomorphic animals and characters such as Nemo (*Finding Nemo*) and Stitch (*Lilo and Stitch*) (Allison 2003). As an anecdotal confirmation, Mr. Disney himself is said to have put notes on his animators' desks which reminded them to "keep it cute!" (Genosko 2005: 1). Additionally, human characters such as Elsa and Anna from *Frozen* are now being designed with more of these exaggerated *Kindchenschema*

⁷ See: <https://www.tubefilter.com/2018/03/12/lucas-the-spider-viral-youtube-acclaim/>.

characteristics, e.g. larger eyes, bigger heads, softer features compared to the traditional traits of Snow White (Wiersma 2000).

Contemporary research into cuteness as a factor in the design and marketing of artefacts has also largely focused on visual aesthetics (Cho 2012). This focus on visual aesthetics is also encountered in research that seeks to examine and define the aspects of the *Kindchenschema* (Berry and Zebrowitz-McArthur 1988; Bogin 1988). Many cuteness studies feature pictures of faces that are presented for evaluation, where characteristics (e.g. the shape of the head, size of the eyes, etc.) are manipulated to find out which *Kindchenschema* features are indeed important in cuteness perceptions (see Wang and Mukhopadhyay 2016). Often, these studies utilize eye tracking and gaze allocation as their primary measurements (Glocker et al. 2009; Borgi et al. 2014) or ask respondents to evaluate pictures by utilizing the visual modality (Little 2012). In addition, physical characteristics such as color (Etcoff 1999; Frost 1989; Wright and Rainwater 1962) and object roundness (Bar and Neta 2006) that were not established features in the original *Kindchenschema* theory, have lately gained traction. Although there has been extensive research into the visual communication channel in the perception of cuteness, whether of biological or cultural orientation, few attempts have been made to study additional communication channels in evaluating cuteness. In the next section we approach cuteness from a more holistic vantage point to explicate the importance of other perceptual modalities and their interconnectedness in creating a multisensory perceptual experience. To this end, we draw on the perceptual framework of our own *Umwelt* for establishing the importance of other senses (besides visual), such as touch, smell, and sound perception in our apprehension of other species.

5. Cuteness as a multisensory perception

Humans, along with other animals, have many communicative abilities that enable us to perceive the world in a specific way: “[a]ll living beings are immersed in an impalpable “bubble” delineated and defined by the special possibilities allowed each organism by its unique means of sensual perception” (Sebeok 1986: 172). However, despite the typical and well-known Aristotelian categorization of humans’ five senses⁸, vision is still often cited as the main modality for gathering information. “[T]he world we inhabit is filled with visual images. They are central to how we represent, make meaning, and communicate in the world around us” (Struken and Cartwright 2001: 1). Since we live in the information and new media age it is understandable

⁸ There are also authors who claim that people are in possession of more senses, e.g. proprioception and equilibrioception (see, for example, Macpherson 2011).

that a lot of emphasis is placed on the visual modality where text, pictures, graphics, videos, are constantly present on our screens. This phenomenon has also been referred to as “the hegemony of vision in Western culture” (Howes 2003: xii). Still, we do not agree that the visual modality⁹ should be granted independence from the other senses, as this is not reflective of our experiences which are multisensory in nature.¹⁰ Echoing a rather similar thought, it might be argued that generally if some other sense is taken into account in addition to vision, it is most probably audition, e.g. “[m]essages almost exclusively appeal to sight and sound, neglecting the full five-dimensional picture” (Lindstrom 2005: 86). However, humans as a species belonging to the mammalian class, use the entire sensorial spectrum at their disposal while interacting with others and their environment. Thus, we also utilize other communication channels which should not be underestimated.

Humans similarly exploit the conditions of the world and the capacities of our human bodies. We use light and the faculty of vision in multifarious ways. Sound waves and audition too — we listen to vocalized utterances and much else too. Touch and movement play their part, far more than often recognized (Finnegan 2002: 34).

The use of other modalities proves to be important in perceiving objects that are designed with the intent to accord with other senses, e.g. taste in food, smell in perfumes, touch in pillows, the sound of a squeaky toy. However, when it comes to cuteness it has been argued that “[t]here are [...] no cute textures, tastes, or smells” (Morreall 1991: 39). We do not fully agree with this statement. Recent studies have been shifting attention to other senses, e.g. the role performed by the olfactory and auditory senses in cuteness perceptions (e.g. Kringelbach et al. 2016). Some studies include topics such as motivation (Aragon et al. 2015), suggesting that to a certain extent other modalities of cuteness perception are beginning to be recognized, although exploration into this topic still lies at an embryonic level.

We argue that cuteness is a multisensory experience that builds off biosemiotic ground and affection. Affection, although seen as a response to cute features, can be elicited by *cute behavior*, e.g. the clumsiness of an animal or animal character. Clumsiness embodies the lack of

⁹ In fact, the input of our other senses can even lead to visual illusions, or misinterpretations of visual stimuli, such as the addition of auditory cues to a visual stimulus can lead to a sound-induced illusion of visual motion (Fracasso et al. 2013).

¹⁰ This claim is further supported by the fact that much of social communication of primates relies not on visual but on tactile communication (see de Waal 1989).

skill in interacting with one's environment. It can also be argued that affection eliciting cuteness perception creates a situation similar to the social interaction between people in proximity to each other or where they establish a relationship through mutual gazing in face-to-face encounters. Now, the term *face-to-face* is in itself interesting, inviting us, once again, to identify visual cues and to glean information from faces, e.g. to detect personal identity, possible kin relationships, personality, facial expressions, and action tendencies (Cosmides and Tooby 1992). We, however, are interested in other senses that are operative in direct social interaction. Touch is one of the modalities that allows people to show affection in social interaction. It might even be argued that touching can potentially evoke some sense of proximity to the touched and human beings often employ touch when they want to provide emotional support or when they express intimacy or tenderness (see, for example, Jones and Yarbrough 2009). We could draw a parallel between the affective responses that humans feel towards cute animal characters, especially toys, or animals themselves and what they express in interpersonal communication with other humans through the modality of touch, i.e. it is a similar expression of affection that is elicited in cute perception and in social situations where only humans are involved. When the first soft animal toys were produced¹¹, they were covered with real animal skins in order to point out their authenticity by portraying a more realistic representation of the toy as animal (Berger 1980). Touch, in this example, is paramount for the entire experience of the animal toy.

We may discern from the above that if we take into account the affection that people feel towards animal characters and the wish to approach or establish contact with them (Dale 2016), we can conclude that cuteness motivates the desire to touch or hold cute animals (Elliot and Covington 2001). One reason for this is that tactile communication is important in our mammalian *Umwelt* especially in social settings; and since cute animal characters and animals elicit affective responses (partly due to their cute behavior or clumsy movements), they also stimulate the urge to cuddle or physically protect them (Lorenz 1981). This is especially evident in zoo settings, where children's zoo or *affection section* as Disney's Animal Kingdom Theme Park¹² cleverly calls it, is hugely popular and the element of touch is in the center of experience.

In many cultures, we also encounter the manipulation of vocal pitch for conveying social meaning. This is exemplified in the Korean concept of *aegyo*, in which a falsetto is often employed among young women to express a sense of innocence and affection towards partners (Cho 2006). Similar ways of garnering affection through audition are employed in toy design,

¹¹ It is also interesting to note that the production of realistic animal toys coincides historically with the establishment of public zoos (see Berger 1980).

¹² See <https://disneyworld.disney.go.com/attractions/animal-kingdom/affection-section/>.

such as in *Build a Bear Workshops*¹³ which allow for pre-recorded or personalized sound boxes to be built in their bears with a view to fostering a personal connection. In animals, such as mammals and birds, high pitched sounds (as compared to low pitched sounds) are often employed to approach another animal in a friendly manner (Morton 1977). It is reasonable to assume that high pitched sounds are also part of *Kindchenschema*. For example, human babies, inasmuch as the young offspring of many mammals and birds, produce higher frequency sounds which are intended to elicit care-taking responses. “Nearly all infant vocalizations are high frequency and pure tone-like sounds that would tend to attract the adult rather than repel it, [...] apparently selection favors vocalizations to elicit parental care and to direct food toward the calling nestling” (Morton 1977: 865). Additionally, auditory information can be associated with texture such as the feeling of warmth or softness, as in the case of cat purring or of onomatopoeic expressions in Japanese such as *fusa-fusa* and *pof-pof* that convey sensations of softness and comfort (Ohkura 2016).

Cuteness as perceived through the olfactory sense provides a greater challenge than other senses, especially regarding real animals. We recognize the objection in considering an animal or an animal character as *smelling* cute, however the olfactory sense is part of the overall affective experience that sustains cuteness perception. There are instances where maternal affection in humans and other (mammalian) species is discussed with relation to olfactory signals and where nurturing behavior is seen as strongly elicited by the smell (Fleming 1989). So, this aspect can be considered as something quite prevalent in the mammalian *Umwelt*. Although it is difficult to locate scientific studies on people knowingly smelling other animals, the fact that there exist perfumes for dogs¹⁴ and perfumes made from animal scents, e.g. musk, civet, castoreum (Jellinek 1997), supports the argument that olfactory signals are also important in perceiving cuteness in animals and animal characters.

Furthermore, we can trace a relationship between cuteness and the gustatory sense in colloquial expressions such as “so cute I could eat it up” and in the employment of terms of endearment referring to sweet substances such as ‘honey’, ‘sugar’, and ‘sweetie’. We can also see associations between animal characters and our gustatory preferences. The usage of cartoon animal mascots (and media characters) on foods may increase a child’s appetite and preference for the food (Kraak and Story 2014). Animal representations and characters are not limited to food packaging, but foods themselves are often shaped as animal characters (e.g. animal crackers, fruit snacks, cookies). The design of food into animal shapes and forms has

¹³ See <https://www.buildabear.com/>.

¹⁴ See, for example, <http://www.ohmydog.eu/en/content/c0750-oh-my-dog-perfume-en>.

also been shown to be an effective technique in encouraging food consumption for children who are picky eaters (Elliott 2011). Anecdotal evidence also supports the usage of animal shaped foods to encourage eating, with a variety of blogs, videos, and articles¹⁵ dedicated to the subject. We can also see contexts and connotations associated with sweetness in the usage of animal characters. Often cute characters are utilized in products high in sugar and sweeteners such as soda, cereal, and candy. The usage of characters has been shown to exert a particularly strong influence on children's food preferences for cookies and candy as compared to vegetables and fruits (Kraak and Story 2014).

The above examples are crucial in understanding that the visual representation of animal characters may not account on its own for the intimacy and affection that are elicited when people perceive cuteness. We argue that cute character perception is a complex activity, i.e. it requires the senses to be interwoven, it has similarities with social interaction, and is further amplified by the anthropomorphic factor. To elaborate, the representation of cuteness solely through the visual modality is not sustainable because the effect of cuteness perception on human behavior or action already involves other modalities and their interaction. The affection people feel towards cute animals or animal characters that invite people to approach them is also a prerequisite for using both distance senses (e.g. olfaction) and proximity senses (e.g. touch) (Ludden et al. 2006). The interplay between senses is sometimes referred to as *sensory synergy* (Lindstrom 2005: 85). In addition, there is a sort of plasticity and interwovenness of our senses that can be expressed in language, e.g. *warm color* combines touch with vision; *sharp sound* combines touch with audition, *sweet smell* combines olfactory signals (see also Žemaistytė 2017). Thus, we do more than see when engaging with the world around us.

6. Congruence and incongruence of the senses in perceiving cuteness

Our argument for the interconnectedness of the senses is also supportive of the fact that people develop certain expectations that accompany the visual perception of an object, e.g. small things are not supposed to produce loud sounds, and if they do, it creates a conflict (Ludden et al. 2006). The same applies to other senses, e.g. when viewing an object, people develop a variety of assumptions and perceptions as to the tactile characteristics of the object that correspond with perceived physical ones. For example, even if we first experience an object with a visual modality, we often transition to the modality of touch, especially regarding cute animals or animal characters. During this transition we use our visual experience to predict the secondary modality, surface or texture. Such predictions occur in all modality transitions (Yanagisawa and Takatsuji

¹⁵ See <https://www.popsugar.com/moms/Animal-Shaped-Snacks-33928147>.

2015). Tactile communication is important in the human *Umwelt*, as it sometimes serves to confirm the information sourced through the visual communication channel, i.e. whether an animal's or character's texture feels the way we visually perceive it. It is suggested that these features combine to form tactile judgments such as "nice to touch" and that these judgments are heavily influenced by our expectation of the object (the expectation effect, Yanagisawa and Takatsuji 2015). The feel of a cute animal or animal character (e.g. round and soft) may also be accompanied by expectations of moves (e.g. clumsily), sounds and smells (e.g. a baby's scent).

In product design, this sensual bias has been called the *halo effect*, designating how our initial expectations of a product, either in relationship to its brand or its design, create expectations or even sensory biases (Garvin 1984). If the perception of cuteness is congruent with how it is perceived by different senses (i.e. the experience is truly multisensory), then it is reasonable to assume that overall cuteness perception is reinforced. In cases where conflict of the senses arises, i.e. the expectations nurtured by one sense are not confirmed by another, there are two possible outcomes: either there is a sort of compromise where information from different senses is integrated in the overall perception; or the information from one sense dominates the overall experience of the object (Ludden et al. 2006). This phenomenon has been tackled by the *expectation confirmation theory* (Oliver 1980), which proposes that a product's customer satisfaction is influenced by the confirmation of expectations and perceived quality, as well as by the quality itself leading to a perceptual outcome of either contrast or assimilation. Where touch and vision are involved, the incongruity is more distinct, probably because the characteristics can be perceived through both of these sensory modalities. However, when, for example, there is an incongruence between vision and sound or between vision and smell, the connection is rather of a cognitive kind (i.e. sound and smell are not visible, but texture is) (Ludden et al. 2006) and hence, the incongruence, if not too powerful, might not be perceived as a sharp contrast.

Incongruence in the information gained through different senses is an important aspect in cuteness studies, especially because other senses besides vision are underappreciated or their influence on the whole experience of an animal mascot or of a real animal go unnoticed and may thus create an unwanted outcome. For example, in zoological gardens, what deviates from the visual perception of cute animals is both sound and smell. A case study of the Bosphorus Zoo in Turkey found that among adult zoo visitors the sounds of other visitors and children aggravated the experience, while bird sounds and focusing on the sounds of an animal ameliorated the overall experience (Dirsehan et al. 2010). In a case from Bristol and Paignton Zoos children refused to enter the indoor exhibits with pungent smells and "[i]n most cases the

reactions involved exclamations such as “Phew! It’s *smelly* Mummy!” or, as one older child put it, “They should use some *air freshener* in here!”” (Lindahl Elliot 2006: 204).

The incongruence between scents can also be utilized for eliciting a positive affect. Disney Japan’s Ufufy plush dolls which recreate famous Disney characters in egg shape to enhance cuteness, are also designed with fruity and floral aromas including apple blossom, cherry, and plum. The addition of scents, especially of unexpected ones, has been positively surprising for consumers, leading to adding scents to more of their products, as well as to expanding the Ufufy line globally (Shop Disney 2018). The product descriptions of the online Ufufy also address the multisensory experience of the toy such as this Winnie the Pooh Ufufy description: “Oh brother! Pooh’s nary been more huggable than in this Small Ufufy plush, descended from the clouds and as soft as air, carrying the scent of apple blossom. Snuggly, squeezably soft.”¹⁶

Although we have brought examples of different senses participating in the perception of an animal character or a real animal in a zoo, we understand that considering each of the senses separately allows us to appreciate their interdependency, as well as their interconnectedness in different combinations.

7. Multisensory cuteness and implications for the design of products and services

Insofar as cuteness often refers to a design aesthetic that is intended to elicit lovability (Gn 2016), it is crucial to manipulate forms and sensations in such a way as to capitalize on feelings of lovability which should not be constrained by the visual modality. The increasing popularity of this design aesthetic entails an enhanced attentiveness to perceptual features. Although the existing studies display a bias in favor of the visual modality, there is a clear need for research into additional modalities in order to offer more well-rounded accounts of how animals’ *Umwelten* are processed by humans. Since research into the overall perception of cuteness has largely ignored the multisensory experience of engaging with cute stimuli, there is a gap which limits the benefits that may be reaped by existing models of cuteness in addressing marketing and design issues. This becomes increasingly important with the growth of cuteness into a popular global aesthetic.

Product design that has placed an emphasis on the interplay between the senses and their synergies, as well as on how our perception influences emotion, such as *Kansei*

¹⁶ See <https://www.shopdisney.com/winnie-the-pooh-scented-ufufy-plush-small-4-12-1438158>.
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engineering (see Nagamachi 1995), has been quite successful in Japan and East Asia, although it remains to be widely adopted in the West.

Even so, there is still a large gap in our understanding of how variegated sensory features contribute to the relationship that consumers establish with a given product. The incorporation of the theory of *Umwelt* in the marketing and design process allows designers to better assess and manipulate instances of incongruence in product expectations. We can also see the advantage that such an approach has in the marketing of attractions at zoological gardens and aquariums, where petting zoos, animal feedings, and immersive experiences can lead to greater visitor satisfaction (Direshan 2010). While extra care needs to be paid to both guest and animal welfare, creating a full-fledged interactive experience while balancing desirable stimuli (e.g. animal sounds/textures) and undesirable stimuli (e.g. smell of animal feces) can lead to the construction of more compelling and marketable exhibits for zoos and achieve their educational role through emphasizing affective experiences.

8. Conclusion

Both visual bias and the lack of a biosemiotic approach in cuteness and marketing studies have limited our understanding of human perception and potential design applications. Approaches that separate cultural or social spheres of being from the biological ignore salient processes that condition our *Umwelt* and that are dependent on our body structure and its perceptual and operational organs. It is, therefore, of paramount importance to scrutinize the complex overlay of sensory experiences that create our perceptions, and for designers and marketers to utilize this knowledge in the creation of multi-sensory experiences. The biosemiotic theory of *Umwelt* offers greater insight into how we can interpret and understand the bodily experience of a human consumer.

By drawing on the aesthetic concept of cuteness, we have demonstrated the limitations of the *Kindchenschema*, primarily in terms of its over-emphasis on the visual, and highlighted the importance of incorporating additional sensory factors (e.g., touch, sound, taste, and smell) in the overall perception of cuteness in animals and animal characters. The interaction of these senses cannot be ignored and more attention should be devoted to their joint interaction in creating a perceptual whole. These factors should be considered in the testing and design of products and services. By establishing a robust understanding of the multisensory experience of the human *Umwelt* we can recognize that cuteness is more than just *looking cute*.

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