modelo de desarrollo todos los agentes implicados en la sociedad tienen que asumir una actitud responsable en sus acciones y los diseñadores no pueden ser la excepción. Los profesionales del diseño deben considerar las restricciones y condicionantes socioeconómicas, así como las consecuencias medioambientales de sus actos creativos. Aún más, deben reflejar en su vida cotidiana, un claro compromiso hacia el cuidado y conservación de nuestro entorno natural. A la larga, esto contribuirá a que poco a poco la ciudadanía conozca, respete y disfrute el medio ambiente y logre así una relación armónica con la naturaleza.

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Baby Bottle: the impact of an unsuspicious product

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Abstract

This article presents results of an investigation on the baby bottle and the consequences of it's being a mediator for the act of feeding babies. The article's main goal is to promote reflection on the problems generated by cultural practices molded by the use of inappropriate products, pointing out some paths and initiatives that mean to solve the issue.

Keywords

Baby bottle - industrial culture - professional ethics - social responsibility - sustainable design

Introduction

The unremitting use of some products consecrated by industrial culture has been causing severe impacts on the health and physical integrity of its users, as well as on the environment. One object in particular draws attention for the fact that it maintains its industrial and consumption escalade: the baby bottle. Widely and intensely used as means to feed babies, baby bottles share with formula the responsibility for a considerable part of premature weaning, child morbidity and mortality rates all over the world.

The scientific agreement on the risks and the inadequacy of the practice of giving formula to children, and the measures already taken in order to contain its disastrous effects indicate the urgency of efforts to reclaim the practice of breastfeeding and to develop appropriate utensils for the vital job of feeding babies.

The designer is one of the main professionals summoned for the fulfilling of those initiatives, for "design is not concerned with objects, but with the impact that those objects have on people" (Frascara, 2002).

Notes on the history of infant feeding

Archaeological records indicate that the baby bottle has been part of our material culture since the pre-Christian ages, and they illustrate that breastfeeding is not a purely natural biological process, but a culturized activity (Dettwyler, 1995) that has been modified by a wide variety of beliefs and replaced by other feeding practices.

The XVI century was a crucial stage on the dissemination of European mentality - which considered breastfeeding "undignified for a lady"[5] - on other continents and cultures. The Great Navigations era's notion of "civility" was in contrast to the "primitivism" on the discovered lands, in a way that it was incoherent to behave like a mammal.

In the 1880s, the "mummy's darling" bottle, produced in large scale, contributed for the high levels of child mortality of Victorian England, a time when just two out of ten children lived to be two years old

The Victorian bottle and the first north-American bottle, patented by Charles M. Windship, in 1841. The caps on both models are crossed by a straw, very narrow and practically impossible to clean.

The process of industrialization revolutionized the economy, the social relations and infant feeding. In 1867, began in Switzerland the production of infant formula. In 1873, 50.000 boxes of Nestle dairy food were sold in Europe, United States, Argentina, Mexico and Netherlands Indias. Many other companies were created, selling more and more alternatives to mother's milk. In the XIX century, the baby bottle became one of the symbols of modernity, being prescribed by medical doctors as the solution for any difficulty concerning infant feeding.

In 1974, the damages of artificial feeding through the bottle were loudly revealed by the book "The Baby Killer"[6]:

> "Babies in the Third World are dying because their mothers feed them in the western style, with formulas in bottles. Many of those who don't die enter a vicious circle of malnutrition and disease. The medicine is at everyone's reach, except for a small minority of mothers who are unable to breastfeed. That's because mother's milk is accepted by all as the best food possible for any baby under 6 months of age (...). The industry of child food is accused of promoting their products in communities that are unable to use them properly, of using propaganda, salespeople dressed as nurses, of distributing samples and donations to persuade mothers to abandon breastfeeding" (Muller, 1995: p.15-16).

From then on, the baby bottle began to reveal its darker side. In the long list of problems pointed out by the report, were included the lack of sanitary conditions for the process of bottles hygienization; the difficulty of access to quality water for formula hydration; the lack of resources for the acquisition of new formula cans besides the donated ones. As a consequence, diarrhea, malnutrition and death.

In 1979 the acknowledgement of the superiority of mother's milk and of the benefits of breastfeeding to women's and babies' health, as well as of the dangers of artificial feeding advertising, by the World Health Organization (WHO) and UNICEF, generated a number of important actions for the protection, promotion and support of breastfeeding, as the Innocenti Declaration. The document was produced and adopted by participants at the policymakers' meeting "Breastfeeding in the 1990s: A Global Initiative", and determined, among other measures, that all countries would develop national politics for breastfeeding.

But despite so many efforts, the "bottle-feeding culture" persists. In several countries, public breastfeeding is a taboo[7]. For many women, breastfeeding affects social life and brings a sense of loss of freedom. Many others believed that breastfeeding resulted in droopy and saggy breasts. Among beliefs and lack of information, the formula industry keeps on modernizing and selling its products, regardless of the alarming periodic news, such as the melamine contaminated formula in China, in 2008.

Bottle usage impacts

Formal.
Bottles often have coils for the connection of its pieces. Another element found in models that mean to eliminate bubbles (and cramps) is a tube stuck to the cap, that goes all the way down in the bottle. These, among other formal aspects, demand highly strict cleaning processes which, when not fulfilled, cause the formation of bacteria colonies.

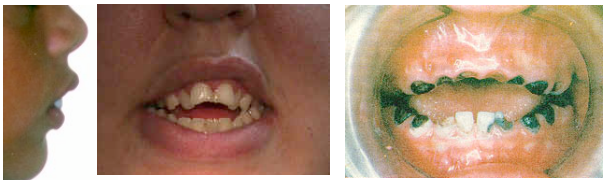
1 In Brazil's case, breastfeeding of the colonizer's children was an activity reserved for native women, then replaced by African slaves, to whom it was mandatory to quit breastfeeding their own children in order to breastfeed white ones. (Almeida, 1999: p.30)

2 War on Want, one of many charity entities working for food and other products supply to Third World countries, decided to question the effects of their own work among those populations.

3 As well illustrate the cases of mothers banned from breastfeeding their children in Starbucks, Victoria's Secret and in Delta Airlines airplanes (www.aleitamento.org.br; www.usatoday.com).

Chemical . The organic compound BPA (bisphenol A), present in bottle production, when washed with detergents, or when put in contact with heated liquids, may liberate the BPA polymer beyond safe levels. Several effects in laboratory animals, such as prostate and breast cancer, early female puberty, diabetes and obesity were related to the exposure to BPA, which lead Canada to ban its use in bottle production[8].

Physiological . Breastfeeding allows suction - baby's first neurological reflex - to develop properly, preparing the child for chewing, for teeth eruption, a harmonic facial growth and a good articulation of phonemes. When breastfed, the child works all facial muscles and breaths through the nose. Their tongue develops movements that stimulate milk flow from the breast and the continuity of its production. The nipple fits the physiology of the baby's mouth, and milk flows as the baby demands. The entire process is altered when the bottle comes in scene. With it, the muscle efforts are smaller. The bottle drips, accelerating the baby's natural demand and altering the coordination between sucking and breathing. Because of that, respiratory alterations tend to appear[9], as well as infections, nasal septum deviation and mouth breathing. The bottle may also damage teeth eruption, brain oxygenation and the development of the dental arch (Cordeiro, 2002: p.68-69).



Left to right: profile and front views of mouth breathing patients and the effects of the sugar present in formulas on the dental arch of a baby.

Rhetoric . It's important to stand out that no product whatsoever can be compared to breastfeeding in physiological terms, on the contrary to what the speech of those interested in artificial feeding makes believe.

Ecological . Breastfeeding involves one of the few products "produced and liberated for consumption without any sort of pollution, unnecessary packaging or waste" (Radford, 1992: p. 204). And it is also a valuable renewable resource.

The idea of replacing mother's milk with formula may be compared to the suggestion of replacing kidneys with dialysis equipment. Both, dialysis equipment and formula, may save lives, but using them instead of human's body original organs is a complete waste of resources (Radford, 1992: p.204).

Breastfeeding requires no refrigeration, packaging, labeling, transport, storage or advertising. Considering the fact that most women don't have periods while breastfeeding, it also saves the consumption of a great volume of disposable pads and tampons that take years to decompose and which industrial production involves chemical substances and environmental pollution.

Statistics . In 2008, the WHO admitted the children growth board they have been distributing was overestimated, for the used curves, from 1977, had used babies fed with formula as a reference. However, it was verified that breastfed children gain less weight and height after the third month, and the growth board curves were corrected. It is not hard to understand that parents and pediatricians were worried about the development of many breastfed babies, since they were not matching the "standard" weight. This lead, for many times, to the resource of complementing the child's feeding with bottled formula.

Alternative to the bottle

Breastfeeding is not an instinctive behaviour, but a socially learned process that does not come naturally and may be painful and uncomfortable sometimes. For that and other reasons, alternative means to feed babies are under research. The little cup is a promising method. It allows suction with pauses for breathing, and even premature babies are able to be fed through it. Its use is relatively recent and restricted to hospitals and a few families. Though it is present in the market, the cup is still a product in need of efforts to reach its proper level of efficiency.

Reflections on a revision of baby bottle use

Exploring the general idea of a revision of the notion of use in general, Frascara (1996: 44) explains that for many people "use equals possession, which equals power, power to do things, to enjoy things and to achieve comfort". He adds that people end up getting used to the things they use, taking them for granted and believing to have the right, and not the privilege, of using them. Therefore, from

8 www.uff.br/Sbqrio/novidade/bisfenol520policarbonato520mamadeira.html

9 Studies show that the development of the human face depends only 40% on genetics, leaving 60% to how the individual will suck, swallow, chew and breathe.

people's point of view, a "revision of use" that results in a "reduction of use" will be feared as a possible reduction of freedom and power as well, and will be rejected. From industry's point of view, a "revision of use which results in a reduction of use will be feared as a possible reduction of business", and will, also, be opposed. A "revision of use" rejected by people and industry will not achieve support from governments (severely pressured by the interests of their voters and companies). Design's task is to build arguments for a "revision of use" to be seen by people as providing them with more comfort, leisure and freedom, by industry as a possibility for profit increase and by politicians as helping them stay in power. The author adds that what is important for people is not the use of a certain product, but the values associated to it. The challenge, then, is to think of this revision not as a denial of those values, but as an association to ones as equally important.

Frascara (1996: 57) points out that "the magic power of objects has been skillfully promoted by advertising". He extends the symbolic dimension of products to their "functional actions" and teaches that "driving a car" (or, in our specific case, "bottle feeding" and "breastfeeding") are also an "aesthetic act". For that very reason, any revision of use includes the "cultural task" of modifying the aesthetics of actions that products in revision are involved with, as well illustrates "smoking", that used to be a symbol for glamour and now it is a symbol for self-destructive and anti-social behaviour.

Concluding, Frascara explains that understanding is a cognitive process while acting is a social one and that as an idea that has to do with action, a revision of use will have to be understood, then adopted, and finally acted on. In sum, "the idea has to affect the knowledge, the attitudes and the behaviour of people in order to succeed" (1996: 59). For that, it must count on measures such as legislation, control, imposition and penalties.

Final considerations

We believe it to be hard to think of any other more vital and urgent task as a wide revision of the use of baby bottle. Therefore, we believe in the strength childhood has gain in the modern life and its ascension as one of the dearest values of today's society. In this sense, inspired by the questions that sum up Frascara's teachings, we finish by questioning:

How can a change be created in the symbolic function attached to bottle-feeding, so that, without attacking strongly held values, changes could become desirable? How can we recognize leaders, followers and our potentially most supportive partners? How can it be possible to simultaneously work with government, people at large and the business sector toward a revision of use of the baby bottle? Which are the specific actions that will promote and materialize that revision and establish new cultural paradigms?

We hope the debate on the issues here exposed will provide paths not only for a successful revision of use of the baby bottle, but also, and more importantly, for planned actions by designers to protect and strengthen our children.

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