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Streamlining Breasts

The Exaltation of Form and Disguise of Function in 1930s’ Ideals

Adrienne Berney

Ideals surrounding the breast at the turn of the twentieth century shifted in ways that epitomized the goal of industrial efficiency and reflected the essence of streamlining—the primacy of form and the disguise of function. Although design historians have long acknowledged the influence of organic matter on the streamlined style, cultural historians have just begun to explore the interplay between technology and the presentation and perception of the human body. Exploring the ways in which experts attempted to conceal both mechanical and bodily function through streamlining illuminates the cultural values this style represented.

While the machine served as the ideal for bodily function, popular culture applied the philosophy behind the design mode of streamlining to breasts. Prescriptive literature presented lactating breasts as technology that could be manipulated into better performance or replaced by perfectible mass-manufactured products. By the 1920s, medicine, new technology and fashion encouraged a singular ideal of youthful, or neutered, femininity. During the ‘streamlined decade’, undergarments coaxed breasts to conform to the fashion for ‘pointed roundness’ popularized by streamlined technology. Ultimately, the ideal breast’s aesthetics surmounted the significance of its potential nutritive function.

Keywords: advertising—breasts—fashion—history of technology—streamlining—women’s history

Introduction

The streamlined style both shaped and disguised objects. Smooth, rounded forms hid machines’ functioning parts. Similarly, women’s breasts were a site for the moulding and concealing actions of streamlining. Products such as undergarments, creams and gadgets promised to shape breasts into the ideal large, but youthful, bust that fashion promoted during the ‘streamlined decade’ of the 1930s. But streamlining was not only about form. The new style in mechanical design also corresponded to improved function. For transportation technology, streamlined designs claimed to reduce friction and increase speed. In other gadgets, streamlining ushered in modern standards of operational efficiency. In this vein, women’s popular advice guides and medical literature prescribed new ideals for lactation, no longer part of aesthetically ideal breasts. Mothers who opted to nurse were supposed to breast-feed at regular intervals, according to preordained schedules, and to employ medical expertise and devices to regulate the quantity and quality of their milk.

The streamlined design aesthetic developed in the early years of the twentieth century as a form for transportation technology and relied upon aero-dynamic studies of streamlining that had begun in the late nineteenth century. Streamlined machines, such as locomotives and automobiles, emulated the egg or teardrop shape, which was based upon the form of a particle in motion passing through a solid body or fluid. Thus, the streamlining prototype was
organic, and streamlined forms concealed mechanisms. The verb 'to streamline' dates from 1913 and rapidly came to mean more than simply designing an object with a particular shape. By the 1920s the phrase came to refer to a lifestyle, to modernizing, organizing and rendering objects more efficient and simple. Raymond Loewy's 1934 pencil sharpener design [1] not only illustrated the quintessential streamlined shape but also testified to the quick spread in the United States of the style to all kinds of objects with moving parts by the 1930s.²

Streamlining evolved from body–machine metaphors that became dominant at the turn of the twentieth century. Medical literature and nurture advice adapted these analogies to mammary function and devised management guidelines so that lactation could occur ever more efficiently and hygienically. At the same time, popular imagery altered its presentations of breasts, denying earlier notions of the beauty of the maternal breast. Instead, ideal breasts were free from clinging infants and were smooth, firm and large (characteristics that lactation supposedly discourages). Commercial products multiplied to assist women in their aspirations toward these new ideals of form and function. Artificial feeding implements and modified milk recipes facilitated standard feeding schedules with precisely measured quantities, while gadgets, undergarments and implants promised to reshape breasts according to current aesthetics, which by the 1930s directly reflected mechanical styles.

To understand the way that breast ideals were adapted to the streamlined style for machines, cultural histories discussing the female body provide an important context. Fashion historian Lois Banner has chronicled the changing ideal shapes in women's fashions during the nineteenth and first half of the twentieth centuries. As ideals of bodily appearance and processes change over time, perceptions of actual bodies also alter. In *Seeing Through Clothes*, Anne Hollander has explored how fashion has shaped the way contemporaries beheld the naked body. Marilyn Yalom has recently focused scholarly attention on breasts, more specifically, in her broad-based *History of the Breast*. Building upon 'the idea of the social construction of the body [that] has become a given for most gender historians', Yalom has explored changing meanings of the breast over time in Western civilization.³

Like much of the work that has been done on changing ideals and evaluations of women's bodies, this essay uses the rhetoric and imagery in medical and popular prescriptive literature as core evidence. The ideas these sources convey were accessible primarily to middle-class and elite women in the period 1880–1940. Increasingly, however, the American working class of the twentieth century also had access to the literacy and disposable income necessary to consume this kind of mass culture. Moreover, while physicians interacted with women of means in private practices, public health programmes dis-

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Fig 1. This 1934 patent drawing for a pencil sharpener by Raymond Loewy made clear references to the egg shape, which Loewy acknowledged as a design prototype for streamlining.
Streamlining Breasts: Ideals in the 1930s

...tributed standard medical knowledge among the masses. Tracing shifts in the way such prescriptive literature presents breasts can suggest possible explanations for the changing experiences of embodiment for women during this period. As several historians of infant feeding have pointed out, fewer and fewer mothers began breast-feeding babies during this period, and among those who did initiate lactation, increasing numbers took advantage of the burgeoning supply of artificial infant foods and feeding implements to supplement or to abbreviate their nursing periods.

Mass cultural and medical evidence suggests that breast ideals not only adapted to the streamlined style, but they also helped shape its development. In their work on streamlining and 'the aesthetics of waste', Ellen Lupton and J. Abbott Miller have argued that the design style that characterized the 1930s 'took shape out of the compelling ethos of bodily hygiene and domestic discipline.' Claude Lichtenstein and Franz Engler have characterized the development of rationalized or disciplined systems (such as breast-feeding schedules) during the late nineteenth century as an 'inherent tendency' in modernity and have written that streamlining was the continuation of that impulse. The management and mechanization of the human body began several decades before efficiency experts attempted to apply scientific management to households and industrial designers developed the streamlined style.

In addition to deriving from rationalization, streamlining was also the product of an 'ethos of bodily hygiene' (in Lupton and Miller’s words) that encouraged the disguise of bodily function. Despite common notions of Victorian prudery, proscriptions against breast-feeding in public were not a feature of mid-nineteenth-century sensibilities, but rather can be tied more closely to the turn of the twentieth century. The popularity of streamlining, then, can be linked to earlier efforts to control the function and appearance of the human body in general, and breasts in particular. In the realms of both aesthetics and efficiency, however, machines could more easily be manipulated. Such an exchange of ideals between bodies and the design of technology was smooth and logical, because at the turn of the twentieth century body–machine metaphors dominated perceptions of both.

While Descartes had encouraged mechanistic versions of physiology as early as the seventeenth century by emphasizing similarities between the human body and the clock, by the late nineteenth century the machine had become a dominant metaphor in characterizations of the human body. Extrapolating the laws of thermodynamics, analysts viewed the body as an engine, and elements that the body ingested—oxygen, water and food—thus acquired additional significance as fuel for the human machine. The bodily machine then converted these elements to produce heat and work. In the late nineteenth century both steam engines and electrical technologies were dominant metaphors for human bodily function. Increasingly mechanistic, both professional and popular notions of human physiology relied upon body–machine associations to understand and explain organic activities.

Both medical historians and cultural analysts of technology have recognized the prevalence of the body–machine association in the final decades of the nineteenth and early decades of the twentieth century. Cecelia Tichi and Mark Seltzer have used period novels and other sources to explore the ways popular anxiety over boundaries between organism and mechanism created a specific culture, collective consciousness, or 'complex'. Meanwhile, Donna Haraway has argued that such 'miscegenation' between the natural and the technological led to the formation of cyborgs—new types of hybrid beings. Both mass culture and professional expertise often conflated organism and mechanism, applying standards of mechanical function to the body.

Ideals of the female body shaped the way designers re-envisioned machines and engendered the streamlined style. Although historian Donald Bush has associated streamlining with phallic shapes and penetrating motion, Bush has also noted that the egg—a distinctly female body—was the streamlined machine’s organic prototype. Raymond Loewy himself acknowledged the influence of his perceptions of the female body on his design vision. In his 1951 autobiography he drew an analogy between the body of Betty Grable, 'whose liver and kidneys are no doubt adorable, though I would rather have her with skin than without', and his streamlined designs. He intended his machine designs to hide the working parts in the same way that a pin-up girl’s image glorified her body’s appearance without reference to its functions. The effort to streamline...
breasts, then, reveals the complex interplay of ideas about the human body and technology.

Maternal breasts become distasteful, 1870–1900

Changing presentations of the breast in both medical and popular cultural sources offer evidence of the development of essential aspects of streamlined design—the exaltation of form and disguise of function. Mid-nineteenth-century images of breasts in popular culture were often maternal—both aesthetically pleasing and nourishing. Sentimental imagery in stereograph cards, postcards, gravestones and women’s household guides showed mothers with bare breasts and clinging nurslings [2]. By the 1890s, however, nursing breasts no longer appeared in mass-produced celebratory imagery of middle-class domesticity and maternity. Instead, breast-feeding began to represent poverty and ethnic minority status.14 Prescriptive literature had begun to present the ideal breast’s aesthetic and nutritive functions as separate. Youthful, or non-maternal, breast aesthetics took on a growing importance in American popular culture as the significance of the potential nutritive function waned.

Popular literature and advertising imagery paralleled the new meanings that breasts acquired at the end of the nineteenth century. Two cultural historians have identified a significant shift away from maternal models and towards mechanical ones. In Shifting Gears, Cecelia Tichi has written that the ‘gear and girder’ world view displaced Romantic beliefs that nature and human creativity were ‘fertile, maternal, and co-generative’. Jackson Lears has argued that advertising imagery acted as a catalyst in this transformation. According to Lears, the rise of corporate advertising redefined the ‘iconography of abundance’ from the fecund earth to the efficient factory. In the process, ‘the carnival-esque celebration of fleshly excess was streamlined into an exaltation of industrial efficiency.’15 The mechanical or factory model guided nurture advisers in their attempts to persuade mothers to increase breast-feeding efficiency. Excess flesh, however, remained an ideal in breast aesthetics, as long as it was firm, youthful and non-lactating.

Physicians had noted changing breast shape as a result of lactation as early as the mid-nineteenth century. Biological changes and cultural practices surrounding reproduction influenced breast shape in ways that many found distasteful. One physician described such changes in 1878:

After puberty girls’ breasts are hard and hemispherical, but later in life, when they become women and pregnancy occurs, their breasts enlarge and hang loosely from...
the thorax. In order to make the breasts appear full and of a beautiful contour, various kinds of padding are used by some women . . . Through their own weight, or by being drawn out, the breasts may become so much elongated that women can nurse their children over their shoulder or beneath their arm. Indian squaws and Hot-tentots carry their children on their backs, and let them nurse in this position . . . the women of North Ireland nurse their children in the same way.

Such descriptions offered implicit cautions that lactation destroyed breast shape.

Approaching the twentieth century, professional literature, popular infant care guides and product advertisements continued to circulate the notion that lactation left breasts unshapely [3]. Tonics such as Sanmetto and Mother's Friend offered some hope for mothers who feared acquiring 'withered' breasts. While advertisements for Sanmetto promised that the potion could restore the roundness of mammary glands, those for Mother's Friend promoted the product as a preventative. An 1898 advertising pamphlet explained:

Many women go childless because they fear the ordeal will destroy their figures . . . It need not be . . . In cases where the breasts have withered and lost their graceful roundness . . . it simply proved that Mother's Friend had not been used. No woman who uses Mother's Friend . . . loses her figure . . . the breasts may be preserved from that shrinkage and premature decay which so often follow the cessation of the milk secretions . . . the liniment not only softens and whitens the skin, but it nourishes and secures the deposit of fat which is necessary to a round firm appearance of the breasts after nursing is over.

The prevalent notion that lactation changed breast shape from plump and firm to elongated and flabby probably discouraged some mothers from even attempting to nurse their newborns.

The aesthetic ideal, then, conflicted with the nutritive ideal in size, shape and consistency. Large breasts, according to several physicians, were not conducive to good lactation. If breasts were too large and did not 'become distinctly smaller when empty', then the mammary gland was supposed to be underdeveloped. Given that lactation purportedly left breasts saggy and flabby, and small to medium-sized breasts were supposed to be the best milk producers, good nursing breasts could not live up to the ideal for breast beauty—large, smooth, firm and hemispherical.

In his 1871 book, *The Descent of Man*, Darwin speculated that women were evolving in ways that left beauty as the ultimate achievement for that half of the species. A decade later a physician, Moses T. Runnells, applied the same principle more specifically to women's breasts.

There can be no doubt whatever that the true and essential function of these glands at the present day is ornamental and aesthetic. Their noblest opportunities are not in the 'Milky way', but in the line of high art and realistic delineation. They are functionally at their best when they are being painted in strong lights and shadows, photographed by a patent process and exhibited in our shop windows for the education of the masses.

Runnells' assessment was both prescriptive and prophetic as increasing numbers of mothers selected alternatives to breast feeding and mass culture continued to bring breast shape into sharper focus. Moreover, the photography of breasts, to which Runnells referred, was just one of many intersections between bodies and machines at the turn of the twentieth century.

**Mammary gland as mechanism, 1880–1920**

If the human body were 'a machine', according to the prevalent turn-of-the-century metaphor, then food was especially important as the body's energy source. Both the quality and quantity of the body's intake warranted scrutiny. Over-feeding resulted in 'a little poor blood and a bulk of lymph', which 'built up into masses of useless flesh, while the vital organs degenerate for want of proper nourishment.' A 'bodily machine' in this state was 'incapable of much physical effort or moral power.' At the other extreme, a 'half-fed or an under-fed body [could] no more produce full results than an engine not sufficiently supplied with fuel.'

As a result of their potential reproductive functions, female bodies constituted special kinds of machines, according to the physicians who promulgated such analogies. One explained in his 1892 household guide:

It is a self-evident fact that the finer the work, and the more complicated a piece of machinery, the more liable is it to become deranged or out of order; and the more...
Fig 3. The author of *Mother and Baby Care in Pictures*, a 1946 baby care guide, prescribed these breast exercises to 'restore firmness' to breasts after discontinuing lactation.
skillful must be the mechanic who undertakes to make any necessary repairs. Upon this consideration I argue that the system of the female is the finer and more complicated, having to perform a double...function of sustaining her own life, and giving life to her species.²²

As sites of food production and purveyors of nourishment, breasts generated the ‘fuel’ necessary to develop new body-machines. In order to function efficiently, according to standard medical advice, breasts needed to emulate machines themselves. Consequently, mothers and infant care professionals attempted to ‘manage nursing breasts’ or to feed babies scientifically with artificial food.²³

If mothers chose to nurse their babies, according to common nurture advice, they had to pay strict attention to their own bodily functions and lifestyles. Coaxing breasts to run like machines supposedly took plenty of effort and often time. Writers who referred to the mammary gland as ‘a mechanism’ immediately qualified their characterization by emphasizing the vicissitudes of lactation. As one medical specialist explained in 1898:

the mammary gland is not constant in its secretion either as to quantity or quality. It is an automatic, self-regulating piece of mechanism under the control of the sympathetic nervous system, and consequently subject to many influences, such as grief, fright, worry, digestive troubles, etc.²⁴

Two decades later the US Children’s Bureau popularized this interpretation of lactation in its pamphlet entitled Infant Care. The mammary gland was ‘a wonderful and delicate mechanism.’ Because the connection between the mammary nerves and the mind was so intimate, ‘mental states of the mother are readily reflected in [breast] function.’ Both positive and negative emotions influenced the quantity and quality of maternal milk:

Fear, anger, or worry may serve to check the secretion of the milk, or to change its quality so much that, for the time being, it is unfit for use, while, on the other hand, a calm mind, joy, laughter, and delight in life, coupled with desire and intention to nurse the baby, will make it possible to do so.²⁵

Because human lactation was so fallible, breast-feeding had to be carefully ‘managed’, according to professional advice of the day. Nursing mothers needed to make sure their own nutrition was adequate so that their milk would have the proper proportions of components. Moreover, regulation of quantity was also essential. Health care professionals advised that breast-feeding sessions be limited to fifteen or twenty minutes each and occur at regular intervals, every three to four hours. Finally, the baby should not be allowed to nurse beyond its first birthday. ‘Management of the breasts’ was also important for successful breast-feeding. Flat or depressed nipples needed to be drawn out and the breasts had to be cleansed with sterile water or a boric acid solution to prevent infected nipples and mastitis.²⁶

New technology for breasts, 1880–1920

If well-regulated diet, exercise, hygiene and emotions failed to improve the flow and character of mother’s milk, new technologies also claimed to offer remedies. While pumps had been used for decades to relieve engorged breasts, by the early twentieth century, specialists had developed increasingly complex technologies to ‘manage’ breasts. One medical researcher in 1918 recommended ‘faradization’ of the mammary glands. The process involved placing cone-shaped electrodes of flexible zinc over the breasts. An ordinary faradic coil connected cables attached from secondary terminals to soldered terminals on the electrodes. Treatment involved passing a current through the breasts for twenty minutes two or three times a week. After between four and ten faradizations, several women began to breast-feed successfully, and their babies gained weight and improved in health. Another technique involved exposing women to a Hanovia mercury-vapour lamp three times a week. The treatment with ultra violet rays supposedly allowed lactating women to improve or retain their milk supplies ‘for prolonged periods’.²⁷ Thus, with developing technology, the connection between breast and machine became even stronger.

If mechanical devices did not work to improve lactation, then commercially manufactured products could replace mammary function. Recipes abounded for modifying cow’s milk to render it more suitable for the consumption of human infants, and increasing numbers of companies sold their own versions of milk-based artificial infant foods. Companies also
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developed new baby bottles to improve upon the older rounded, narrow-necked varieties and to purvey the 'formula' more efficiently. The Hygeia feeding bottle [4] had several features that appealed to consumers of the 1900s through the 1920s. The Sears, Roebuck & Co. catalogue marketed it widely and the cylindrical shape allowed for easy and thorough cleaning. Ounce numbers marked regular intervals on the bottle's surface so that mothers could determine precise quantities. By far its most notable innovation, however, was the top of the nurser. An advertisement proclaimed: 'The rubber portion of the bottle is not a nipple, but is a correct representation of a mother's breast.' As a self-identified prosthetic breast, then, the Hygeia nurser could fulfil its infant-feeding mission, leaving mothers (as the advertisement illustrates) with the work of preparation and sanitation after use.28

While physicians and manufacturers designed products in an effort to improve upon lactation, technology could also be used to alter the appearance of breasts. Although celebrated as the ultimate medium of realism, photography was often a highly manipulative art. Photographers could select models, arrange lighting and blur what they deemed to be blemishes during the developing process. Whereas in the late nineteenth century artistic and professional photographs of the naked human body often showed sagging flesh and blemishes, by the mid-twentieth century conventions of the genre allowed most photographs to present only firm, smooth, unblemished, youthful flesh. The popular eugenics film, *The Science of Life*, primarily emphasized such stark, mechanical images of beauty. According to medical historian Martin Perrick, an attractive body in this film 'was a sleek streamlined engine, whose beauty became manifest in powerful motion and efficient function.'29

Companies manufactured and marketed a variety of products in the 1880s and 1890s with claims that the devices would increase bust size and/or firmness. The prevailing ideal at the end of the nineteenth century was what fashion historian Lois Banner has termed the 'voluptuous woman' body type, characterized by a 'buxom, hearty, and heavy' figure. Advertisements accordingly exhibited 'bust forms' made from braided wire and claimed that wearing them (in conjunction with a corset) would make the bust appear larger. Promoted as 'appliances for improving the figure', the forms were also designed to be hygienic and to separate the clothing from any bodily secretions, such as sweat or milk. In addition, creams, massages, and exercises promised to enlarge the bust.30

The 'Bust Developer' kit [5], listed in the Sears & Roebuck catalogue during the 1890s and 1900s, included a jar of cream called 'bust food' and a metal object resembling a bathroom plunger. The advertisement claimed the developer tool could exercise 'the muscles of the bust' and would compel circulation of the blood through the 'flabby, undeveloped parts'. Meanwhile, Bust Food claimed to be 'the finest nourishment for the bust glands . . . making a plump, full, rounded bosom . . . which before was scrawny, flat, and flabby.' Ironically, rather than the mammary glands functioning to nourish a baby, bust food was supposed to nourish the glands and consequently increase breast size. The tool came in standard sizes of a 4- or 5-inch diameter and the system promised to 'enlarge any lady's bust from 2 to 3 inches.'31

More technologically sophisticated products to increase bust size came on the market in the first
Fig 5. The appeal of this 'Bust Food' product was widespread enough for the Sears, Roebuck & Co. to continue selling it for more than a decade.

decade of the twentieth century. The Montgomery Ward & Co. catalogue listed a 'massage or cupping pump', which was supposed to create 'a vacuum on the surface of the skin [to develop] the . . . bust, or any portion of the body where the flesh is shrunken or unnatural.' Advertisements in women's magazines showcased other machines, such as the electric 'American Portable Vibrator', designed to improve circulation and thus 'develop and strengthen the tissues' of various body parts, including the bust. Advertisements in women's magazines

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breast function. Rather, these products sold themselves with the promise of enlarging breasts. Although during this decade a large bust was still necessary to achieve the ideal figure and an important part of the 'S' curve silhouette, Gibson Girl imagery emphasized youth and a trend towards smaller ideal breast and hip measurements began as the twentieth century progressed.33

Automobiles as influence, 1910–1930

During the 1910s and 1920s, the automobile became the dominant technological form in popular culture and influenced standards for both the shape and function of women's bodies. The automobile replaced more general references to the 'engine' as the prototype for the human body in physiological discussions. The analogy between motors and human bodies worked both ways in advertisements of the decade. An advertisement for Pan-Am Gasoline and Motor Oil warned 'Don’t give your motor indigestion.' Then, picturing both a car at a gas pump and a baby with a bottle of milk, the ad proclaimed that 'The best possible fuel for a baby is GOOD milk!'34

Writers in popular women's magazines echoed the body-machine association that was prevalent in professional health literature and advertisements for foods and patent medicines. One 1926 article expounded upon the primary role of mothers as mechanics of the human body:

How many of us ever come to a real understanding of the fact that the human body is as much a machine as the automobile, the sewing machine and the gas engine? To do work efficiently it must be well made; it must be kept in good condition; it must be kept running smoothly; it must be supplied with the fuel necessary to do its work . . . In the case of the mother building new human machines . . . Firm muscles, sound teeth, strong bones, healthy, rich blood, responsive steady nerves can not be built without being supplied from day to day with all the building materials needed to make them.35

Mothers had to supply the necessary food for their own building responsibilities. In order to do so properly, they could either keep their bodies running as an efficient machine and breast-feed their babies, or they could select a medically ordained artificial food and employ modern implements to nourish their growing 'human machines'.

The automobile also drove aesthetics for women's bodies. One company that manufactured bust forms or 'falsies' advertised its product with the headline 'We fix flats.' In addition to suggesting slogans, car tyres also inspired 'pneumatic dress forms'. Made from Para rubber, these forms were supposed to be 'light and odourless. The advantage of these forms over earlier braided wire ones was that they could be 'easily inflated by the wearer to any size desired—giving a full and beautiful contour.' Unlike braided wire forms, which allowed for possible lactation, the later rubber breast pads did not claim to protect clothing from secretions.36 Perhaps by the 1910s and 1920s, breast products did not have to be compatible with lactation, as more and more mothers substituted artificial infant foods for breast-feeding (at least part of the time).37

By the 1920s fashion celebrated slender, youthful—even boyish—forms as symbolic of modernity [6].38 The ideal woman in many advertisements of the period (such as those for Fisher automobiles) was youthful, slender, tall and affluent. Industrial designers as well as advertising companies recognized the parallel aesthetics between automobiles and women's bodies. In 1928 designer Paul Frankl wrote that continuity of line 'was characteristic of the modern style as we find in the stream-line body of a car or in the long unbroken lines in fashions.'39 Undergarments helped facilitate the new aesthetic. Whereas nineteenth-century women's corsets had formed steel or bone support systems intended to add a structure to the female anatomy and to force perfect posture, early twentieth-century girdles made a woman's body appear more slender.

Ideal female body types in the 1920s prized youth above all other characteristics, de-emphasizing possible notions of beauty based on maternity. As one corset advertisement announced, 'It is no careless fancy that considers Youth the reigning goddess of this modern world.' Undergarments functioned to minimize women's curves and attempted to re-create 'the physical evidence of youth.' Just as brassieres, or 'bust confiners,' of that decade flattened a large bosom, corsets were supposed to 'keep the hips from spreading.' The advertisements of such products touted themselves as necessary with slogans such as 'Youth is the Only Permanent Fashion,' and 'Looking young is an art you can learn.' In some cases women even folded their breasts and kept

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them in that position with elastic. Advertisements depicted mothers as different from the ideal of youthful femininity. In contrast to the emblematic feminine form of the decade, maternal subjects rarely indulged in dramatic poses, appeared to be women of fairly modest social status, and were softer, rounder and more likely to appear in soft focus. Thus, maternity conflicted with the height of fashion.40

The flat ‘flapper’ silhouette of the 1920s was a necessary step in the process of neutering the symbolic breast. Although breasts that mass media idealized could be sexual, they could no longer be reproductive. While medical science and fashion increasingly profited from attention to breast size and form, lactation was not part of the ideal breast that mass culture promoted.41 Once the 1920s stripped maternal associations from the ideal breast, the rounded shape returned to fashion without hints that the breast could serve any purpose other than aesthetic.

Breast ideals during ‘the streamlined decade’ and beyond

Although the 1920s represented a rather anomalous time when fashion-conscious women sought to minimize their chests, within a decade a large bust once again became an asset. The Maiden Form Brassiere Company began, in contrast to the flapper model of beauty, when two New York dress designers decided the flat look was unattractive and uncomfortable and began building undergarments into the dresses they produced. In 1926 they patented a separate undergarment designed to support, rather
than to compress, the breasts. By 1930 corset departments began announcing that it was time for women to coax their 'waistlines back again . . . [and take up the] new role of being charming ladies instead of emancipated women.' Even as curves came back into fashion, the emphasis on slimness and youthfulness remained. According to design historian Jeffrey Meikle, stylish women of the 1930s 'sought a sleek modern look to match their automobiles', and fashion experts advised women to 'Streamline the Silhouette'. As the design of women's clothing borrowed from the machine aesthetic and began employing zippers and lastex elastic, the shape of a streamlined figure consisted of smooth lines curving around a narrow set of hips, rising up through the torso, and then thrusting outward as a large, projecting bust.

With help from shaping undergarments, breasts could come even closer to the quintessential streamline shape than could automobiles or locomotives. One advertisement for a Chansonette brassiere proclaimed, ‘Smart moderns are demanding subtle “pointed roundness” of bosom’ [7]. Another brassiere advertisement promised its products would raise pendulous or sagging breasts into ‘well-uplifted lines—by means of a cleverly constructed inner “shelf” of firm elastic.’ The fashion for pointed roundness in breasts (just like the prototypical chicken’s egg or Raymond Loewy’s 1934 pencil sharpener design) persisted through the 1950s.

During the 1930s streamlining spread to all sorts of implements dissociated from transportation, thereby becoming a prominent ‘machine style’ for that era. Among household appliances, streamlining became particularly popular for those machines with kitchen and bathroom functions. The transfer of the style to domestic technology extended a trend that had begun in the late nineteenth century—that of reduced ornamentation and smooth, clean lines. Homemakers of the period sought streamlined appliances for their kitchens and bathrooms because the rounded edges and white enamelled surfaces appeared more hygienic, were easier to clean, and corresponded to the modern associations of the technology itself. In contrast, consumers expected more traditional forms for parlour radios and other forms of living room technology.

Streamlined objects in the household, therefore, were often intimately associated with the human body. Kitchen appliances from refrigerators to toasters contained, preserved and prepared food for bodily consumption, while others expedited the disposal of bodily wastes in the bathroom. While the smooth, rounded surfaces of the appliances covered their internal structures and disguised their functions, they facilitated the functioning of the human body by their relationship to nourishment, cleansing and waste disposal. Similarly, streamlined breasts, if lactating, were carefully managed to produce food efficiently at regular intervals and to be contained appropriately. Otherwise, streamlining suppressed the breast’s potential nutritive function and shaped it according to the current ideal.

The portrayals of maternal bodies in public art during the 1930s suggest alternate meanings for breasts apart from those that fashion promoted. Farm Security Administration photographer, Dorothea Lange, created the tremendously popular and widely reproduced portrait entitled, ‘Migrant Mother’. The subject was a mother from one of California’s pea picking camps, and the image conveyed the stabilizing influence of motherhood amid the Depression’s disruptions. Significantly, Lange posed her subjects to represent breast-feeding in another photograph in the ‘Migrant Mother’ series. Calling the image ‘Migrant Madonna’, Lange later explained that she intended to relate the mother to the Virgin Mary in humble surroundings. That portrait, however, was never as successful as ‘Migrant Mother’. It was the Migrant Mother’s strength and dignity, rather than her reproductive functions, that generated popular acclaim. Other forms of New Deal art and sculpture presented the strength of maternal bodies by depicting large rounded forms in a fairly uniform style that conveyed their capacity for work and made direct references to the streamlined style of machine design. Beauty was not the goal of these artistic portrayals of maternal breasts. Rather, they conveyed the strength and security to bear the burdens of child rearing and economic instability.

Approaching mid-twentieth century, ‘pointed roundness’ remained the ideal shape and mass culture encouraged aspirations for ever-larger breasts. Surgical augmentation developed as another technique to increase breast size and firmness. The first implantation had occurred in Heidelberg in 1895, using a transplanted tumour from the patient’s back. The idea, if not the technique, caught on and the pro-
procedure soon spread to the United States. In 1903 a Chicago surgeon inserted ‘braided silk, bits of silk floss, particles of celluloid, vegetable ivory and several other foreign materials’ into women’s breasts. By the 1940s physicians crafted breast implants from shots of liquid silicone. Side effects of enlargement were often the destruction of breasts’ potential to breastfeed and risks to the woman’s overall health.

The phenomenon of breast implantation represented scientific and technological efforts on behalf of feminine beauty along with the development of a new consumer mentality. The market for products designed to alter the female body depended upon consumer willingness to view the body as a machine with interchangeable parts. In fact, surgeons borrowed the formula for silicone implants directly from machines by mixing transformer coolant made from silicone with a vegetable oil. Twentieth-century consumer culture increasingly promoted a cyborg (cross between human and machine) aesthetic. And as for female breasts, form took precedence over function.

As breast implants continued to gain in popularity, popular culture presented new analogies between breasts and technology. The term ‘bombshell’ came to refer to an extremely attractive woman, and Hollywood stars brought the large busts of pin-up girls to life on 1940s movie screens. Meanwhile, painted breasts occasionally appeared on Second World War aeroplanes. In the post-war period undergarment companies began using parachute silk, as well as other fabrics developed for the military during wartime, to manufacture brassieres. Along with these new textiles, new crisscross or ‘whirlpool’ stitching techniques helped form cone-shaped breasts. As Yalom has written, ‘These “torpedo” brassieres made each breast look like a projectile about to be launched.’ Maiden Form introduced a new version of
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its Chansonette brassiere that revised its earlier look of ‘pointed roundness’, becoming the popular ‘bullet bra’. Though bullets, bombs, and torpedoes all varied in size, ideal breasts remained large and their pointy shape linked them to weaponry.

Whereas at the turn of the twentieth century breast–machine analogies most often referred to the mammary gland and its milk-making function, by the 1930s and 1940s they represented ideal breast forms. The ‘pointed roundness’ shape that brassiere companies promoted in the 1930s was a precise analogy to the styles in automobile and locomotive design of the same decade. Undergarments and implants promoted a breast aesthetic based on large, firm form, and sexual appeal that popular culture related to aeroplanes and weapons in the 1940s. This ‘standardized bust,’ as Yalom has labelled it, extended the philosophy of streamlining beyond its connections to operational efficiency.5

Ultimately, the supreme importance of the ideal breast’s aesthetic qualities surmounted the value placed upon its nutritive function. Thus, as Lupton and Miller have written, ‘streamlined objects collapsed the natural and the artificial, the biological and the industrial, into [a new] aesthetics.’ Streamlined machines mirrored the shifting cultural evaluation of female breasts. Streamlining worked to separate the dual beauty–nurture character of the ideal maternal breast that had dominated the mid–nineteenth century. With its apparently solid, rounded forms, the streamlined style of the 1930s promoted form and disguised function. According to ideals that had evolved by that time, for breasts to nourish efficiently, they could not be beautiful. And conversely, for breasts to be beautiful, they could not lactate. As manufactured goods increasingly appropriated the mammary function, female breasts could more easily be assessed by the single mass cultural standard of beauty. Pressures to enhance breast appearance, at the expense of other potential breast functions, persisted even after streamlined machines became obsolete.

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Notes
1 Ellen Lupton & J. Abbott Miller, The Bathroom, the Kitchen, and the Aesthetics of Waste, MIT List Visual Arts Center, 1992, p. 67. Lupton and Miller astutely suggest that ‘the female body is another site for the moulding action of streamlining.’ I pursue this idea further to argue that breasts in particular relate to the streamlining process. Donald J. Bush, The Streamlined Decade, George Braziller, 1975.
4 See Lizabeth Cohen’s work for discussions of working-class consumption of mass culture, for example, ‘Encountering mass culture at the grassroots: the experience of Chicago workers in the 1920s’, American Quarterly, vol. 4, no. 1, 1989, pp. 6–33. See Molly Ladd-Taylor, Mother-Work: Women, Child Welfare, and the State, 1890–1930, University of Illinois Press, 1994 for an excellent account of the public health campaigns of the US Children’s Bureau and the audience they reached. Medical historian Martin Pernick’s innovative work on the eugenics movement, Black Stork, Oxford University Press, 1996 is a model for interpreting medical writings in conjunction with mass cultural sources. Pernick has warned that distinguishing separate ideological strains between professional and lay sources overly dichotomizes science and mass culture (p. 50). Because it was appropriate for medical writers to discuss women’s bodies and breasts in medical journals, these sources help to elucidate scientific knowledge as well as understandings that were current in broader culture.
7 Lupton & Miller, op. cit., p. 65; Yalom, op. cit., p. 126; Mark Seltzer, Bodies and Machines, Routledge, 1992, p. 159. Seltzer cites James Beniger, a historian of technology who has labelled the decades from the 1870s through the 1930s as ‘the control revolution’. My suggestion that breast ideals helped to shape design styles for machinery, parallels Londa Schiebinger’s fascinating discussion about the way breast aesthetics shaped science in ‘Why mammals are called mammals: gender politics in eighteenth-century natural history’, American Historical Review, vol. 98, no. 2, April 1993, pp. 382–411.

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10 Cecelia Tichi, *Shifting Gears: Technology, Literature, and Culture in Modernist America*, University of North Carolina Press, 1987, pp. 42–17; Mark Seltzer, *Bodies and Machines*, Routledge, 1992, p. 3. In her book, *Simians, Cyborgs, and Women: Their Reinvention of Nature*, Routledge, 1991, p. 150, Donna Haraway makes the point that 'In the tradition of "Western" science and politics . . . the relation between organism and machine has been a border war.' I would argue (as Haraway's title implies) that the long-lived border war has been particularly intense over the connection between women's bodies and machines. It is Seltzer, rather than Haraway, who has used 'miscegenation' in this sense. See also Peter Brooks, *Body Work: Objects of Desire in Modern Narrative*, Harvard University Press, 1993, p. 221.

11 See Adrian Forty, *Objects of Desire*, Pantheon Books, 1986, pp. 8–9, for a discussion of the importance of the 'social context' to changing design styles.

12 See, for example, the first chapter of Bush, op. cit., entitled 'The science of penetrating motion'; Lichtenstein & Engler, op. cit., p. 13; Lupton & Miller, op. cit., pp. 66–7; Lupton's autobiography, *Never Leave Well Enough Alone: The Personal Record of an Industrial Designer*, Simon & Schuster, 1951 p. 220. The Lupton/Miller article argues in a similar vein that streamlining adopted a pre-existing set of attitudes towards the body (p. 65).

13 'The Loved One', mass-produced souvenir image (c.1870), Louisiana State Museum Photography collection, 5385.44. Although only one example of this kind of imagery is reproduced in this article, it was not uncommon in the 1850–80 period. Yalom, op. cit., pp. 123, 126, writes that the maternal breast 'was publicly honored' in both England and America during the nineteenth century. See also the centre panel carving on Southwestern Lodge No. 40 society tomb (c. 1850), Odd Fellows Rest Cemetery, New Orleans, photographed in Robert Florence, *New Orleans Cemeteries: Life in the Cities of the Dead*, Batture Press, 1997, p. 146; 'The morning call', stereograph card (c. 1860), 71.53.1762, Photographic History Collection, National Museum of American History, Smithsonian Institution; Seth Pancost, *The Ladies' Medical Guide*, Hubbard Bros. Publishers, 1875, p. 302; Elliot G. Storke, *The Family and Householder's Guide*, Auburn Publishing Co., Auburn, NY, 1859, front cover; Special Collections, Morris Library, University of Delaware. Helena Wright, Curator of Prints, National Museum of American History, suggests that images of breast-feeding mothers were common in children’s books of the mid-nineteenth century.


16 In 1847 Dr William Pots Dewees advised mothers to breast-feed their babies and chastized men who discouraged this practice by placing 'the shapeliness of their wives above the happiness of their children.' His statement clearly presents breast-feeding and maintaining ideal breast shape as mutually exclusive. Sally McMillen cited Dewees in *Motherhood in the Old South: Pregnancy, Childbirth, and Infant Rearing*, Louisiana State University Press, 1990, p. 9. J. C. McMeihan, MD, 'Hypermastia and polymastia in the female', *AJO & DWC*, vol. 11, 1878, p. 719.


18 'Motherhood', Atlanta, Georgia, Bradfield Regulator Company, 1898.


21 'Health culture' and 'Weaning grown babies', *Medical Brief*, vol. 28, 1900, pp. 1347, 1348; Phineas Wood, 'Food as an element of national strength', *Medical Brief*, vol. 13, 1885, p. 248.


23 In Tichi, op. cit., pp. 36–8, the author cites food and beverage advertisements of the 1920s, marketing their products with phrases like 'fuel for young engines'. Application of the term 'management' to breasts was widespread at the turn of the twentieth century. See Daniel Beekman, *The Mechanical Baby*, Lawrence Hill & Co., 1977, p. 111; Alfred C. Beck, 'Care of the breast during pregnancy and postpartum', *Medical Brief*, vol. 50, 1922, p. 600; Cook, *AJO & WC*, vol. 22, 1889, p. 687; Henry E. Tuley, 'Infant feeding', *AJO & DWC*, vol. 47, 1903, p. 281; Fussell, *AJO & DWC*, vol. 67, 1913, p. 184; Emelyn Lincoln Coolidge, 'Four breast-fed babies who did not thrive and how they were made to do so', *Ladies Home Journal*, April 1904, p. 38.


27 E. S. Chesser, 'Breast-feeding: faradization of the mammary glands', *AJO & DWC*, vol. 78, 1918, p. 931; Catherine Chisholm, 'Treatment of nursing mothers with ultra-violet rays', *Medical Brief*, vol. 55, 1927, p. 541.

28 Advertisement for Hygeia, Sears, Roebuck & Co., Catalogue No. 134, 1917, p. 682. See also *Ladies’ Home Journal* for...

29 Martin Pernick, Black Stork, Oxford University Press, 1996.

30 Banner, op. cit., pp. 5, 112. Banner contends that the ideal figure in the post-Civil War age was mature, sophisticated and sensual, but not maternal. From my own survey of popular women's magazines, I would argue that associations with maternity were closely tied with the ideal through the 1870s but agree that ideal aesthetics connected to maternity disappeared by the end of the nineteenth century. Advertisement for Hygeia Bust Forms, The Delineator, December 1888, p. iv; advertisements for health braided wire dress forms and featherbone dress forms, Ladies' Home Journal, May 1887, p. 15; January 1889, p. 12; April 1889, p. 7.


33 Banner, op. cit., pp. 5, 166, 203.


35 Flora Ross, 'Engineering the human machine', The Delineator, March 1926, p. 54.

36 Colmer, op. cit. (although pages are not numbered in this book, the reference can be found in 'The body unleashed' chapter); advertisement for Nature's Rival Air Forms, The Delineator, April 1906, p. 712.

37 By the 1930s commercial products replaced breast milk as the standard in infant feeding. See Apple, op. cit, pp. 153, 157. By that decade entire articles could be written about baby care and feeding without even a mention of the possibility of breast-feeding. See, for example, Charlotte Grier, 'Scheduling the baby', Parents' Magazine, May 1933, pp. 20–1.

38 D. H. Holmes, a prominent southern department store, produced this advertisement for the New Orleans Item, 12 February 1925, p. 3.

39 There is some debate among fashion historians as to whether the 1920s ideal shape emulated an immature girl or a boy. I believe that the co-existence of the brands Maiden Form and Boyshform in brassieres is evidence that these two versions of the ideal were not mutually exclusive. Norah Waugh, Corsets and Crinolines, Routledge/Theatre Arts Books, 1991, p. 91; Meikle, op. cit., pp. 32, 214.


41 For another example of the term neutered as applied to feminine ideals of the twentieth century, see Martha Fineman, The Neutered Mother, the Sexual Family, and Other Twentieth-Century Tragedies, Routledge, 1995.


44 From the New Orleans Sunday Item Tribune, 15 March 1938, special insert, p. 3.


46 Meikle, op. cit., pp. 110, 152, 162; discussions with Shelley Nickles, design history instructor, National Museum of American History, Smithsonian Institution.


50 Yalom, op. cit., pp. 177, 135–8.

51 Yalom, op. cit., p. 159.

52 Lupton & Miller, op. cit., p. 68.