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### Bridging measurement and cultural interpretation

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#### Critical Studies in Men's Fashion

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# Bridging measurement and cultural interpretation: **Experiencing the form-giving** of men's briefs

#### **ABSTRACT**

This article explores the first-hand experience of the diversity in styles of men's briefs. It questions the standard categorization of briefs based on coverage and leg length. Due to the advent of internet-based sales channels, the scope for design has widened dramatically. The quality and experience of underwear styles is not captured in waistband dimensions and information on fabric. The article questions some ideas about designers' ability to communicate product understanding given the tacit, non-verbal and haptic qualities inherent in briefs. It also raises questions about research paradigms common in industrial design research. This article is thus both about the subject (men's briefs) and the means of research (research paradigm). The article combines aspects of design research used for industrial design and approaches such as wardrobe studies and interpretation used in fashion research.

#### **KEYWORDS**

packaging semantics masculinity research design sexuality underwear

#### INTRODUCTION

How do you choose a product you do not understand, especially when you are unaware of your lack of knowledge? How can a designer communicate product understanding when the customer is mostly ignorant? Men's underwear confound the assumptions underpinning conceptions of the design process. Buyers of men's underwear typically know very little of the great amount there is to know about the product. The information they have to go on is limited personal experience guided by largely uninformative advertising and terse product details on packaging. On the other side, designers have a very large number of variables to consider. Fabric, colour and dimensions do not exhaust the list of variables controlling the physical, graphical and haptic qualities of a pair of briefs. In short, men's briefs, as items of practical use and emotional expression, mediate between a largely ignorant customer and designers whose ability to create exceeds the capacity of available information channel to communicate their ideas. This situation stands in contrast to the theory of the informed designer serving the explicit, discovered needs of the user supported by informative product information.

I am writing this as a visitor to the field of research into men's fashion, which lends this research a novel angle of approach. My background is industrial design where the paradigm depends on the informed user contributing to the design process, and there operates a process of design for product understanding. Also assumed is that the user-as-customer knows what they want to buy. I am also a design researcher, one who enquires into design so as to improve design and the design process via writing.

While this article is ostensibly about men's underwear, it uncovers problems arising from assumptions about design methods' research paradigms. These matters hinge on bridging measurement (quantitative) and cultural interpretation (qualitative), something often lacking in industrial design research. The semantics and affordance of men's briefs are the result of the interplay of numbers and meanings. On the one side are technical matters related to engineering patterns for cutting and managing the measurement of male bodies (e.g. Cheng and Kuzmichev 2019). On the other is the interpretation required to translate an image into a product that means something to the buyer. The image is an artistic one, the drawing or sketch. And here we can see already design involving matters of science, matters of interpretation and matters of art. Had I not ventured into this area of design research, I would not have gained a sense of the limited manner in which a lot of design research is carried out.

#### PRE-RESEARCH

Rather than begin with the customary literature review, this begins with a personal experience. Having discovered a few years ago that I could not buy locally the same brand and style of briefs I had been wearing for many years, I ventured online. This meant the choice of products increased effectively infinitely. Whereas before I could choose the five or ten brands typically sold in shops, I now had hundreds of available styles. I had to learn the vocabulary of the product sector and try to infer from size charts and photographs what these terms meant. Ultimately my competence as a consumer only came from selecting, buying and wearing these underwear. The parameters that defined the corporeal, sensory and haptic experience of wearing the briefs were not captured in a waist measurement or a description about the fabric. So this led to a deeper exploration of the parameters that matter in men's briefs.

I should make some points here about what I am not discussing. O'Neill (2022), writing in the New York Times caught my eye as he seemed to be writing about a new attitude to men's underwear generally. However, O'Neill discusses greater openness to men's underwear inspired by the fabrics of women's lingerie. He writes not about briefs but about bodywear next to the skin. It seems especially about gay or non-binary people or at least men who want to overtly explore clothing-defined gender boundaries. This article is not about men's lingerie. It is based on my own fairly conventional need for comfortable briefs in conventional fabrics. I suppose I did cross a line by going for pink whenever it was available, but pink and lace were rejected. I have never liked boxer shorts, and the mainstream branded Y-fronts tend to be mid-rise or higher so I did not research these (see Figure 1 for a definition of the rise). Despite the narrowness of my selection criteria, the choice remained bewildering and still suggests the same thesis that the design space and the meaning of the design is far larger than most customers understand.

The history of men's underwear has been covered quite effectively and from various angles (Benson and Eston 1996; Lönnqvist 2001; Engel 2003; Cole 2012; Blanco 2014; Yamada 2019; Hill 2022). I will only pick some elements for a short consideration. Benson and Eston state that 'differences in anatomy have always dictated basic differences between men and women's undergarments [...]. Men's underwear has always been primarily functional, conforming to the body's shape, and made of sturdy, protective materials' (1996: 107). As I discovered later, this statement is not really adequate. I would argue that differences in psychology have been very important in how designers create garments to suit men's anatomy. There is also the paradox of coverage and exposure. The underwear, as a piece of garment, seeks to conceal and highlight the genitals' (Ueno 1989: 12). And I would suggest that conforming to the body shape (I mean the obvious fact of men's external genitals and a different hip-to-waist ratio) is what underwear have seldom done.

I will not reiterate the rather convoluted story of how undergarments evolved, but note that the main themes are of economic history, technical development and social transformation. On the economics front, underwear were often the privilege of the upper classes (Cole 2012: 26). Social class could once determine style preferences (Benson and Eston 1996: 110). Economics matters less now. These days you can buy packs of three briefs for the same price as a fast-food meal. Online, eBay offers pairs for about €2. Technical developments are related to innovations such as linen being replaced with wool and then cotton (Black et al. 2014: 139). Now we have elastane, polyamide, Modal, Lycra, bamboo and others. Social transformation occupies much of the literature. The most comprehensive analyses are by Hill (2022), Cole (2012) and Black et al. (2014). One can see that a combination of the advance of capitalist commerce and the retreat of religious sentiment meant that men's underwear became more public and men became more aware of their underwear, reflexively. Cinema and holiday culture put increasingly scantily clad bodies on show on the screen and on the beach, respectively. Early swimwear was modelled on underwear (Delis Hill 2022: 10), but later, designers began to borrow back from the styles of swimwear. A milestone in the ending of the brief's (nominal) asexuality was Calvin Klein's 1992 campaign featuring the entertainer Mark Wahlberg wearing white boxer briefs (Osterberg 2010: 58) though at earlier times some ad campaigns coyly alluded to some life inside the briefs (Lönnqvist 2001: 77). There was a message in this for people, gay and straight: somehow these underwear will make you or your partner

 I seem to have amalgamated jockstraps into the same category as briefs very attractive. Hill notes that a 1951 volume by C. W and P. Cunnington, *The History of Underwear*, makes the observation that the subject of underwear'is so generally associated with eroticism, often to a pathological extent' (2022: v). Black et al. (2014: 135) also note this. This factor undergirds most of the story of the social transformations exerted by underwear on us and by us on underwear.

Benson and Eston (1996) and others chart the evolution of men's undergarments generally. The branch of the underwear family tree I am interested in leads to briefs. Depending on how you look at it, the brief has one or two lineages. Either it is a recent invention, emerging from Jockey shorts themselves an adaptation of basic woollen drawers. Or it goes back further: 'Briefs, derived from loin-cloths, the most basic and primitive garment for both men and women' (Ewing 2010: 14). Engel (2003: 18) ascribes the invention of the modern brief to Heinzelmann of Stuttgart who marketed the Piccolo underpants in the mid-1930s. These lacked a fly opening (Cole 2012: 82). At the same time, Jockey launched the Y-front in 1935 (Cole 2012: 82). It is not a garment with a simple direct lineage.

If the origins of briefs are a little cloudy, so too is their definition. Dibyendu (2018: 167) attempts a nine-way classification of men's underwear (see Table 1). Engel (2003: 4) lists seven. The exact correspondence of the two lists is not complete and is ambiguous. For Engel the category 'briefs' includes bikini briefs. Dibyendu distinguishes them from Y-fronts. Trunks, pants, boxer briefs and long underwear might really be one group, with no clear demarcation. What they all seem to have in common is that there is some material covering part of the leg, but this ranges from anywhere below the fold of the leg down to the knee and beyond. Briefs may or may not have a Y-front or buttons. Neither Engel nor Dibyendu list open-backed briefs that are conventional at the front and around the legs but have an oval opening in the seat, an alternative to the jockstrap. Neither author lists garments that combine the string and jockstrap (jockstring) or which lack a waistband entirely. Olaf Benz (1996 in Cole 2012: 131) distinguished boxer briefs from 'bikers'. For boxer briefs, the leg opening only goes down slightly above or below the level of the pouch; on biker briefs, the legs extend nearly to the knee.

The leg length and presence or absence of a Y-front do not exhaust the definition of briefs. There are differences to the detail design that are important for the look and feel of the garment related to ways to design the pouch, as seen from the inside and the outside. Seat design is a little simpler. All of this is by way of saying that a reliable, clear-cut and objective classification of briefs and their relatives is not easy to draft.

Table 1: Two categorizations of styles of underwear: rise does not figure in these conceptions. Note in this table 'boxer' means loose cotton underwear with extended leg coverage. The boxer brief is a close-fitting garment with a longer leg than the standard brief.

Author									
Engel (2003)	Briefs	Boxers	String	Jockstrap	Long under- wear	Pants			Misc.
-	Briefs (Y-front)		G-strings	Jockstraps	Boxer briefs	Trunks	Thongs	C-strings	

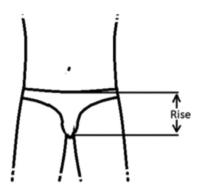


Figure 1: The rise – the distance from the hem of the waistband to the inner leg or crotch.

#### RESEARCH: BUYING, READING, WRITING/DRAWING

Now I will describe the change from unreflective, routine buying of chain store briefs to active exploration. This process has two phases. In phase 1 I began to explore what was available online using two mainstream retail portals. In phase 2, I decided to draw from Blanco (2014) and Franklin (2014) and attempt a phenomenological approach to my underwear choices. In phase 3 I realized that the standard method of writing about design would not address what was fundamentally important, an insight gained via recording, annotating and eventually drawing.

The first phase was not conducted as deliberate design research. It corresponds to the unstructured pre-research experience that is the hard-to-see foundation of organized, end-directed activity. During this period of eighteen months I existed as an uninformed consumer, studying the market for men's briefs in much the same way as many other consumers: shopping as leisure activity or as distracting consumerism. Had I been a better-informed consumer, I might have shortened the process leading to the acquisition of 263 pairs of underwear. I learned products are not clearly described. Online retailers pile up descriptive terms to create hooks for the search tools. One might search for 'men's low rise briefs' and find the resultant items titled as, for example, 'Men's Slip Mesh Breathable Briefs Low Rise Sexy Fashion Lock Buckle Men Bikini Underwear Briefs Brave Person S M L XL' or 'Men Low Rise U Convex Bulge Mesh Underwear Jock Straps Briefs Thong'. Ignoring the catch-all terms, one can view images of the garment, often not modelled, and inspect measurements, but one is left to one's own devices to decide to what class the item belonged. What the garment affords is unclear.

I turned to relevant literature to see what design research had to say. Blanco describes a 'phenomenological approach to discuss my personal lived experience and creative authorship in selecting my underwear' that he uses to explain 'the meanings created by my interaction with my underwear and how this clothing object has been shaped' by cultural factors, socio-economic context, his relation to his sexuality and his body (2014: 117). Blanco (2014) focuses most on the reception of the garment – how the wearer and others understand it. Crucially, the description is one of a *lifetime* of use, from childhood onward. Blanco writes: 'In my life, underwear, even as a semi-private signifier, presents information about who I am and how I have constructed my multiple identities

- 2. Separate-pouch underwear separate the genitals from the torso by means of a secondary, inner pouch behind the outer one. Advertising copy indicates this can be for hygiene, health and comfort reasons. but it also has a visual enhancing effect.
- 3. Clancy and Barry's (2022) study of men's attitudes to their underwear that appeared after this article was submitted for review

through the years. I am indeed the signified of my underwear choices' (2014: 128). Blanco (2014) does not detail much regarding how cut, fabric and colour affect the way the garments are read by himself or others.

Cheng and Kuzmichev (2017, 2018, 2019) approach men's underwear from the engineering side: geometry, fabric and measurement. They study the way in which the waist and hip area of the male body can be measured and defined. However, while they do make efforts (Cheng and Kuzmichev 2019: 1630) to address the variability inherent in male anatomy, they understandably do not get as far as saying how guides for measurements are to be used in creating meaning. Lee (2016) invests some time in trying to understand the pouch design for briefs, a kind of technical review of leading designs for separatepouch underwear.<sup>2</sup> Lee does not discuss the reasons for enhancing pouches.

In sum, the technical articles do not say much about the haptics or semantics of the designs. That means the designer is not aware of how a preferred effect can be related to a particular cut or vice versa. The hermeneutic approach misses the relation to geometry and how it expresses, enhances or supports body shapes and proportions.3

I followed and adapted Groenewald's (2004) guide to phenomenology in assembling an inquiry method. According to Hycner, 'the phenomenon dictates the method (not vice versa) including even the type of participants' (1999: 156). The method was fused with concepts borrowed from Klepp and Bjerck (2014) on wardrobe studies, focusing on the materiality. The reader will notice here that the methods are yoking together (1) my subjective and haptic experience and (2) the material and physical. Klepp and Bjerck are very clear on the materiality of wardrobe studies (2014: 2). Eventually I will bring into this report the symbolic aspects of the garments since underwear do eventually mean something to someone.

Klepp and Bjerck state that 'much of what concerns our clothes practices will be tacit knowledge' (2014: 2). There is indeed a difficulty in expressing this nonverbal but important characteristic of the underwear. Klepp and Bjerck also note that the problems inherent in the study of materiality is to 'grasp the non-verbal experiences' (2014: 2) and to translate this into written language. But they also note: 'The focus on the body in exploring the materiality of clothes has contributed to the exclusion of other perspectives of the material (2014: 2). The notes I made during this would have been different had I not dealt with the necessarily close relation of the material and its properties in relation to my body.

What I notice in writing this is the switching between doing, thinking and theory. As much as this is about one person's experience of one type of garment, it seems also to be an account of an internal struggle to find the right mode to report it. This struggle was between the (1) neat format of introduction – litertaure review – research question – method – data analysis – discussion and (2) a non-linear sequence of things connected in ways that are not clear to me until I write them.

I turn now to the clothing diary and analysis. In this I recognize versions of two of four methods listed by Klepp and Bjerck (2014: 4): (1) fieldwork, (2) inventories and records. I did not conduct laboratory testing or interview myself (or this is my self-interview).

Over a period of 196 days, I recorded my underwear choices (see Figure 2). This began on 19 November 2021 and ended 3 June 2022 (corresponding to data gathering, after Groenewald 2004: 47). The notes were made on the same day or the day after (Groenewald 2004: 48). During the writing process, I also episodically reviewed the literature on men's underwear. That informed the observations I made. At the end I transcribed the data and converted

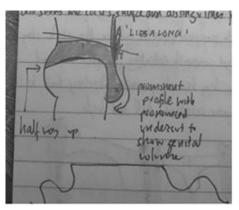




Figure 2: Notes and sketches for underwear drawings. Wearing these is a non-verbal experience (Klepp and Bierck (2014).

hand-drawn diagrams into digitally drawn diagrams (see Figure 3). The process of reading my notes and generating the images allowed me to spot the large-scale patterns. I noticed that the diarizing became more detailed. The diagrams turned into better sketches, which extracted design ideas from the descriptions. To describe is to try to understand.

The transcription yielded a document of about 8000 words. Together with the notebooks, this is the stored data (Groenewald 2004: 48). Initially the log entries are short. The first is:

Nov 17, 2021: Grey cotton tanga (with a diagram of front and back).

By the fourth entry I began to elaborate:

Low-rise nylon mini boxers. They have a proper band of cloth going from front to back; the pouch is nicely tailored and there is a horizontal line (the hem) cutting across the rear. They are quite masculine [...] I should have bought more of these as they are a comfortable and satisfying shape. Ordinary briefs seem quite huge now, like grand-dad underwear.

A front and rear-view diagram accompanied this.

From these descriptions, sometimes noting how many pairs I tried on before choosing, I built up a set of parameters. This is explication (Groenewald 2004: 49). The conversion of the hand-drawn sketches to digital ones also made me consider the shape of the garments in relation to a body (albeit a standardized outline). I noted the graphics of the garment and the relation of the garment to the body. The semiotics of the garments emerged as a theme: what were the items signifying and how was that achieved.

I generated a coding schema for the notes and then applied it to the underwear choice log. This revealed patterns of recurring themes. Hamilton-Smith (2017: 100), in a review of an exhibition about underwear, records the fact that men choose their underwear from boxes rather than feeling the fabric. On those boxes one reads typically only sizing information (the waist) and sometimes a little about the fabric. In contrast to these few parameters, the schema required these variables: pouch design, rear/seat design (coverage), colour, sizing/fit, graphics, fabric, rise, waistband, haptics.

To condense this data (4 pages, 297 rows, 9 columns) from 8000 words runs the risk of simplifying it excessively. I can only deal with some main headings.

#### ANALYSIS AND COMMENTARY

First I generated a classification of categories: bikini, tanga, cheeky/Brazilian, mini-boxers, thongs, boxer briefs, jockstraps, open-backed briefs, combined jockstrap/thong (sometimes called a jockstring), sheath type 1 and sheath type 2, string and 'other'. The diary entries point to how the conventional ontology of briefs seems to overlook the variety of pouch designs, a consequence of research and commentary inadequately addressing the job the pouch is doing (this harks back to the neurotic sexualization of underwear noted by the Cunningtons [cited in Hill 2022: v; Cole 2012: 21]). Some exceptions to this are Ueno (1989: 12) and Yamada (2019), who discuss concealment versus display.

The table of classes (Table 1) based on Engel (2003) and Dibyendu (2018) seems to assume pouch design is unimportant. Lee (2016) does not comprehensively tabulate pouch variation. Those inclined for ontological neatness might wish to incorporate pouch designs into the existing schema; this would mean subsets of boxer briefs, for example, boxer brief with (1) flat front or (2) u-shaped profile or (3) sheath design and so on. That might be tidy because it upholds the existing paradigm based on coverage and leg length. But this omits the undeniably central role of the pouch in the identity of the underwear and the wearer (discussed by Osterberg 2010: 59), somewhat corresponding to the role of cup dimensions in bras.

In my log-book entries, I started by using the existing, conventional classes but noted if the pouch varied from the conventional:

Dec 8, 2021 – modal light grey boxer briefs with elephant's nose pouch. This style has a pouch with a sheath design. I have only worn such underwear once, with a tanga back; this time I notice it feels like not wearing underwear at all as there is no compression or pressure; it's an agreeable alternative to something like Obviously Anatomax.

The process of trying to describe accurately the differences between the garments forced a greater awareness of the reasons for the differences.

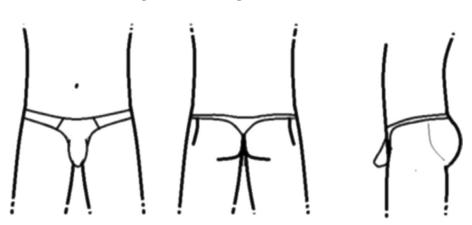


Figure 3: Blue, elongated pouch thong with opaque and semi-transparent materials.

For 14 December 2021, I had to go to some length to describe the way in which material combination and cut worked (see Figure 3):

The pouch is of a star-patterned blue semi-transparent elastane [...] the pouch narrows close to the abdomen, giving a pear-shape front outline - the elasticity of the fabric allows the shape to be expressed without compression. I notice with the thongs that the less elastic material of the hem holds the fabric edge to my abdomen, while the stretchier panel inside it stretches to accommodate me [...] as single material would not do both.

From this, I abstracted a subcategory of factors for the pouch:

- At the core of this is the functional and comfort-related issue of compression, support or active shaping.
- Secondary to this is the separation or not of the pouch, which concerns the extent the genital volume is visually separated from the lower abdomen.
- Tertiary are graphics, which has to do with colour break-up of the garment.
- Quaternary, semiotics, the meaning of the pouch design.

In the way of things, although derivative of function and material, semiotics can become a driver: the designer seeks to convey a meaning and then designs accordingly. And the wearer/buyer can have a preference for what the design conveys and seek the design that seems to manifest it best.

The difficulty of formulating an ontology of pouch design is that the possible forms are not discrete or step differences but almost continuous. On one axis is the degree of compression (how much flattening effect the fabric has), and on the other, the depth of the pouch profile. These are explained in Figures 4–8.

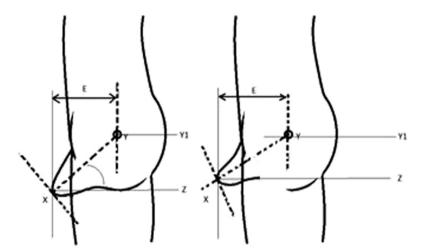


Figure 4: Key dimensions in the pouch profile, side view. Y is the key point, the hip. X is the location of the crown of the pouch in relation to Y. E is the distance of Y to X longitudinally, measuring how far forward X is from Y or how much protrusion is expressed. Z is the vertical distance of X from Y (elevation of the crown). Compressing briefs will result in X being low and E being reduced. Non-compressing or anatomical briefs allow X to be wherever the wearer's genitals hang. Shaping briefs will control X's location.

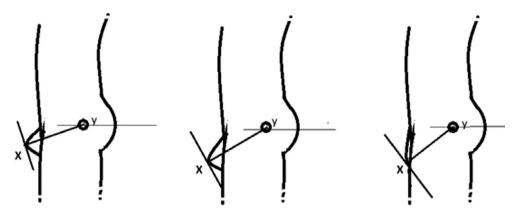


Figure 5: General profiles of pouch, from shaping designs (left) to flattening, compressing (right), assuming anterior spinal tilt. Cheng and Kuzmichev (2019: 1628) has a section on the bewildering issue of measuring the male lower torso in relation to the pouch profile. See in particular the diagrams of buttocks and genital bulge (Cheng and Kuzmichev 2019: 1629). The research (Cheng 2019) is about measuring the body and not about the intended final shape of the garment on the body.

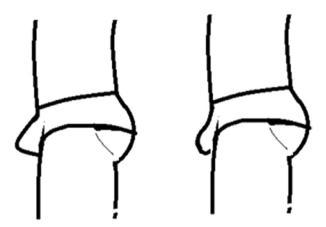


Figure 6: Two approaches to shaping the pouch profile. Left, active shaping achieved by locating the seam edge in a two-panel front. This design is associated with cotton or modal. Right, natural form-following 'passive' design using softer, more elastic fabric (thinner cottons, ribbed cotton, elastane).

Looking at the front, pouch designs can be seen to vary from a shallow profile to a deep profile. The depth is relative to the cut of the leg aperture, as in how far the edge of the leg aperture sits above the line of the pouch (see Figures 7 and 8).

Sheath pouch designs are of two types. See Figure 9. Type 1 seems to be derived from the Y-front, enclosing both scrotum and penis, and has moderately enhancing properties. The second has a sheath conforming directly to the shape of the penis, the so-called elephant's nose type. The design (top pair of sketches) is technically more complex requiring an aperture in the front panel (inverted Y shape) and a separate interior panel, usually

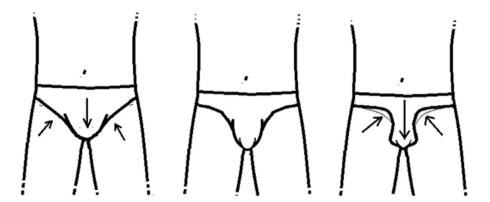


Figure 7: The depth of the front profile. In this diagram the minimum width of the waistband has been held constant. On the left, the leg apertures are lower, a classic 'supermarket' brief with a moderately open leg aperture; on the right a more expressive and ergonomic design accentuating the outline of pouch and also increasing the apparent length of the leg.

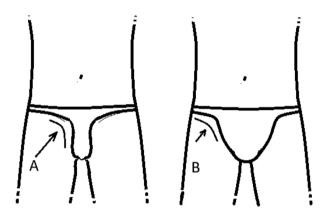
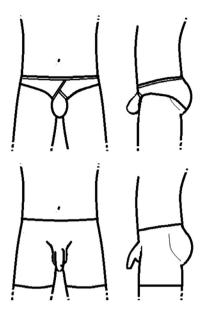


Figure 8: The pouch profile from the front. Left, a natural form mostly determined by the user's own shape and size with the body-form guiding the elasticity of the fabric. On the right, a more controlled shape, achieved by a wider area of stitching of the pouch to the waistband and more compression or flattening of the body volumes. Using the 3D visual analysis of Akner-Koler (1994), the curve A on the left indicates a stronger force than B. The curve A is more expressive. Semantically it draws more attention to the genital volume than B.

of thinner fabric, which is everted through the aperture and into which the wearer fits themselves. The second type (bottom pair of sketches) is a simpler construction, based on the cutting pattern and weave to make what is effectively like the finger of a glove. It offers no supporting properties at all, subjectively feeling like one is wearing no underwear at all.

Lee (2016) considers another class of underwear, the enhancing type, again not part of the conventional schema. That article considered one type only, briefs with a two-part construction: an inner panel that has an aperture and an outer panel, usually triangular and often open at the sides.



*Figure 9: Two sheath-type pouch designs, type 1 (top) and type 2 (bottom).* 

Most enhancing underwear I encountered seemed to be of this type. I only found one variant, an international brand called C-In2, which resembled very conventional boxer briefs on the outside. They had an adjustable elasticated loop on the inside, attached to the waistband. The enhancing effect was achieved by lifting and gathering the genitals. One might assume this kind of flattering clothing is not much different in concept from shoes with elevated heels or bras that lift and support, for example, Wonderbra. But apart from not actually being all that comfortable, from a first-hand point of view, I did not enjoy the deceit, thinking of Immanuel Kant's strictures against lying. More fundamentally, the concept seemed to undermine my sense of physical adequacy, much like being helped when one does not need or want help.

Through wearing and considering these various designs, I reach an interim conclusion about the frontal aspect of briefs. The existing framework of discrete categories is not as useful as a three-way categorization into (1) compression, (2) body neutral and (3) enhancing designs. Compression designs and shapeless bagginess seem to be what mainstream retailers are comfortable with marketing. Display mannikins are designed assuming compression and not for neutral and shaping design of briefs. A thorough check of the market for male underwear mannikins showed only one, discontinued, anatomically correct mannikin. Many of the designs discussed here would not be amenable to retail display as the fit to the mannequin would be very poor.

Briefs are not only about the front view, though. During the 196 days of study, I understood better the essential design properties of different levels of rear cover (see Figure 10). These categories corroborate more with the materials as I experienced them. I would suspect there would be more intersubjective agreement about the classes: brief, bikini brief, tanga, thong, jockstrap, open-backed brief, string and combined jockstrap-thong (or jockstring). The

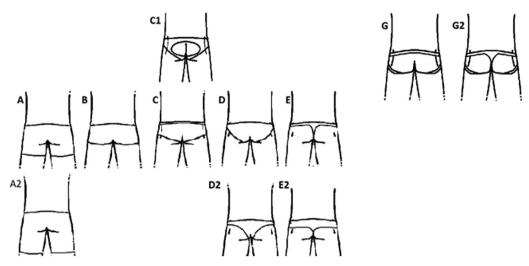


Figure 10: More and less coverage. Items B or C could be called the basic brief. A and A2 involve increased leg length. C1 is route 1 to less coverage, the backless brief. D and D2 are bikini briefs; E and E2 are two types of thong: the bikini thong and Brazilian cut ('cheeky brief'). The jockstrap has no rear coverage other than leg bands; G2 is the combined jockstrap with thong-centre band, a somewhat oxymoronic styling invention.

tanga is best understood as a garment with a jockstrap-type waistband and front (a broad triangular pouch with some level of compression) with a bikinistyle seat. I only bought one pair of these.

The waistband is often discussed as one of areas of innovation in the 1980s: embossed with brand logos. Here its role is as the link to the jockstrap, which consists of a pouch, a waistband and two connecting straps, looping around the legs under the buttocks to the pouch. The functional aspect of more or less coverage comes down to comfort: in warmer times of the year, the backless brief, the jockstrap and thong insulate the least. They are also associated with connotations of athleticism and eroticism, rich with meaning despite the scantiness of the material involved.

The mini-boxer-brief, the midi-boxer-brief and long-leg (Olaf Benz's 'biker brief') are better suited for winter. From a semantic point of view, less coverage is understood to be more sensual and erotic and either generates or supports a more affirming body image. The clothing diary documented the graphicalsculptural interplay that the Brazilian/cheeky briefs and other designs exploit. If the front view is both for the wearer and others, rear is something that is perhaps more for others. The coverage can be 100 per cent or 0 per cent. In between are the possibilities allowed by following the contours of the buttocks, cutting across them or exposing them completely. Most briefs accommodate the curvature of the gluteal muscles with arcs or straight lines. Either way the lines make sections that highlight the muscle shape. See Figure 10 (D, D2, E and E2) for examples.

Arising from this is the sense that the tailoring of the briefs can work with the boundaries and forms of the abdomen, buttocks and legs. The bikini brief accentuates by cutting diagonally and allowing for a high leg opening. The briefs in Figure 11 depend on a mid-rise waistband to provide a contrasting

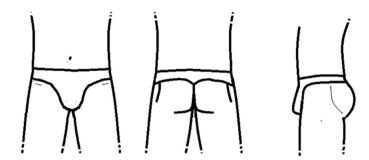


Figure 11: 'DM' brand baby-pink mid-rise string. The string running from front to back is continuous with the white edge trim around the leg apertures. The arc of the hem at the rear accentuates the upper edge of the muscles and there is effectively no coverage. The pouch is moderately compressing.

zone edged by the semicircular cuts: openness and display depend on the presence of the mid-rise waist that plays with semiotic conventions that imply the higher the rise the more sober the design is. In a sense, the garment's humorous intent sets up a surprise. From the front: quite modest mid-rise briefs with an equally low-key pouch. From the back: the body is displayed and accentuated with curved edges defining the upper boundary of the muscle.

This one example illustrates the way in which the designer can choose to pick out physical boundaries on the body, the body masses and volumes while also toying with conventions (the sober midrise is contrasted with display of the uncovered body). The design can then recommunicate these lines and volumes back to the wearer. Undressed, I am just a bunch of continuous shapes. In underwear, the different cuts and styles can be used to address myself and make me aware of me. This can be either life-affirming (if I am feeling fit and healthy) or challenging (I am a body in decay). While some might feel underwear serves to commodify and sexualize (and this is true), they can also be a personal instrument by which we become aware of the overlooked self.

Even within the narrow set of criteria (low-rise briefs), there is much variation in line and nuance. The path of the waistband around the circumference of my waist had as much graphical variety as the profile/depth of the pouch and the cut and coverage of the seat.

The bikini briefs in Figure 12 are an example of the way in which the designer can define the lower torso as it transitions to the legs, groin and buttocks. Emerging from my sketching of the daily selection came the awareness of the angle of the waistband, though this is a generalization that does not fully express the way in which from front view the waist can be set lower down to the crotch or up closer to the navel. See Figure 13.

Seen from the front the waistline plunges more or less deeply. The ultimate point of the design is about how much to show and how much to reveal. It is a kind of topological, psychological and erotic game predicated on skirting the boundaries of what is possible to show (see Hill 2011: 1). But it is also about how what is shown or covered is presented too. I have tended to pay attention to what is called 'geometry', those shapes and lines definably in 3D space. I have not paid much attention in this text to colour

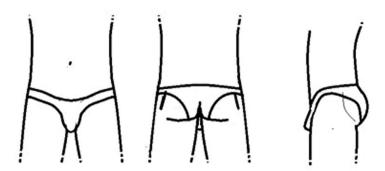


Figure 12: Low-rise bikini brief with strong accentuation of line of lower abdomen, lower than Jockey 'Skants' of 1959 (see Hill 2011: 1) and a sporty highcut leg (affords easier movement).

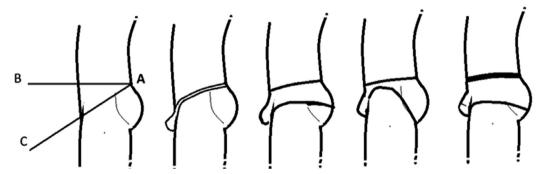


Figure 13: On the left, a schematic representation of the angle of the waist. B-A is more conventional, mainstream than the angle C-A. On the right, four examples of less and more horizontal waistline angles.

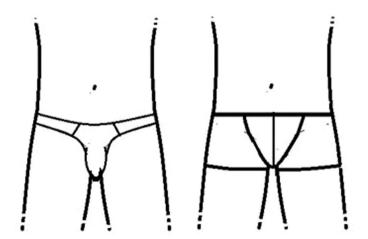


Figure 14: The plane of the waistband is raked down (left). On the right, the waistband angle is near horizontal. The semiotics of this relate to accentuating or downplaying the transitions of the body and allowing more or less exposure. The design on the right relies on the fabric to control form. The design on the left uses stitching as graphics to highlight the crotch.

or fabrics. In the course of the purchasing and recording of the underwear choices, I sometimes noted colour. Initially, I bought just white underwear, which meant some continuity with my previous clothing habits. But some styles came only in other colours; I avoided neutrals (with the exception of elongated pouch bikini briefs in navy) and discovered blue camouflage, orange, yellow, various pinks and sporty combination of reds and yellows. One interesting cut/fabric combination consisted of midi-boxer-brief with a non-compressing pouch and pink-grey-black camouflage pattern. The semantics crossed over in a socioculturally complex way that one would not find with plain white boxer briefs: the humorous linkage of military patterns with cheery colours (pink, light blue), masculine (military) and what one might call conventionally feminine (pink, lilac).

Not easily amenable to drawing is the fabric. The material affects the expression of the pattern and small surface details and topography under it. Through the diaries I became more aware of nuances regarding the elasticity, bias, thickness and composition of fabrics. At one end of the spectrum are the thicker, denser synthetics that had a technical esque quality akin to sportswear or swimming trunks. Semantically, these suggest an artificial or at least idealizing quality that generalizes body shapes. A few producers experimented with perforated fabrics (usually the panels) contrasted with solid edges. These suggested juxtapositions of public (sports) with private (the essential nature of the jockstrap or briefs). Modal fabrics tended to be associated with simpler designs such as some elongated pouch designs and Brazilian-cut cheeky briefs. Simple cotton fabrics could be cut to give distinctive pouch profiles, while more advanced weaving allowed synthetics to be given a very detailed form-fitting quality without recourse to stitching or use of multiple panels.

The subject of briefs turned out to be multidimensional. The diary entry of 13 January 2022, for 'white bikini briefs with very fine grained perforated texture', is worth picking out (see Figure 15).

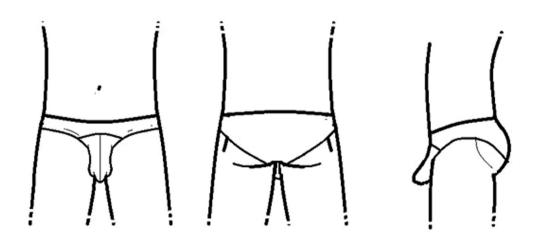


Figure 15: Low-rise white modal briefs. Rather than forming part of the waistband, the pouch is supported from the waistband with an arc-shaped stitched connection. The material is bias-cut and finely textured and passively supporting rather than compressing or shaping.

That entry had this extended commentary:

I suppose whatever else is decided about the style of a pair of underwear, the fabric and the shape of the pouch matter most. A good pair of underwear shows clearly surface detail and form and doesn't compress at all. Thus a thin, bias-cut fabric is desirable. The next is a suitable design for the seat which is probably a more open-matter. I really don't care so much whether it's a thong, open-back, briefs, bikini or cheeky or mini boxer so much as I am comfortable up front and the haptics are positive. That said, the nice aspect of thongs and cheeky briefs is that they don't cut into the buttock but rather follow the contours.

A few times in the course of the experiment, I made similar analyses, indicating the constancy of the significance of these factors.

It is time to begin some form of a conclusion. The change from a white woven or knitted and comparatively shapeless functional garment to coloured, shaped ones of many fabrics led to design possibilities far in excess of the customer's understanding. I gathered 8000 words of notes concerning cut, shape, colour, fabric, haptics and semantics. I have tried to explore some of the sub-verbal haptic qualities of different ways to hold and shape body parts subject to strong conventions and mores. The rise, the shape of the pouch, the amount of coverage plus the fabric's stretch, shear, thickness and density plus the colours and graphics all go to define the garment in addition to the unknown (to the designer) variable of the consumer's body shape and how they wish to be seen by themselves and others. In essence, the garment is at the intersection of two sets of elastic variables – the fabric and the customer's body mediated by the subjective mind.

Online retailing has allowed a profound increase in the possibilities open to designers and manufacturers. An examination of underwear retailing in supermarkets, department stores and men's shops reveals a narrow array of products described in terms that in no way articulate the haptic, visual, sociocultural significance of the products: a number to quantify the waist measurement and perhaps a word or two about the fabric. One or two producers mention the rise. The rest is closed inside the box or plastic wrapper. Articles on marketing (Hale and Hodges 2013; Phau et al. 2015) talk in only basic terms like comfort and branding. How are designer's aims related to marketing? Is marketing leading the design? I have not been able to address this fully. More research would be helpful in seeing to what extent designers lead by innovation or whether marketing influences the directions in which designers go.

One of the peer reviewers wrote:

I am also left to wonder how the author's own body factored into his analysis. [...] This could impact the wearing analysis of briefs, considering the large variability in bodies [...] would cause the data to be further complicated, as each consumer brings their own body to their understanding of what is comfortable, appropriate etc. for wearing.

From a factual point of view, I am an ergonomically average person who undertakes a moderate amount of regular exercise, neither conforming to cover-model ideals nor varying from current body mass index recommendations. It is not really feasible to say more than that researchers will have to extrapolate these findings in the direction of other body types, ages and levels of physical fitness.

For me the four most significant insights relate to design research. First, design is a discipline bounding art, humanities and science. It is not in a class of its own, but is a unique compound of existing classes: you cannot understand underwear without thinking of science (anatomy, fabric engineering, production), the humanities (the social science and interpretation of colour, form, shape, sexuality) and art (the aesthetic impact of the senses and perception). Second, methodologically, an attempt at a positivistic account of this experience would have lost elements essential to understanding the underwear. Only as an individual, male human can I explain the meaning of choosing and wearing these garments. From this individual experience, something general emerges. I also acknowledge that this is not quantifiable science but that is not only how we understand personal experience either. Third, design researchers need to look very closely at assumptions about the informed designer working with informed users. To be sure, not so very many design projects have the peculiar mix of psychology, haptics, gender/ sexuality, practicality and semantics as underwear. But not many have none of these. I thought I understood what my underwear were and were for. 196 days later it became clear that even with some of the tools of design research available to me, I knew almost nothing. And 7600 words later I have probably only dealt with half of what I have learned. Finally, this inquiry is not a neat cycle of theory-research-experiment-data analysis. These steps are concatenated in a way unsuited to boilerplate formats of research writing. It ended up as 'a methodological and stylistic experiment that endeavours to both explicate and illustrate its reasoning through both its form and content' (Franklin 2014: 83).

I have approached this as an industrial designer. It is important to underline that I am aware fashion design has its own approaches and means of analysis. Industrial design's strength are in the ability to formalize design methods and draw on more naturalistic modes of inquiry. This, of course, is due to industrial design's inclination towards objective acceptability and a closer fit between form and function. I see also that reliance on these modes leaves out a means of inquiry I would not have understood had I not turned my attention to clothing that allows for a much greater element of the emotional, subjective and personal. I have to ask why industrial design research has (to my knowledge) so little first-hand inquiry into the meanings and emotional aspects of products and what could be gained by an experimental research inquiry into how products feel to use and relate to.

Underwear are conceptually situated among shifting boundaries, material and social. Cole writes: 'Over the last one hundred years, men's underwear has become increasingly visible and public' (2012: 8). Benson and Eston wrote that'the primary purpose of men's underthings is still cleanliness and comfort, with the cliché that preppies choose boxer shorts, working class men wear Jockey shorts and briefs are preferred by gays' (1996: 10). They then note that 'those lines no longer hold. As in the field of women's underwear, anything goes and the male animal may well be regaining his traditional flamboyant place in the animal kingdom' (Benson and Eston 1996: 10). Lonnqvist emphasizes the aspects of 'new adaptations of the meaning of fashion in relation to changing gender roles, new ideals of the body and new mechanisms in consumer culture' (2001: 75). This article has examined the consequences of new mechanisms in consumer culture. The infinitely large showroom of online sales has allowed designs to move away from broad averages, focused market place norms and narrow social norms. The ontology of briefs is now a blur of overlapping genres. Semantically, the relation of the product and user needs more articulation. Designers may have more ability to create subtle and appealing garments, and through improved packaging and marketing, the customer can be helped to understand what these products afford and what they might mean.

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