CHAPTER 6 THE TYPOGRAPHIC SENSORIUM: A CROSS-MODAL READING OF LETTERFORMS

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1 Introduction: Function(s) of type

Anyone living in a post-industrial society consumes and interacts with typography[1] daily, albeit often unconsciously. For many of us, typography primarily is a linguistic or lexical tool; a vehicle by which we can express the content of language – 'a carrier of words'.[2] Be it on signage, billboards, packaging, a website or digital interface, wayfinding systems or as ink marks on the pages of a book or Kindle, we often gauge the usefulness of a typeface[3] in terms of the degree to which it makes written content legible.

Many typographers, too, think of type as a 'neutral' medium that, when applied, should not interfere with the reading experience. The 1930s modernist type critic, Beatrice Warde, for example, argues that letterforms[4] should act as 'crystal goblets', transparent vehicles that transport the intention of the copy or text.[5] Modernist designer Emil Ruder furthers this view:

> Typography has one plain duty before it, and that is to convey information in writing … The text must be clearly legible. The "mass of text" on the page must be measured to make it possible for the reader to take it in without undue effort.[6]

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1   'Typography' is an umbrella term for the study of letterforms, typefaces and the practical selection and application of type in layout.

2   S Hyndman *Why fonts matter* (2016) 25.

3   'Typeface' refers to a family of letterforms that together showcase a unified structural composition.

4   'Letterform' describes the unique visual, audible, tactile, smell or flavour articulation of a typeface. I make use of this term to reference non-linguistic communicative properties of typography.

5   B Warde 'The crystal goblet' Paper presented at the British Typographers' Guild, London (1930).

6   E Ruder *Typographie* trans D Stephenson (2001) 23 27.

Their views are indicative of a much broader modern design philosophy that still permeates today. Indeed, the use of Helvetica, Din, Gotham and other similarly 'neutral' fonts has become ubiquitous across a sea of 'clean' designs in fields ranging from branding to advertising and in the flat design aesthetic that dominates digital interfaces today (Figure 6.1).[7]

android mastercard.
animal planet
open serve absa
Skype yahoo!

Figure 6.1: Examples of the use of 'clean' typefaces in branding design

On the other hand, an extensive body of thought[8] suggests that typography functions as a communicative artefact in its own right – that letterforms are inherently connotative, ideologically rhetorical structures. The argument is that letterforms reflect and orchestrate a generation of cultural themes, symbolic connotation and philosophic ideologies. Why, for example, may some typefaces be read as more lighthearted or whimsical than others? Others as having masculine or feminine attributes? Why do some signal protest and others elegance? The very idea that, when opening a type

7   K Rath 'The rhetoric of neutrality. Again. Revisiting Kinross in an era of typographic homogenisation globalisation' (2020) 1 *Image & Text* 33.

8   S Heller *Iron fists: Branding the 20th century totalitarian state* (2008); S Heller & G Anderson *Type speaks* (2021); H Stöckl 'Typography: Body and dress of a text – A signing mode between language and image' (2005) 4 *Visual Communication* 76; T van Leeuwen 'Towards a semiotics of typography' (2006) 14 *Information Design Journal + Document Design* 139.

menu, we are presented with an endless array of typeface options suggests that they must, at least to some degree, connote differently.[9]

As designed objects, typefaces are narrative structures with interconnected meanings, generated by their material form. Michael Rock argues that typefaces should be seen as structural markers, suffused with historical and nostalgic evocation. He argues that letter*forms* serve as rich iconic markers of cultural accomplishments and underpinning ideological tenets of any one time in a historical design landscape; as graphic imprints of a specific ethos of a specific culture, and at a specific time.[10]

For example, nothing says high-end luxury, elite fashion, glamour and opulence quite like classic Roman typefaces such as **Bodoni** or **Didot** on the covers of *Vogue* and *Elle* magazines (Figure 6.2). With markedly strong visual contrast, where sharpened fine lines are juxtaposed with thickened, heavier ones, the typefaces exemplify the Victorian pursuit of detailing, precision and adornment, facilitated by technological advancement at the turn of the eighteenth century.[11] On the other hand, fifteenth century German-designed blackletter types, 𝕱𝖗𝖆𝖐𝖙𝖚𝖗, 𝕴𝖊𝖝𝖙𝖚𝖗𝖆, 𝕽𝖔𝖙𝖚𝖓𝖉𝖆 and 𝕾𝖈𝖍𝖜𝖆𝖇𝖆𝖈𝖍𝖊𝖗, endemic throughout German wartime history,[12] convey a pungent reek of nationalism and heritage as they enwrap German alcohol brand labels today (Figure 6.3). Ironically, even Helvetica's 'neutral' letterforms cannot escape connotation. On the one hand, its decidedly geometric and 'clean' structure, and particularly its prevalent use in graphic design[13] has garnered it 'celebrity status' as a designer's font. On the other hand, specifically because of its (over) use in communication

9   S Garfield *Just my type. A book about fonts* (2010) 14.

10   M Rock 'Typefaces are rich with the gesture and spirit of their era' in M Bierut et al (eds) *Looking closer: Critical writings on graphic design* (1994) 122.

11   R Jubert *Typography and graphic design: From antiquity to the present* (2006) 90-94; S Heller *Stylepedia* (2006) 321-322.

12   During the Napoleonic wars of 1803-1815, the Franco-Prussian war of 1870, World War I and, perhaps most notoriously, at the hand of Joseph Goebels during World War II, in order to instil a renewed faith in German policy, German nationalists looked to Blackletter, and particularly *Fraktur*, as propagandist symbols of purity for German identity. Heller (n 8) 49.

13   The documentary film, *Helvetica*, for example, explores the proliferation of *Helvetica* in design spheres; from subway information graphics, branding and brand paraphernalia, to textile design, motion graphics and poster design. G Hustwit (dir) *Helvetica* (2007).

design, Helvetica also is often playfully perceived as a safe and somewhat boring typeface. As typographer Stefan Sagmeister describes it:

> If I see a brochure, with lots of white space and six lines of Helvetica … the overall communication that says to me is "do not read me, because I will bore the shit out of you".[14]

Since its first mechanical implementation in the Gutenberg Bible (c 1450) the perceived function of typography has vacillated tremendously. Whether viewed as a purely semantic/linguistic device, graphic imprints of an era, as defining geographic and spatial bounds, patriotic and nationalistic insignia or as badges of technical proficiency, the answer as to the 'function' of typography is almost entirely dependent on the context and era in which the question is posed.[15]

However, there is another way in which type communicates. As a collection of uniquely-composed structural nuances, a typeface's features convey – often intuitively and experientially – their own distinctive essence. That is, over and above the more measurable conceptual references they invoke, they trigger within us visceral, multisensory responses.[16] Central to this chapter is a focus on a relatively recent turn to what I refer to as 'the typographic sensorium'. Following Walter Ong's concept of 'the sensorium' – that our sensory instruments, sight, sound, touch (including kinaesthesia), smell and taste inform what we know by means of experiential learning and intuitive response to our world,[17] I investigate the notable uptake in a sensory approach to the analysis and design of letter*forms*. In doing so, I analyse noteworthy letterform experiments that explore the interplay and communicative value of specific sense-based letterforms.

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14   Sagmeister in Hustwit (n 13).
15   Heller & Anderson (n 8) 10 12.
16   E Lupton & A Lipps *The senses: Design beyond vision* (2018) 10; Heller & Anderson (n 8) 12.
17   WJ Ong 'The shifting sensorium' in D Howes (ed) *The varieties of sensory experience: A sourcebook in the anthropology of the senses* (1991) 28.

Figure 6.2: Left, *Vogue Paris* magazine cover with logomark set in *Bodoni Bold* (November 2008). Right, *Elle Romania* magazine cover with logomark set in *Didot* (November 2011)

Figure 6.3: Left, *Jägermeister* label and logo design by Guther Claussen (c 1930). Typeface set in Blackletter variant. Right, *Windhoek* logo, designer unknown (c 1970). Typeface set in Blackletter variant

2   Design and the typographic sensorium

As embodied beings, we lick, lift, touch, sniff, drop, play, balance and hear elements that constitute our surroundings as a means of discovering and sensually mapping our physical environment. That is, before we even begin to negotiate our world intellectually, we invoke a visceral response to it.[18] For example, when we engage with something unfamiliar – an oddly shaped fork, a peculiarly textured seat or a strange new interface design – our brain fires neurons as it searches our internal memory database to link it in some way to a prior experience of a similar phenomenon. We focus our attention on the disparity between the new stimuli and what we have previously encountered.[19]

At this point we begin to make cross-modal or synaesthetic[20] associations; our sensory perceptions merge as we try to negotiate more complex sensual stimuli; colours change what we feel, sound alters what we see and smell determines what we taste.[21] Of particular interest here is Ong's concept of 'the sensorium' – a Gestaltian-phenomenological view that considers the entire sensory apparatus as an operational complex; the shifting or cross-modal relationships between the senses and how they inform what we know by means of experiential learning and intuitive response to the world.[22] Ong argues that we communicate with our entire

18   DJ Gromala 'Towards a phenomenological theory of the visceral in the interactive arts' PhD thesis, University of Plymouth, (2007) 3 27.

19   Lupton & Lipps (n 16) 10.

20   To clarify, synaesthesia is a specific neurological condition that results from cross-wiring in the brain where any given sensory sensation is experienced in response to stimulation of another sense. Synesthetes may associate colours with different months of the year, as an example. Neurologists Richard Cytowic and David Eagleman argue, however that we are all, to a degree, synesthetes since we all make inter-sensory connections several hundred times a day. R Cytowic & D Eagleman *Wednesday is indigo blue* (2009) 246.

21   C Spence, D Senkowski & B Röder 'Crossmodal processing' (2009) 198 *Experimental Brain Research* 107.

22   Ong (n 17) 1.

body and adds that our sensory instruments; sight, sound, touch (including kinaesthesia), smell and taste overlie one another.[23]

In the case of a spiralar fork, in addition to wondering what its shape reminds us of in visual terms, we might consider what it tastes like. What sound would a chair, made of oasis floral foam, make if you were to sit on it? What might a haptic menu feel like if we were able to lift it from a mobile phone screen? Here, we perceive meaning through synesthetic pathways as senses trigger and amplify other senses until we are able to forge a new synaptic memory.[24]

In colour theory, too, it is long established that in addition to its symbolic function, colour also evokes different emotive responses. Colour grading in photography or film, for example, might help induce a sense of fear or tension or help convey a sense of lightheadedness or romance in different stills or scenes. Without having attributed a particular colour to any of the descriptions above, one already has a sense of what these colours might be.

The instinctual, associative effects of colour are also hardwired into our evolution.[25] For example, fruits such as apples and tomatoes turn red when ripe, and so we tend to associate red with sweetness. Foods that have expired turn brown and blacken, and so our sense of taste has evolved to associate these colours with bitterness and burnt flavours, to help turn us off of these foods. These associative effects are also frequently exploited in advertising and packaging design. As early as 1935, researchers found that consumers associate abstract qualities such as 'cheapness' and 'dignity' with the *colour* of commodities.[26] A more recent study[27] examines the combined influence of packaging shape and colour on consumer expectations concerning milk desserts. The researchers found that,

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23   Ong notes that the sensorium is not limited to the realm of social anthropology, cognitive or neurological biology. Interestingly, Ong also makes particular mention of typography, as visually perceived marks of sound, as one such site. Ong (n 17) 9.

24   Lupton & Lipps (n 16) 10.

25   Hyndman (n 2) 103.

26   G Schillebi 'An experimental study of the appropriateness of colour and type in advertising' (1935) 19 *Journal of Applied Psychology* 652.

27   G Ares & R Deliza 'Studying the influence of package shape and colour on consumer expectations of milk desserts using word association and conjoint analysis' (2010) 21 *Food Quality and Preference* 930.

without having seen or tasted desserts contained within six containers, participants[28] deemed yellow containers to contain sweet desserts, whereas desserts in white and black packaging were presumed more likely to be plain, sour, bitter or tasteless.

In this way, design extends the realm of the senses.[29] Sensory design confronts that body; it activates sight, touch, sound, smell, taste and our sense of movement so that designed texts gain meaning predominantly due to our embodied experience of them.[30] As an artifact of graphic design, typography too is communicative in an essential way.[31] That is, as a collection of material characters, we engage with letter*forms* through our senses and so they are also subject to cross-model or sensory exploration.[32]

However, it was not until the 1970s and 1980s, in reaction to the notion of transcendental universality in typeface design held by modernist typographers, that the more visceral aspect of letterforms was investigated in terms of deconstructionist design practice, philosophy and discourse,[33] but by the late 2000s and into the 2010s, the influence of post-modern letterform experimentation had waned. The arrival of the iPhone in 2007 and the introduction of 'flat design' for Windows 8 and iOS 7 interface platforms in 2012 and 2013, respectively, sparked a significant trend in design, where designers tend to gravitate once again to 'neutral' letterforms *a la* Helvetica.[34]

Relatively recently, however, pockets of experimentation have (re) emerged that look to letterforms as embodied instruments. That is, designers are again exploring the interplay between the visceral and experiential communicative value of sense-based letterforms. I now proceed to investigate this uptake by analysing noteworthy experiments that explore the interplay and communicative value of sense-based

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28   It is worth noting that Ares and Deliza's study (n 27) was conducted in Montevideo, Uruguay; 39% of the 105 participants were male and 61% were female, ranging in age from 18 to 77 years old.

29   C Baumann 'Foreword' in Lupton & Lipps (n 16) 6.

30   Lupton & Lipps (n 16) 9 18.

31   J Drucker 'Imitations of immateriality: Graphical form, textural sense, and the electronic environment' in E Bergmann (ed) *Reimagining textuality: Textual studies in the late age of print* (2002) 153.

32   Hyndman (n 2) 26 102.

33   Jubert (n 11) 379-384.

34   Rath (n 7) 24.

letterforms specifically. That is, I am interested in the appearance, sound, taste, texture, movement and smell of letterforms. It is worth mentioning that, although human experience is intersensory, as acknowledged above, in the sections that follow I explore each modality separately as a matter of convenience only.

2.1   Sight: Type as image

Typography, as Ellen Lupton famously put it, is 'what language looks like'.[35] Owing to its linguistic function, typography, more so than any other form of design, is predominantly perceived as a visual communication device. The very term 'typographic' (type and graphic) suggests a strong connection between type and imagery. It certainly is the case that most typographic design, at least in the West, is predominantly ocularcentric; we 'look' at letter*forms* and, as designers, are taught to create, almost exclusively, for the visual.[36]

Indeed, the image quality of type has long since served a pivotal role in even the most basic forms of communication. Hieroglyphics, ideographics, rock art and even contemporary dingbats are but a few examples of the first appearance of writing, where the link between image and type is clear; typography serves as a way of visualising ideas pictorially.[37]

Centuries later, and despite the introduction of more 'abstract' Latin characters, typographers continue to make use of pictures and illustrations as a way to refer to identifiable concepts, actions or emotions more directly. Countless typefaces borrow graphic features from imagery and import them into the domain of letterforms since they are already laden with connotation (Figures 6.4a-6.4d). We interpret the visual properties of letterforms by considering their connotative value, derived from or reminiscent of our physical experience of materially similar phenomena. Trummel[38] explains that in perceptual experience, the abstract visual stimulus of a letterform creates a structural skeleton that helps determine

35   E Lupton *Thinking with type* (2004) 8.

36   Lupton & Lipps (n 16) 13.

37   R Barthes *Image music text* trans S Heath (1977) 155.

38   P Trummel 'Rhetoric and typography: Creative interaction in modern communication' (1988) 31 *Transactions on Professional Communication* 123.

the referential connotative role. Van Leeuwen[39] refers to this as a kind of
metaphorical perception of letterform connotation, a concept he borrows
from Lakoff and Johnson's conceptual metaphor theory.[40] That is, when
we make sense of letterforms metaphorically, we interpret one domain
of experience in terms of a different domain. In metaphorical terms, we
might say that the pictorial features of ᴛʜᴏʀɴꜰᴀᴄᴇ look *like* natural defensive
mechanisms. The typeface's 'T', for example, is arguably reminiscent of a
thorn or spike.[41] Since natural defensive mechanisms connote themes such
as danger, defence, discomfort (a 'thorny issue') or sharpness or treachery
the letterforms also inherit these concepts.
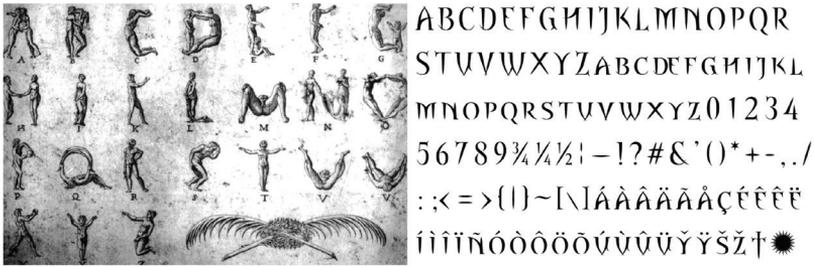
Figure 6.4a-6.4b: Left, *Anthropomorphic alphabet*, designed by Peter Flotner
(1540). Right, *Thornface*, designed by Jan Erasmus (1997)

When describing letterforms in this way, we typically demarcate these
texturally by their degree of similarity or difference.[42] We might describe a
typeface as *more* masculine or feminine, soft*er* or hard*er*, quiet*er* or loud*er*,
more or *less* energetic, sensual, delicate, and so on. Take, for example, the
forms of 'g' in Figure 6.5. Across all three, certain structural conventions
indicate that we may read them as 'g's in a linguistic sense. At a glance,
however, it is apparent that the structural nuances of each communicate
differently. Certain organic shapes unique to the letterform on the far
left may register as *more* playful, organic or elegant in comparison to
the stricter geometry of the other two. We can also differentiate the

39   Van Leeuwen (n 8) 146.
40   G Lakoff & M Johnson *Metaphors we live by* (1980).
41   J Erasmus *Intrigue. The graphic designer's code* (2007) 71.
42   Van Leeuwen (n 8) 139.

geometrically-constructed letterforms even further. Owing to the thicker shapes and dominant horizontal orientation created by the shortened descender and ear of the middle letterform, it appears sturd*ier*, heav*ier* and *more* 'dependable' when compared to its thinn*er*, *more* delicate and 'precise' partner on the right.

Figure 6.5: Illustrating difference in distinctive features of 'g' type letterforms (2016). Reproduced by the author

Here, Van Leeuwen refers to the 'distinctive features' of letterforms that describe their 'visual patterns of recognisability'. Increased *weight*, for example, increases salience and appears 'assertive' or 'solid', while its opposite seems 'timid' or 'flimsy'. Wider typefaces seem to provide room to breathe or move, while condensed forms appear cramped and restrictive of movement. Leaning letterforms connote movement in contrast to their static counterparts whereas a letterform's horizontal or vertical orientation may suggest 'heaviness' or 'lightness' respectively. *Curvature* appears 'soothing', 'soft', 'maternal' and 'organic', while *angularity* comes across as 'abrasive', 'technical' or 'masculine'. Moreover, letterforms that are disconnected might appear 'unfinished' or 'organic' whereas the contrast and consistency between regular and irregular forms of a typeface appear either formal or 'novel'.[43] It is these unique visual shapes and structures evident in the structural makeup of letter*forms* that elicit connotation

43   Van Leeuwen (n 8) 147-150.

metaphorically, experientially and viscerally; we decode the distinctive features of each primitive shape.[44]

Fowkes's typeface experiment illustrates a more systematic delineation of these descriptive visual qualities (Figure 6.6). In her experiment Fowkes demonstrates a step-by-step mapping of shared visual characteristics between illustration and typography, unpacked in two parts. In the first, she selects and matches two typefaces – Organics Elements and **Velvet** – with illustrated characters based on her visceral perception of the characters' distinctive features. The dramatic contrasts in shape thickness along with the sharp, whip-like curvature in the embellishments of Organics Elements appear to mimic the meticulous, mischievous and perky nature of the character on the left. On the other hand, the heavier and perplexed demeanour of the second character is emphasised by the bulkier, elongated structures unique to **Velvet**. In the second part of her experiment Fowkes dislocates the distinctive features from the respective letterforms. From these she crafts abstract typographic 'symbols' that serve as mimetic snapshots of the essential essence shared by each character and its respective typeface. For instance, the symbol created for the first character seems to share an energetic, sharp and upward slant to its form. In contrast, the simplified, angular and thick form of the second tends to communicate heaviness, dejection and disbelief. The second part of the experiment acts as a corollary or retrospective motivation of the first since the linguistic quality of each typeface is completely abstracted by this point.

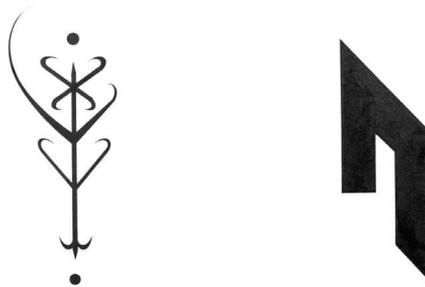44   Trummel (n 38) 121; Stöckl (n 8) 78 81.

Part A

Part B

Figure 6.6: Character and letterform pairing exercise, designed by Megan Fowkes (2014). Typography set in *Organic Elements* (left) designed by Nerys Evans and *Velvet* (right) designed by Michael Jarboe

2.2   Touch: Type as haptic and kinaesthetic

Where sight is a dominant sensory language (in the West), touch is our *first*. Before we open our eyes at birth we are already interfacing with the material world through touch.[45] Babies who struggle to develop a sophisticated sense of touch have enormous difficulty developing vital social connections with their caregivers. In addition, for many of us our

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45   B Mau 'Designing live: A new medium for the senses' in Lupton & Lipps (n 16) 22.

sense of touch or proprioception[46] is also usually the final sense to endure as we age.

Touch also allows us to communicate at times when sight is not available to us. For example, early sea traders typically tallied their traded goods by carving tactile lines into wooden planks that, even under low light conditions, could be 'felt' and counted.[47] A computer joystick, mouse or remote are other examples of similar touch-based communication. Those who are deaf-blind also communicate with their family and friends through social-haptic processes, using a grammar of touch through pressure, speed, location and motion.[48]

In typographic terms, any mention of touch-based type design must surely start with Samuel Gridley Howe's boston line regular, a tactile atlas font designed and developed in 1835 at the Perkins institution for the blind and developmentally disabled (Figure 6.7). At first glance, the font appears strange since the letterforms do not seem to follow a consistent stylistic structure. For one, the font is a mixture of upper and lowercase letters. The bowls of the b, c, E, f, G, p, q, s and y appear curved, while those of the a, d and o are pinched. The b is also uniquely 'condensed' and is the only letter where the bowl is not fully connected to its stem. In addition, the crossbars of the h, n and r are angled while those of the G and t remain straight. Moreover, some characters, including the c, G and s spout serifs – with the u having a peculiar curve to it – while the rest are without. This strange amalgamation is intentional – each form is distinctive enough to the touch of a blind person, making it uniquely legible.[49]

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46   Proprioception is a form of touch and refers to a sense of awareness of our own bodily location, posture and movement, as well as communication to others around us. Lupton & Lipps (n 16) 39.

47   Lupton & Lipps (n 16) 165.

48   R Palmer & R Lahtinen 'History of social-haptic communication' Paper presented at the 4th European Deafblind Conference, Finland, 1996.

49   Later, in 1852, *Boston embossed line letter* would be replaced by Louis Braille's *Braille* forms – a character set based on a system of raised dots in a six-dot grid – because, while the former was reasonably easy to learn to read, for blind users, learning to 'write' them proved more challenging. Lupton & Lipps (n 16) 165-167.
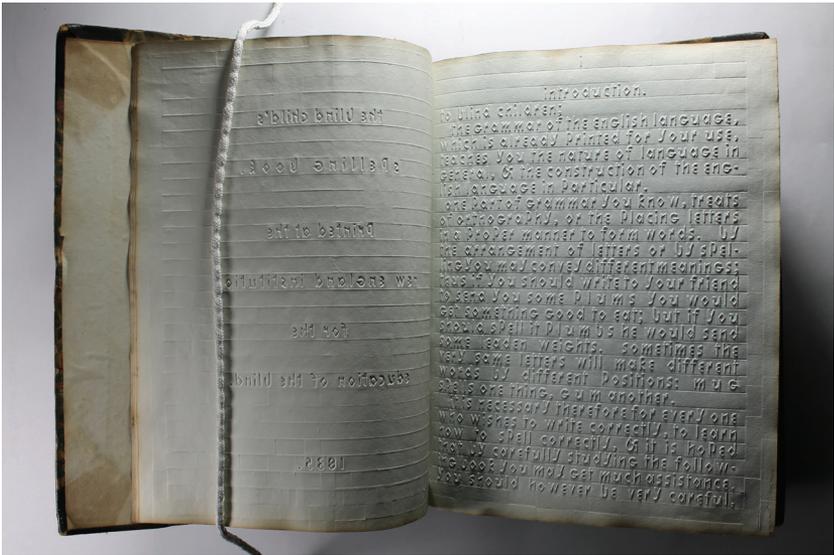
Figure 6.7: *Boston Line Regular*, designed by Samuel Gridley Howe (1835). Image courtesy of the Perkins School for the Blind

When we touch, we perceive objects haptically. Receptors in our skin, the body's largest organ, are able to gather hyper-detailed data about the objects with which we engage – data that we otherwise could not detect through the eyes alone – and relay to the brain a sense of motion, pressure, pain, heat and resistance.[50] That is, while we might be able to identify 'texture' through sight, it is not always possible to detect how cold or hot an object might be if not through touch.

For user-interface designers, haptic technology introduces a level of physicality to interface design that, from the 1980s to the 2000s, seemed strictly virtual. At the time, it appeared that our only access to the digital world was through a mouse cursor or keyboard. Today, thanks in part to the rapid uptake in smartphones, more and more designers in the field of interface design are engaging the illusion of touch as a way to help naturalise interaction with the screen through haptic responsiveness. Designers use sounds, vibrations, textures, responsive animation and gesture-based interactions to make digital interfaces seem more

50   JJ Gibson *The senses considered as perceptual systems* (1983) 97.

'touchable'.[51] As interaction designer Josh Clark explains, '[w]e now touch information itself: we stretch, crumple, drag, flick it aside.'[52]

Designer Nick Mills' identity design for Strike media – a South African mobile marketing agency – encapsulates a sense of haptic design in typographic terms (Figure 6.8). For the design of the wordmark, Mills draws inspiration from common touchscreen interactions – tapping, swiping, squeezing, pinching – and creates an animated wordmark where each letterform is expressed as a gestural motion.[53] The S, for example, animates from a double tap at either end of the form, with a curved swipe connecting the two, while the E forms from three separate straight gestures. Mills's wordmark also illustrates the unique, often interdependent relationship between touch and movement; a tactile-kinaesthetic sense. Unlike the ocular system with which we can explore an environment but not physically alter it, touch also is performatory; we use our touch organs to *feel* but also to exact change through movement.[54]
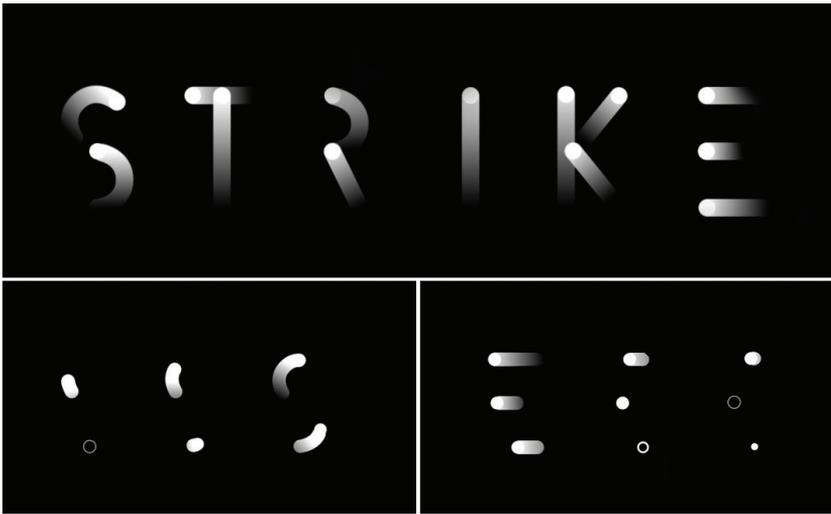

Figure 6.8: Identity design for Strike media, designed by Nick Mills (2017). https://www.nick-mills.com/strike-identity (accessed 12 December 2020)

51   Lupton & Lipps (n 16) 41.
52   J Clark *Designing for touch* (2015) 7.
53   For an animated presentation, see https://www.nick-mills.com/strike-identity (accessed 19 March 2020).
54   Gibson (n 50) 99.

Like Mills, designers Pretorius and Ramos also invoke kinaesthesia to form the structure of their typeface, MOVEMENT. For the shape of the letterforms, Pretorius and Ramos tracked the movement of dancer Andile Vellem as he recited the alphabet through dance, along vector paths.[55] In transcribing Vellem's movement to the letterforms, the designers also considered 'direct' and 'indirect' movement – a punching action or a slow bend of the arm, for example. For MOVEMENT DIRECT, quick and contained movements transcribed letters with straight lines, whereas MOVEMENT INDIRECT is informed by slow and flexible movement, producing letters with curved shapes (Figure 6.9).
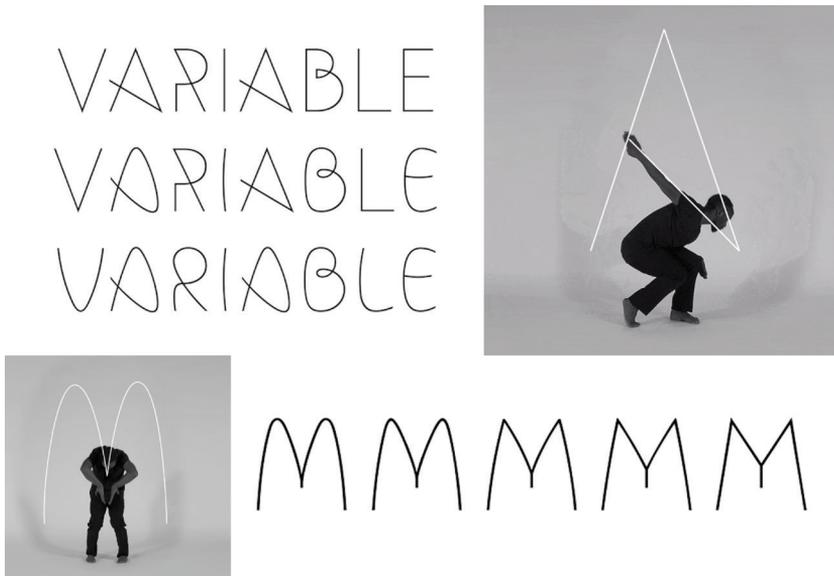

Figure 6.9: *Movement*, designed by Noel Pretorius and María Ramos (2018). Illustration of the difference between 'direct' and 'indirect' motion informing *Movement's* letterforms. https://www.nmtype.com/movement/ (accessed 14 March 2021)

55   For an animated presentation, see http://www.nmtype.com/movement/ (accessed 19 March 2020).

2.3   Sound: Type as wave-form

Next to *sight*, our sense of hearing has enjoyed arguably the most robust
inquiry, discursively speaking. One reason may be that roughly 88 per
cent of our sensory learning is achieved through sight and sound, while
touch, smell and taste combined account for the remaining 12 per cent.[56]
Like sight, sound also plays a vital role in our survival since it alerts us
to danger; the hiss of a snake or cry of a vulnerable infant is sometimes
heard before the threat is seen. Moreover, we often assign tactile and
visual descriptions to sounds in order to make sense of them. We might
describe a sound as 'bright' or 'dull', for example, or perhaps experience
sounds as soft, hard, coarse or piercing.[57] This sort of classification is
borne from a dominant strand of research into sound-image mapping
known as phonology – a long-established discursive field of enquiry that,
from its conception around 1700,[58] looked to linguistics as a means of
describing sound-meaning relationships.[59] Scientists, musicians, linguists,
poets and writers alike discovered that the sounds of words can *feel* a
certain way (sharp or muffled, for example). The letter p in words such as
pip or *pop*, for example, sounds 'explosive'.[60] Consonant sounds b, g or d in
words such as 'brood' or 'grand' connote slowness, while fricative, higher
frequency sounds f, v, s and z in words such as *zip* and *fizz* suggest speed. In
documenting these phonetic discoveries, scientists turned to visual form
as a vehicle for transcription by interpreting the acoustic value attached
to shape. Experiments conducted using 'inscriptional' apparatuses could
produce shapes when affected by sound. For example, in 1787 Ernst
Chladni found that two distinct shape-patterns were created as he ran a
violin bow against the edge of various glass plates. Edourd-Leon Scott
de Martinville's invention of the photautograph (1857) evidences similar

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56   Hyndman (n 2) 102.

57   Lupton & Lipps (n 16) 47-48.

58   As a discursive field, phonology originates from the eighteenth century. However,
        the practice of sound-image mapping dates back to as early as Pythagorus (c.571-
        495 BD) who discovered numerical relationships that determine tones of a music
        scale. A few centuries later (mid-1400s) sounds once again were documented
        visually in Hangul, the Korean alphabet.

59   J Drucker *The visible word* (1994) 15.

60   T van Leeuwen 'Typographic meaning' (2005) 4 *Visual Communication* 140.

transcriptions, only this time by way of vocal recording.[61]

Several other cognitive psychological studies have yielded practical examples of intuitive sound-image mapping. In 1947 for example, Köhler identified intuitive constraints in the way that sounds may be mapped onto visual forms.[62] His experiment presented two otherwise non-figurative shapes – one rounded, one spikey – to an undisclosed number of English-speaking subjects. Along with the shapes, he verbalised two nonsense words; 'Maluma' and 'Takete'. Köhler then asked participants to pair the respective shapes with the word they found instinctually more appropriate. Köhler found that a vast majority of subjects assigned the deeper, slower sounding 'Maluma' to the rounded shape and 'Takete', a higher pitched sound, to its spiky counterpart (Figure 6.10).
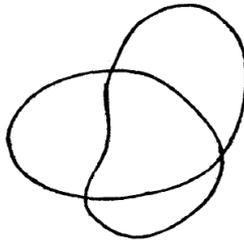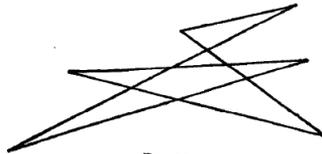
FIG. 18

FIG. 19

Figure 6.10: Illustration from the 'Maluma' and 'Takete' experiment, conducted by Wolfgang Köhler (1947)

Today, sound-shape mapping is also frequently employed in sound-based letterform designs. A type-based study conducted in 2005 by Peter Cho,

61   When a subject speaks into the photautograph's funnel-shaped collecting chamber, an elastic membrane and stylus at the opposite end of the chamber leave a graphic trace on a steadily moving strip of paper. Drucker (n 59) 13.

62   W Köhler *Gestalt psychology, an introduction to new concepts in modern psychology* (1947) 224-225.

for example, explores sound-image relationships similar to Köhler's.[63] Cho's study takes the form of a reactive installation where participants vocalise various phoneme sounds into a microphone that are then digitally transcribed by reactive sound filaments. As they are recorded, the sounds appear to bend and distort the shape of screen pixels according to patterns that are produced by the sound waves. The resulting typeface, *Takeluma* – adapted from Köhler's Takete/Maluma – illustrates how similar types of sound materialise in visually similar shapes (Figure 6.11). For example, high or low-pitched vowels result in forms that are either tall and thin or wide and rounded, respectively.
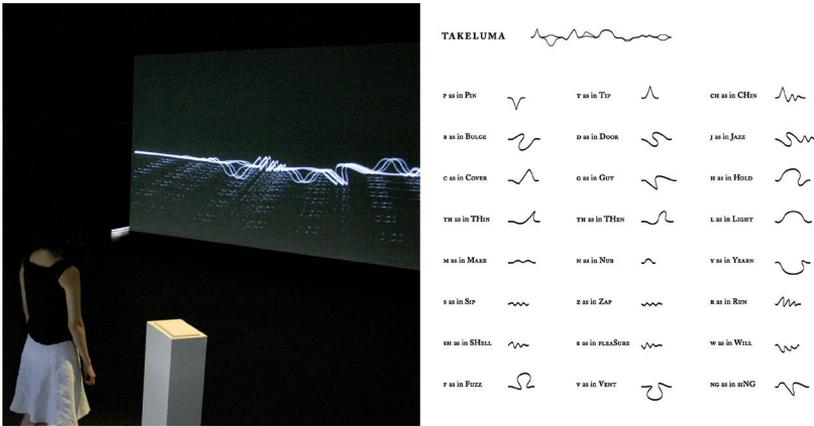

Figure 6.11: *Takeluma*, designed by Peter Cho (2005). Courtesy of Peter Cho

Zheng's *LOOK/HEAR* exhibition, on the other hand, captures sound-image mapping in letterforms, not through vocalised sound, but fluctuating environmental sounds. For her exhibition she recorded nine distinctive sounds from five different sonic environments in New York – a cafe, an office, a park, a street and a subway station. To transcribe each environment to letterforms, Zheng created a modular, two-dimensional square grid, repeated over nine layers, in three-dimensional space. Each

63   P Cho 'Takeluma: An exploration of sound, meaning and writing' MA dissertation, UCLA, 2005.

layer, composed of 15 by 15 points, is dedicated to transcribing one of nine sounds in each environment – a car, a coffee mug, footsteps, a siren, a tweeting bird, and so on. In visualising the sounds, as each increase in volume or pitch, the size and shape of each point are affected. Softer, low-pitched sounds mimic rounder shapes whereas higher pitched sounds take on angular forms that increase in accordance to volume. Dull thuds, on the other hand, are represented by heavier rectangular shapes. When viewed together, the nine layers appear to fuse and create totally unique shapes at any moment in the recording (Figure 6.12). What makes this project particularly interesting is that owing to the dynamic nature of each scene, Zheng illustrates how letterforms can reflect the changing quality of sound. In choosing to visualise each scene through letter form, Zheng gives shape to type.[64]

64   R Zheng 'Look/hear' MA dissertation, Maryland Institute College of Art, 2016. For an audible presentation, see https://www.ranzhengdesign.com/look-hear (accessed 18 March 2020).
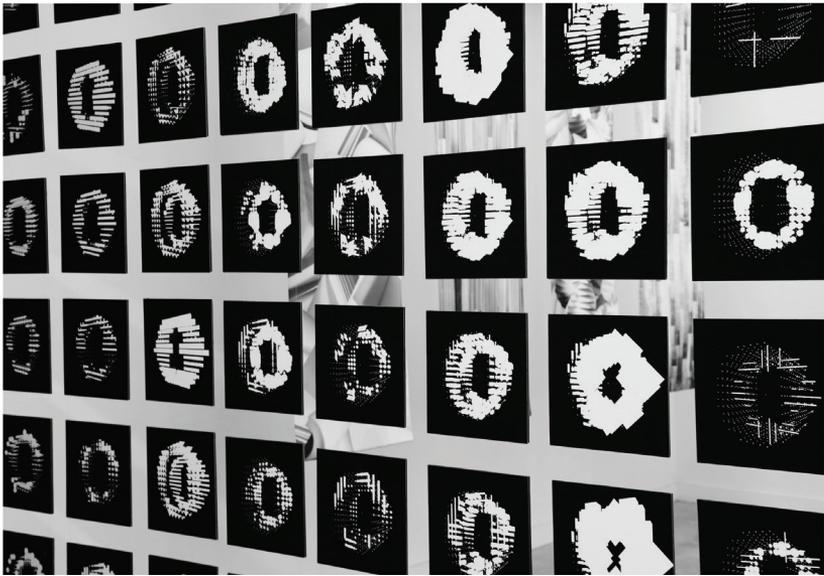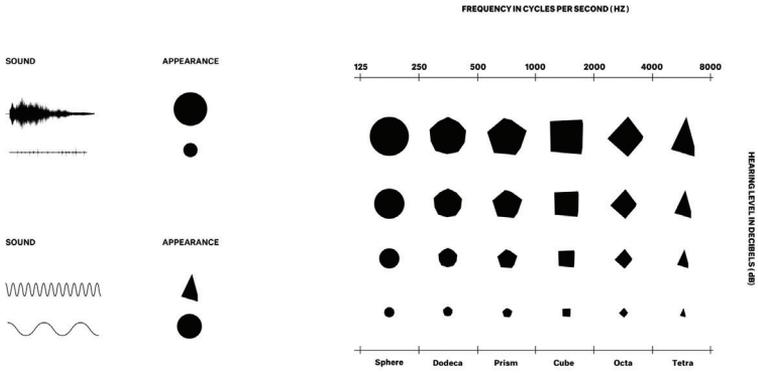
Figure 6.12: *LOOK/HEAR* typographic exhibition, designed by Ran Zheng (2016). Above, visualisation of sounds according to volume or pitch and the size and shape. Below, dynamic 'O' letterform designs. Courtesy of Ran Zheng

Where Zheng constructs letterforms *from* sound, Dutch designer Just Van Rossum, on the other hand, is interested in the sounds letterforms *make*.[65] In a fascinating turn, and almost as if to provide a corollary to Zheng's experiment, Van Rossum takes a more analytical view of letterforms; interpreting them through a Fourierian harmonic transform. That is, by defining the coordinates of letterform shapes on an oscilloscope[66] and then processing them in the form of a synthesised soundwave, Van Rossum is able to demonstrate noticeable audible differences between identical characters set in different typefaces. Remarkably, letterforms set in rounder fonts such as **Arial Rounded** produce notably softer, warmer sounds when compared to harsher, higher frequency waves produced by more angular types such as `Trixie` or **Jesus Loves You**, for example (Figure 6.13). The difference is also noticeable when comparing characters of the same typeface family, set in different weights. **Helvetica Bold***, for example, produces a louder, more abrupt sound when compared to Helvetica Regular.
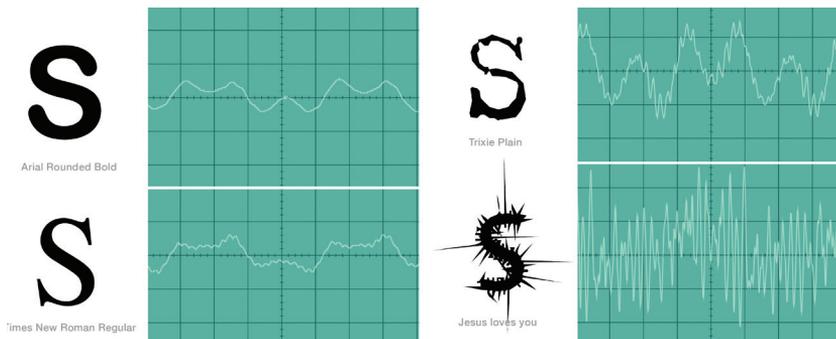

Figure 6.13: Soundwaves representing 'S' forms from *Arial Rounded Bold, Times New Roman Regular, Trixie Plain* and *Jesus Loves You* (2021). Image courtesy of Just van Rossum, compiled by the author

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65   For an audible presentation, see https://www.youtube.com/watch?v=1y1w5dvT5-I (accessed 19 March 2020).

66   An oscilloscope is an electronic test instrument that produces varying signal voltage waves based on a calibrated two-dimensional plot of one or more graphical planes.

2.4   Olfaction: Type as scent and taste

Of all our senses, smell is the most sophisticated. In addition to being able to detect at least one trillion distinct scents, a disproportionately large number of genes – roughly 1 000 of a total of 30 000 available to the human body – encode for scent via the olfactory system. The olfactory system is also largely responsible for how we interpret taste through our 'taste cortex' – the area of our brain that creates sensory maps. The process of chewing releases volatile, aromatic compounds that, as we exhale, pass out of the mouth and to receptors located at the top of the nasal cavity where their molecules are transmitted to the limbic system – the seat of emotion and memory in our brain.[67] It would therefore, seem vitally important for designers and marketers to note that the limbic system is also where an estimated 85 per cent of our decision-making processes occur. That is, smell often is linked to an emotionally-significant memory and by triggering these memories – a phenomenon known as the Proust Effect – designers can forge powerful associative bonds with their designed products.

Throughout her *TypeTasting* workshops, Hyndman explores the potency of scent as a marketing tool, and in particular, how letterform may be accessed as a way to engage the senses. In one such workshop, two identical bottles of scent are labelled 'Scent A' and 'Scent B' using two distinctly different typefaces, *Didot Italic* and **Compacta SH Bold Italic**, respectively (Figure 6.14). After smelling each, over 200 participants were asked to rate, following a ten-point scale, the masculinity or femininity of each. Despite each container containing precisely the same scent, Hyndman reports that Scent A was described as decidedly more feminine, whereas Scent B was described as exhibiting more masculine notes.[68] Hyndman's results show a difference of nearly 14 points so that although only two typeface options were provided for review, her findings demonstrate at least that difference in letter*form* invokes 'difference' (to some degree) in associative scents.

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67   A Jasper & N Wagner 'Smell' in Lupton & Lipps (n 16) 54.
68   S Hyndman 'Type alters what you smell' *It's nice that* (2017), https://www.itsnicethat.com/features/sarah-hyndman-multisensory-typography-how-to-draw-type-and-influence-people-200417-1 (accessed 15 June 2019).
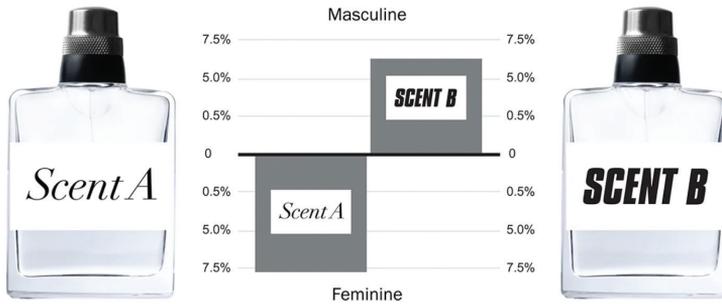
Figure 6.14: Scent-typeface associations. Findings from the TypeTasting experiment, conducted by S Hyndman (2017)

It is interesting, therefore, that despite the evidence for the potency of smell-based modalities, the vast majority (roughly 80 per cent) of design is geared toward the visual, yet less than a quarter of our brain is involved in processing what we see.[69] One reason for the slow uptake of scent-based design is because scents are fleeting so that while they may induce extremely potent visceral responses initially, we struggle to draw lasting concepts of them.[70] Moreover, unlike our other senses, our sense of smell has no descriptive vocabulary of its own, at least in most Western languages. In describing smells, we borrow from sight, touch and taste – something may have a floral note or it might smell woody or sour, for example.

In contrast to the trillion scents we are able to distinguish, our tongues' receptors or 'taste buds' differentiate just five channels, namely, salty, sour, bitter, sweet and umami. However, this limited chemical capacity of taste arguably is also its strength. As Zuker points out, having only five basic taste receptors means that, unlike smell, scientists have a better-defined understanding of each.[71] While Zuker refers to understanding in the biological and chemical sense, we are developing a far more robust understanding of flavour in typographic design too.

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69 Hyndman (n 68).

70 Jasper & Wagner (n 67) 52.

71 Quoted in A Katsnelson 'From the tongue to the brain' (2015) *Columbia Medicine*, http://www.columbiamedicinemagazine.org/features/spring-2015/tongue-brain (accessed 19 April 2020).

Indeed, several qualitative and quantitative studies have been conducted on the associative 'flavour' that certain words and letterforms convey. In a study conducted by Lewis, for example, two groups of participants were asked to read from one of two identically-worded menus – set in either `Courier` or *Lucida Calligraphy* – describing 'rich and creamy' tomato soup. After consuming identical portions of tomato soup, each group was asked to rate the richness and creaminess of their soup. Lewis found that groups who initially read the menu set in *Lucida Calligraphy* were 64 per cent more likely to score the soup higher in terms of the criteria.[72]

Elsewhere, Velasco et al[73] assess how rounded versus angular typefaces in packaging design convey information about the predicted sweetness or sourness of a product. For the study, 12 identical receptacles, each featuring 'eat me' on the label, were shown to over 100 participants who were then asked to rate what flavour of food – bitter, sweet, salty or sour – they thought each package might contain. Only the typeface, in which the wording was transcribed, changed between each of the 12 receptacles. The researchers found that typefaces seven to 12 were rated more bitter, salty and sour than one to six, with three and four rated as *the* sweetest and seven consistently rated as the most sour and bitter tasting (Figure 6.15). The authors explain that the reason for this is likely biological. Our amygdala – the area of the brain where fear is registered – is triggered by, among other things, facial expression. Threatening emotions tend to distort the face and create angular, jagged shapes of the mouth, around the eyes and forehead. Non-threatening facial expressions, on the other hand, present in rounder, more symmetrical features. As a result, we tend to favour curved shapes – a phenomenon known as contour bias. However, it is also possible to argue that an element of experiential learning is evident here – typefaces such as *Candice* are ubiquitous with gelato and other confectionery brands, for example.

72   D Lewis *The brain cell: When science meets shopping* (2013) 47-48.

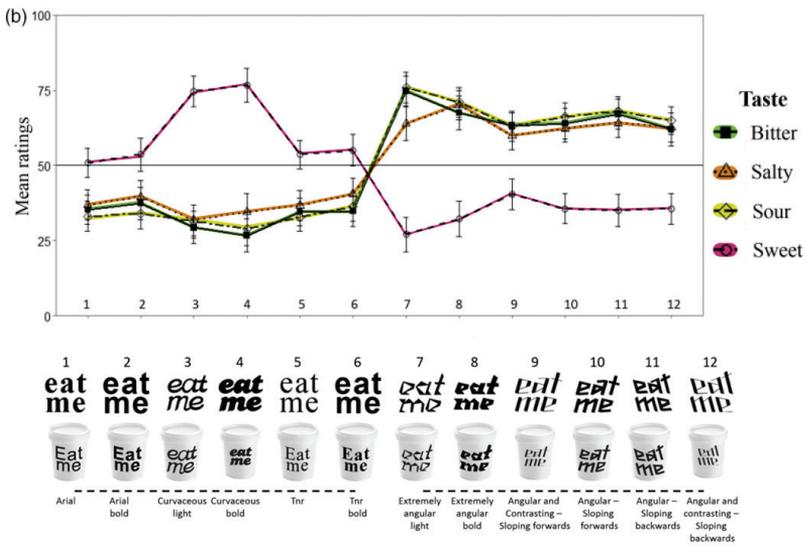73   C Velasco et al 'The taste of typeface' (2015) 6 *i-Perception* 1.

Figure 6.15: The taste of type. Illustration of mean findings of perceived typefaces bitterness, saltiness, sourness and sweetness (2015), Velasco et al (n 75)

3 Conclusion

Letterforms extend the senses. They communicate in ways that bridge our senses and help connect us to our world and to one another. A typeface is not simply a set of characters but a sensory body that injects and can be injected with cross-modal connotation. Its forms are audible, visual and tactile. They move us as they themselves move. They are flavourful and scented. They are all of these things separately and often at the same time. The more digital and distant our world becomes, the more we crave a sense of meaningful connection.[74] Unfortunately, the propensity for complexity in design has drastically shifted to a tendency toward 'flatness' and, with it, a gravitation once again to 'clean' letterforms. Designers at both tertiary and professional level opt for hygienic control over their work – we are obsessed with smoothness and so seek out 'clean' typefaces that can function in any context and for any audience, without appealing to

74   Mau (n 45) 23.

any particular one. We seek typefaces that hide their appearance.[75]

On the other hand, designers often simply do not have an established creative process for the integration of type in multisensory design. Our design practice is built for the image and so the abstract nature of letterforms renders type less obviously communicative in comparison to pictorial media such as photography or illustration, for example. Apart from the few designers who have indeed developed an awareness of the complexities of sensory type, our vocabulary for talking about and teaching it is limited to a handful of adjectives, such as 'masculine, organic or elegant'.

Without suggesting that a sensory approach to letterform design is better or worse than other, well-established approaches, I maintain that there is value in thinking of typography as a complex synaesthetic modality. It not only opens up a whole area of inquiry and research into the rhetorical power of sensory type, but also develops our ability to understand and synthesise complex, diverse inputs into the form of a single, immersive and compelling communicative medium: the letterform. When more than one sense is stimulated at any one time, the experience can become intensified and understanding is considerably more effective. Sensory type is also *functional* in this sense. When trying to identify the richest, creamiest soup among a sea of brands, or having to distinguish, at a moment's notice, highway signage from a Dolce and Gabbana advertisement, absorbing letterforms through multiple senses speeds up our ability to judge situations and to react quickly when necessary.

To suggest, as Warde does, that for typography to be functional it should be void of decoration/ornamentation is a bit like proposing that for clothing to be professional, it must be grey. Letterforms are indeed a bit like ornaments: when they speak to us we take in not only what they say from the words they inscribe, but also from their tone of voice, their body language and from the clothes they wear.

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75   Rath (n 7) 25-26.

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