

# DESIGNING A NOTATION FOR THE SENSES

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## ABSTRACT

This paper looks at the issues surrounding the development and design of a system of notation, in this case the design of a notation for the senses. This activity raises several important issues about how we represent our perceptions and how we employ such perceptions in the design process.

Notational and inscriptive practices are often regarded as wholly natural and neutral frameworks within which ideas may be expressed. This is far from being the case, and the form of a representation colours the mode of thought taken in developing the ideas to a greater or lesser degree.

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## INTRODUCTION

This paper is drawn from the work of the *Multimodal Representation of Urban Space* research project for the UK's AHRC and EPSRC under the *Designing for the 21st Century* stream of projects. The aim of the project is to understand the role of all the senses in our experience of urban spaces, particularly with regard to the prominence given to the visual. Our approach has been to design a set of tools to enable the design urban environments to respond to these other senses. This set of tools must work within existing practices of architectural and urban design, within the parameters of the design and consultation process.

Understanding the role of the non-visual senses is difficult, as there is at present no recording medium for the olfactory, gustatory, tactile or even aural environment which is useful to the practices of architecture and urban design. In any case, recording has a different aim from drawing and notation. The recording medium captures a moment for use as an artefact, an element to be manipulated and replayed. Sound design and sound art is a good example of this, where environmental recordings are frequently adapted and

recontextualised as installations or soundtracks. The reason for this rejection of recording technologies can be further understood with reference to the following observation by Jorge Luis Borges:

'The taste of the apple... lies in the contact of the fruit with the palate, not in the fruit itself; in a similar way... poetry lies in the meeting of poem and reader, not in the lines of symbols printed on the pages of a book. What is essential is the aesthetic act, the thrill, the almost physical emotion that comes with each reading.' Borges, J. L. Foreword to *Obra Poética* cited in Pallasmaa, J.(1)

When using audio recording equipment, all one records is the sound that the microphone technology can pick up. Even when using equipment that mirrors the positioning of human ears such as binaural microphones, it is clear that many of the effects of aural perception are not replicated. These differences include memory and attention functions of perception, meaning that situations such as the 'Cocktail Party'(2) effect where one picks up on your own name being spoken across a noisy party are not fully replicated by recordings. Other sonic effects such as the acousmètre(3) defined by cinema theorist Michel Chion give further insight into this fundamental difference between recording and attention.

This all moves us away from a recording technology to a more prosaic solution: drawing and notation (although this still constitutes a technology, of course). This is also important methodologically, as it places our proposal firmly in the realms of creative practice rather than scientific understanding. Given the qualities of sensory perception we are interested in, it is impossible to arrive at objective values. Qualitative data can, of course, be collated, indicating problematic areas such as a deficit in one sense, or too much stimulation across a range of others. The Sensory Notation system allows for these two activities: the personalised sketching and recording activity of the designer, and the assessment of a range of criteria and conduct a sensory audit of a place or route. This sits within existing design practices whilst contributing a new attention on the broad range of sensory experience.

## **DEVELOPING THE NOTATION**

Notation is a category of inscriptive practice with particular qualities and rules. The most commonly understood form of notation is classical music notation, the score which allows for both the composition of a piece and its distribution for performance. This dual compositional and instructional nature of notation is one of the aims for the Sensory Notation system.

Early developments in the Sensory Notation system drew on examples such as Kevin Lynch's(4) *Imageability* diagrams, where the elemental aspects of the urban environment are depicted as a cognitive map of a city. The arrangement of landmarks, paths, edges, nodes, and districts is plotted, giving a picture of how people understand and navigate the city rather than the geometric representation of figure/ground plans. The spatial extent of a phenomenon could be plotted according to a similar system, noting the origin of a sensation, some of its qualities, and a region which it covered. There were too many variables, however, and it quickly became apparent that the notation did not cope well with the multiple channels of sensation, becoming overloaded with redundant information. Subsequent attempts needed to retain their spatiality without becoming so loaded with information as to be impossible to collate in the first place and then use.

Parallel developments drew on the work of Rudolf von Laban(5), who devised an influential and contentious system of movement notation used primarily for dance, but adaptable to other purposes. This notation contains elements of score and matrices to develop detailed information. The example of Laban is informative given the vast amounts of information it is capable of conveying, from broad movements across a stage down to the flex and twist of each individual joint and knuckle. The level of detail makes for an intimidating system of notation, but one which is ultimately very useful. Laban is interesting for its focus on the actions of the mover, as the notation differs from most forms of choreography graphics in that it does not focus on what the presumed audience sees, but rather on what the actor or dancer must do in order to achieve a certain movement.

One element of Laban notation, the effort matrix(6), looked to be a useful way of giving a lot of detail in a small, efficient diagram. A range of axes were possible, allowing a notation of the power of a sensation, its temporal qualities, how it interacts with the environment, and so on.

figure 1: Original notation based on Laban notation and Lynch's *Imageability*.

Ultimately, however, such notations proved to be too fragmented, as each sensory register had to be notated separately. This complicated matters when an important visual phenomenon overlapped with an aural or chemical one. Given the importance of this corroboration of sensory stimulus, it was a crucial failure, but an aid to the design of the next, more modest system.

### **ATTENTION AND A TAXONOMY FOR THE SENSES**

Moving the process of developing the notation on prompted a return to the idea of a working taxonomy for the senses appropriate to the urban environment. The senses are not a given category, of course, but abstractions that have become deeply embedded in our thinking about our bodies and the external world. Making sense of these sensations is not surprising, of course, and many of the systems categorising the senses agree on a number of fundamental qualities(7). The fact that the sensory modalities themselves remain up for grabs is a useful opportunity for our project of a notation for the senses specific to the experience of the urban environment. This specificity makes the task possible in many regards, as it narrows our concern substantially. This is methodologically crucial, allowing a manageable set of sensations to be selected.

The alternative to this is the parable by Jorge Luis Borges, *On Exactitude in Science*(8) where a ruler sets his cartographers to make an exact map of his territory. The resulting map is so exact in fact that it covers that territory completely. Our task in notation is not only to record information, but also to edit it, allowing only what is relevant and useful.

Taxonomy, listing and categorisation is itself a problematic activity, particularly as it specifies what, in many regards, cannot be specified. It also divides the sensorium, which is experienced as a totality with corroboration and overlapping between senses. This artificiality is not an insurmountable problem, however. The task is, in itself, an artifice that should be recognised and understood rather than rejected or hidden. This artifice allows for a systematisation of the senses, a functional and operationalising system which facilitates further actions such as design.

The essayist and novelist Junichirō Tanizaki, in his classic work on Japanese aesthetics, *In Praise of Shadows*(9). Tanizaki takes on the notion of the shadow, finding its qualities throughout architectural design, but also in terms of material quality, food, theatre and other arts. This approach unites the sensorium, and borrows concepts across modalities. As an essay on the aesthetics of traditional Japanese architecture, Tanizaki reminds us that the basis of an aesthetic response (where it even exists as such) is a deeply encultured response to phenomena, and open to multiple approaches and variations in the concept of what is desirable or beautiful.

This drive to the poetic in describing a total experience of space is a common response, of course, and fulfils certain of the requirements of communicating this experience of being in space as an immersive experience of being in space rather than on a surface. This is a distinction made by Ingold(10) in his work on perception, and is borne out by architects such as Peter Zumthor(11) in describing the manifesto for his architecture as the creation of atmospheres. In this extended essay, a number of the challenges to our project at large are given form.

As well as these holistic approaches to complete sensoriality, a number of texts draw upon one sense, particularly an alternative to vision, which is given a place of priority, a place that is ripe to be usurped. The most likely candidate to overthrow vision is hearing. Sound is uniquely developed as a field thanks largely to the pioneering work of R Murray Schafer on the Soundscape. Schafer is, of course, only the first, and a field of sound design and appreciation of the urban environment has developed across a variety of disciplines. Rather than give a survey of this work by the likes of Blesser(12), Augoyard(13), DeNora(14) and Bull(15), I shall instead consider taking the aural as a starting point for the other senses.

This may at first seem to be replacing the visual bias with another, but is intended purely as an exercise in thinking and perceiving. Were the other senses to be considered in

terms of sound, a series of other qualities are revealed. Foremost amongst these is the impermanent and fleeting nature of sensation. Rather than fixed, total and permanent as vision might suggest, the senses (and I include seeing in this) are contingent to a large number of factors such as season, weather, time of day, social and cultural events, and many more temporal and rhythmical variables.

This focus on the temporal recalls suggests a more useful text by Henri Lefebvre: *Rhythmanalysis*(16) in which Lefebvre posits rhythm as an alternative concept to that of geometry. As a character, the rhythm analyst is described thus:

‘For him, nothing is invisible. He hears the wind, the rain, storms; but if he considers a stone, a wall, a trunk, he understands their slowness, their interminable rhythm. This object is not inert: time is not set aside for the subject. It is slow only in relation to our time, to our body, the measure of rhythm. An apparently immovable object, the forest, moves in multiple ways: the combined movements of the soil, the earth and the sun.’ (Lefebvre 2004:20)

Lefebvre’s method encourages a certain aloofness, like an early detached ethnographer. The site of observation is suggested as a balcony, with a good view of the area in question. Our method would critique this part of Lefebvre’s rhythm analysis, preferring to place the notator in the action of the urban environment. I would even suggest that the action of memory in recalling an event soon after its happening would be preferable to the aloof method proposed by Lefebvre here. Despite this problem, there is a great deal to recommend Lefebvre’s theory of rhythm. The phenomenological basis of the work is clear, to the point of incorporating one’s own bodily rhythms into the process: an awareness of the heart rate and pumping of blood around the body, the action of breathing.

There is a great deal more to say about Lefebvre than we have space for here, the concept of social *dressage*, for example, informs which gestures are encultured into a city. This can be particularly important as in examples such as subway and metro systems where the spatial configuration is very similar from London to Paris, New York, Moscow or Tokyo.

The *dressage* of the participants in these quotidian events are however, completely different from one city to another.

A similar method is explored by the writer Georges Perec in his essay *The Street*(17). As an exercise in perception, Perec asks us to ‘decipher a bit of the town’ (1997:52) and to concentrate on the quotidian and obvious, in order to find deeper observations, you must first, ‘force yourself to see more flatly’ (1997:51).

‘Observe the street, from time to time, with some concern for system perhaps.  
Apply Yourself. Take your time.  
Note down the place: the terrace of a café near the junction of the Rue de Bac and the Boulevard Saint-Germain  
the time: seven o’clock in the evening  
the date: 15 May 1973  
the weather: set fair  
Note down what you can see. Anything worthy of note going on. Do you know how to see what’s worthy of note? Is there anything that strikes you?  
Nothing strikes you. You don’t know how to see.  
You must write about out it more slowly, almost stupidly. Force yourself to write down what is of no interest, what is most obvious, most common, most colourless.’ (Perec, G. 1997:50)

With these observational frameworks in mind, I return to the various taxonomies of the senses, and in particular the work of James Gibson in *The Senses Considered as Perceptual Systems*. This work is widely cited in Malnar & Vodvarka’s comprehensive work on *Sensory Design* and offers a model of the senses which considers them as active modes of attention. This rejects many of the assumptions of psychological studies of the senses, where experiments are conducted on passive subjects robbed of any context for the sensations experienced. This lack of context is essential for the scientific method to operate, but it misses several of the fundamental features of perception: that it is attentive and active, and that it is always within a specific context. We see *in* places and spaces, we perceive *in* the environment and are always a part of it.

figure 2: Gibson’s perceptual systems chart(18).

These attentive systems of perception are arranged slightly different to the traditional notion of five senses we have in the West: Sight, Hearing, Taste, Smell and Touch. Instead, Gibson gives us the *Basic Orienting System*, *Auditory System*, *Haptic System*, *Taste-Smell System* and the *Visual System*. Each is given a mode of attention, receptive units, anatomical details of the organ, the activity of the organ, the stimuli available and an account of what external information is obtained. Our focus on the urban environment necessitated a further exploration of the appropriate sensory systems. The Haptic System in particular requires a further subdivision into its Tactile and Thermal qualities(19). The specialist and precise language of Gibson's schema is also adapted slightly, so as to be more suitable for the designer's engagement with the environment as well as with clients and other community stakeholders.

### SENSORY NOTATION

There are two parts to the Sensory Notation system. One is the graphic representation of the experience, consisting of plan and section along with several Radar diagrams depicting the sensory priority, corroboration, temporality, and quality. This is supplemented by a text, roughly 1,000 to 1,500 words long per site. The text remains, despite all the graphic methods available to the designer, the most flexible way of retelling an event. The text is to follow in the mould of Perec, being focused on the straightforward, ordinary, the banal.

The act of notation progresses in the following order:

**Location:** plot the site being recorded, whether a part of a route or a static position.

Details such as time, date and weather should also be noted.

**Priority:** draw a line on the chart, its length corresponding to the importance or dominance of that perceptual system in this context.

**Corroboration:** indicate how the senses overlap using dotted lines.

**Descriptor:** use a word from the list given to characterise each of the six perceptual systems: visual, aural, chemical, tactile, thermal, kinaesthetic.

**Temporality:** indicate the repetition, singularity, etc. of the observations with symbols on the relevant line.



Noting the location is crucial, and is one of the most useful things to record whilst in the actual place. Plan and section drawings have a value in architecture and urban design that have been established through many years of use. The plan allows for the depiction of relationships between objects and is a matrix of all the possible uses of a space. Sections give a clearer idea of the volumetric character of a space, the relative presence of mass and void. Whilst sometimes written off as visualist, such representations are actually more complex representations of geometry and represent a form of spatial cognition. Actually drawing a sketch(20) is one of the most valuable ways to understand a space, as, once again, it challenges our preconceptions of a space and asks the notator what the space is actually like on that day. What details are important to this section that you might normally leave out? Is the pavement uneven, or are there pieces of street furniture and planting which have particular significance? Are vehicles parked awkwardly, or is a temporary market taking place?

Having established the territory in this way, explore the site. Standing in a single position will only yield a single notation, where the aim for each site should be between 5 and 10 separate readings. These notations can take two forms, recording a route or a place.

Recording a route(21), as one would expect, involves traversing a path from one place to another. This is a fundamental form of understanding space, as directed by a destination and a path. Plot your point of origin, where you start from, and make a notation. Each time you feel the space has changed significantly, stop and make a notation. Other ways of pacing this route notation might be to notate regular intervals such as each cross-road, or after 100 metres, or every five minutes of walking.

Places are considered to be discreet locations with a character and boundary. This need not be a physical boundary, but in urban design terms, such elements as plazas are a good example. Such places have distinct boundaries, thresholds allowing passage, edges and a centre. Again, a series of notations is called for, describing the entries to the area, it's edge condition, and deep into the plan. Take readings across the site, at the corners, in the middle, in quiet spots and in busy flows of people.

Sensory Notation uses a simple Radar Chart diagram to organise this information. The chart has six axes, one for each perceptual system we are using. This is drawn and adapted from Gibson's work on the senses, with our six perceptual systems being:

**The Visual System:** including all effects of light, transparency and colour.

**The Kinetic System:** the movement of crowds, traffic, and the notator.

**The Chemical System:** combining scent and taste.

**The Aural System:** all effects of sound as experienced, clarity, amplitude, pitch.

**The Thermal System:** hot and cold, wet and dry.

**The Tactile System:** touching materials, feeling ground textures through the feet.

Figure 3: The Sensory Notation Radar Chart.

The site should be recorded in terms of the priority of the senses. Which sense is dominant or most important? In most cases, the notator should determine the priority from six down to one. This gives a picture of the most affective sensations down to those which are least important, least affective. This is a loose guideline, and examples such as a bland shopping mall might easily score as low as two across the board – there is no over-riding sensation which stands out, and the experience is suitably boring. At the other extreme, a site such as a busy pedestrian crossing in Shibuya, Tokyo, with masses of people moving together, traffic coming from all directions, bright lights and advertising boards, loud rock bands busking over the noise of public address systems might all contribute to a Sensory Notation diagram with high scores across the entire chart. Moderate examples might necessitate other approaches. Where three distinct channels of experience are present, such as in the Volpetti Deli, Rome, the chemical system is excited by cheeses, meat, and breads, three lines can be drawn on the chart, one for each sensation.

Figure 4: Notation sample with senses ordered from 6 to 1.

Figure 5: Notation sample with low priority across the chart.

Figure 6: Notation sample with high priority across the chart.

Figure 7: Notation sample with multiple records on one perceptual system.

Once the sensory priority has been established, the next step is to consider the corroboration and temporality of each perceptual system. This is shown by drawing an arc from one axis to another as indicated. Corroboration is particularly important, as it allows

the notation to show how the senses overlap one another and reinforce the experience. The jarring nature of a lack of corroboration can be felt in sites such as railway stations, where the voice is delivered via Tannoy speaker systems, blanketing an area with sound in a way that evades identification of the source. Sites rich in corroboration can be fully immersive. The forested park surrounding the Meiji Shrine in Tokyo has this, where the visual spectacle of the trees corroborates with both the chemical stimulation of the foliage and the aural spectacle of the wind moving through the trees. Similarly, the crunching gravel felt underfoot is corroborated by the sense of movement through the park. This notation is a simple act, but speaks volumes about the experience and how the senses interact with one another.

Figure 8: Notation sample with corroboration indicated.

Additional temporal and spatial information can be conveyed through modifiers applied to the line. These are shown in the chart below:

Figure 9: Key to temporality indicators.

Figure 10: Notation sample with temporality indicated.

**Singular:** An event can be said to be singular when it's a one-off occurrence such as the One O'Clock gun from Edinburgh Castle. Such aural events are described by R Murray Schafer as soundmarks, but similar singularities can be experienced across the senses, the most commonly understood being the visual landmark so important to the urban image as understood by Kevin Lynch. Singular events are often timed to happen on a cycle, every day, a particular day of the week or even every season or year.

**Constant:** Constant sensations are experienced over a period of time, often at an even pitch or colour. Constant experiences are often understood as background, but can also be foregrounded. A constant tactile sensation might be a gravel path, a constant thermal effect generated by a fountain or torch. Constant sensations can be screened out or ignored similarly repetitive ones, but the constant is a baseline characteristic of a site, something always there, perhaps akin to the canvas or paper in a painting or drawing.

**Situated:** When an experience is understood as located in a specific place, it can be notated as being situated. Such sensations can vary in proportion to the distance from

this point, such as a campfire gives out heat over an area, being warmer the closer one is to the source. Place is an important cognitive marker in our understanding of space, and we often consider places as meaningful and loaded packets of space. This is true of the source of a sensation, and this corroboration between a sensory perception and a sense of place can be particularly affirming.

**Ambient:** An ambient sensation in this case is one where the source is hidden. This occlusion of a single point source has a particular often disturbing perceptual effect, often spoken of as a 'voice of God' in terms of sound, where theorist Michel Chion defines the effect of *acousmètre* in cinematic sound. Ambient effects can include Baroque lighting, where the source of illumination is carefully screened and deflected, or the railway public announcement, where speaker systems blanket an entire area with the sound of a voice.

**Directional:** A sensation may have a definite sense of direction indicated. Whilst this might be indicated directly on the plan, it suffices for the Sensory Notation to indicate that directionality is a pertinent quality to this site. Flows of traffic are often directional, and competing directionality can be notated with two or more arrowhead forms on the Radar diagram. Similarly, framed views and prospects can be directional visual experiences, such landmarks being the obvious focus for the eye.

**Repetitive:** Sometimes a rhythmic pattern can be identified to a sensation, be this the sunlight passing through the gaps in an avenue of trees, the trundling of a train over tracks, or regular gusting of the wind. This indication is broad, but can be refined by showing faster and slower repetitions, regular or irregular intervals. This is indicated on the diagram by variations in the distance between the lines indicating repetition, but such indications are not measured or absolute, but relative and experiential.

**Switching, Varying and Shifting:** Sometimes there are two possible extremes for a sensation. Varying between these extremes still indicates a certain level of sensory priority and is therefore not indicated by the radar part of the diagram. Instead, this characteristic can be notated by modifying the line in three different ways. Switching indicates a complete change between two poles, a harsh either-or situation where the experience may shift between absolute silence and noise, from busy to empty. Varying situations have a more gradual range. Such situations still move from one pole to

another, but in this case, the light may dim in stages or pulses of people build in intensity before dissipating. Shifting is a similar experience, but has a subtle increase in the sharpness of the distinction from one extreme to the other.

Once this temporality has been established on the notation, one final step remains: descriptor terms. These words can be used to help add description to the notation, and are deliberately chosen to be straightforward and not reliant on metaphor. The words express some more qualities of the experience, giving further detail to the diagram in a way that words are best to. A selection of words are available to each perceptual system. More may be added as appropriate to the scene and the notator, but the chart below represents a solid basis for such divergence.

During a notation exercise, these descriptors are added to the most significant perceptual systems, those where there is a great deal of noticeable, attention grabbing detail. Some channels of the Radar diagram won't need any descriptors, others may need two or three, and some could stretch to five or six.

The terms are arranged in pairs of opposites such as dark or bright, weak or intense. Sometimes a sensation can vary between these two poles. This can be indicated by using both terms: "Dark/Bright" as well as using the line modifiers for Switching, Varying, and Shifting. Rather than provide another set of symbols for this, it seemed more appropriate and efficient to simply write the terms down.

Figure 11: Chart of descriptor terms.

Figure 12: Complete Sensory Notation with priority, corroboration, temporality and descriptors included.

As shown above, the completed diagram shows each of the stages of the notation. The sensory priority is indicated on the radar chart, corroboration indicated with arcs, temporal and spatial indicators modify the lines, and the descriptor terms are arranged to the right. Series of these charts can be used in several ways, from pattern building to sensory audits and community engagement projects. Most importantly, the visual information is part of a series indicating several positions around a space or route. This is coupled with a narrative giving detailed contextual information. Photographs can be used to illustrate, as can audio recordings. A plan and section are used not only to give detailed descriptions of geometry, but the act of drawing in this way is an important step for the designer's understanding of the space. It is important to re-draw this information for this very reason, even where plans and

sections exist already. This multi-modal approach is in tune with the aims of the project, and holds that experience is such a complex and complete phenomenon as to require a number of approaches. The most complex and ordered notational system would still benefit from a descriptive text and set of orthographic drawings.

### **SAMPLE NOTATION: SHIBUYA CROSSING, TOKYO**

Shibuya is a lively district full of marginal activities and young adults. While Harajuku serves the needs of teenagers, Shibuya has a slightly older demographic, while still falling into the younger age ranges. Several 'tribes' can be observed here, from the deeply tanned dayglo makeup of the 'Yamanba' and their male counterparts the 'Sentaagai'. Biker gangs also operate in this area, wearing distinctive tin helmets and sporting powerful motorbikes. Other fashion conscious groups include the 'Gyaru', derived from the English word 'gal', wearing mainly Westernised fashions.

figure 13: Plan and Section of Shibuya Crossing.

Shibuya is dominated by the enormous station complex, which has train and subway lines intersecting it on various axes and at a variety of heights. Tracks puncture this mass, delivering commuters directly into the heart of the department store occupying the site. This dissolves into tiny plots of land elsewhere in Shibuya, with the main street of Center Gai winding its way uphill with irregularly shaped narrow buildings cheek by jowl with large impenetrable blocks. The architecture here varies widely, from the common functional shells to the wilder imaginations of architects such as Shin Takamatsu, with his sinister science-fiction construction, or the theme park buildings of the love hotels crowding the North of the ward.

The square in front of Shibuya Station is an important social arena, providing a platform for buskers as well as being a popular meeting point. Particular attention is paid to the statue of Hachiko, a loyal Akita dog who met his owner from the train every day. After the professor who owned Hachiko died, he continued to return to the spot, and was adopted by commuters, who fed him and eventually commemorated him with a statue.

figure 14: Images of Shibuya Crossing.

Beginning with the arrival into Shibuya, the subway train gradually leaves its underground tunnels, breaching the surface and climbing several stories, with busy highways

below. This elevated railway pierces the Tokyu department store halfway up [notation 1], delivering its cargo of keen shoppers into the heart of the massive store. This is the end of the Ginza line, so the station is always busy with people exiting the train and waiting to board it. The space here is cramped but bright and clean. The surfaces are blank and featureless barring the clutter of advertising and signposts. The crowding is severe, and a swarming instinct applies, with a heaving character to being swept along, there is little choice in how to move. Despite the proximity of the tunnel, the elevation and openness to fresh air dampens the oils and rust of the rails, giving a clean, sterile odour to the station.

The smooth surfaces cause aural confusion, misdirecting echos around corners, and the constant chatter of the area gives an overwhelming blanket of noise that is fairly unpleasant. A smooth transition is offered by the station barriers, passing the ticket through the machine, one comes into direct contact with the satin finish of the steel before entering tiled, incandescent corridors.

These corridors open out significantly adding height and volume to the spaces adjacent to the Tokyo department store [notation 2]. Tokyu own several subway lines, and cement the economic importance of each station by installing a large department store there. This gives a particular pattern to Tokyo's urban fabric that is wholly integrated with the transportation network. There are also more destinations open to the traveller here, some want to change lines, others want to enter the department store or other shops, and the last group are looking to exit the complex and get out to the street. Gauging these eddies of people is tricky, but important to giving one a smooth passage through the building. As I am looking to exit onto Hachiko Square, I try to find the right flow and, adopting the same calm demeanour, exit the building. The sterile antiseptic smell strengthens briefly before entering this set of corridors, the air is dry and hot, a slight catch is given to the throat by the subtly acrid smell, and the same featureless blank walls are adorned with advertising again, giving the effect (presumably desired) that this is the only visual interest.

I exit beneath a large element of the department store which bridges the highway [notation 3]. The wall to the building is lined with coin lockers, and small tarpaulin structures housing fast food dot the pavement. Buskers play rock music, accompanied by friends and enthusiastic dancers. The crowds milling about give a wide berth to these activities, respecting and responding to their right to be here. This is one of the few places in Tokyo where such activities are permissible.

The music is boisterous, the breakdancing energetic. Coin lockers offer a facility to school children who want to change clothes without their parents knowing; everything is kinetic and in motion. That movement is direct, with a destination firmly in mind. The

octopus balls fry in stale oil mixed with petrol fumes, the vendor stirring occasionally and hawking his wares against a background of cartoon octopus on red and white striped tarpaulin.

Moving on to Hachiko Square itself [notation 4], the crowding becomes more pronounced as people waiting mix with those on their way somewhere. Several distinct channels of sound can be heard, voices chatting, vehicles on the road, neon display boards with speakers, and bands playing. People arrange themselves around a small, still pool of water giving places to sit around the edge. That same negotiation between hurried movement and relaxed waiting takes place, sometimes a happy exchange, sometimes a more awkward compromise. The main destination is Shibuya Crossing [notation 5], a stereotypical image of Tokyo, all bright neon, moving images, noise, jingles, and jarring juxtaposition. An image of a brontosaurus moves across one screen while the latest pop music sensation sings on another. The visual sense, looking further into Center Gai, is overloaded with pile upon pile of neon light. The open area here is vast, bordered by enormous slabs of buildings on each edge.

figure 15: Shibuya Crossing notations 1-4.

Actually crossing the street is a spectacle in itself [notation 6]. Waiting at the edge of the street are ever more people, keen to make it to their destination in what is a very important entertainment district awash with bars, restaurants, karaoke booths, love hotels, clubs and so on. As this queue backs up, the traffic eventually stops moving and the lights change. The crowd's expectation is palpable, and I am swept up with the movement of what seems like hundreds of pedestrians. The quality of this movement is so much more direct than anything experienced so far, despite there being many instances of direct, bound movements. There is an urgency to this movement: time is limited, and people want to cross the road safely. Complicating matters, the crossing has several entry points, so streams of people interact across a star formation as people from one point have a choice of two or three destinations. Nearing the neon wall ahead [notation 7], the images above become pure effect, with no content at all as only those at ground level can be apprehended with the required fidelity. The aural element of this projection becomes much more important, and combines with the music pouring out of commercial establishments around the area.

I head underground at this point [notation 8], into the packed shopping areas that connect the various strands of the transportation network. This is a close, tight space, with halogen spotlighting uncomfortably near to my face. It is a riot of colour and texture down



here, the majority of the establishments selling fashionably outrageous clothes to trend-conscious teenagers and twenty-somethings. The neon above ground is replaced by spotlighting on these wares, showing them in their best aspect. A clash of smells announce the different flavours on offer, all with a hint of cooking oil playing off against scrupulously clean blank corridors of tile, steel and glass.

figure 16: Shibuya Crossing notations 5-8.

## CONCLUSION

The Sensory Notation system provides a way to record and describe experience, making that data available for critique or use as a model. These two uses place the notation at an interesting point in the design process. The research we have conducted into the senses suggests that attention is a key concept, and that attending to something encourages a deeper understanding. Experience is also key to this process. Sensory perception is fundamentally experiential and subjective. Indeed, the attentive designer's eye, ear, nose, hands and skin may perceive the world in finer detail than the everyday user of a building or urban quarter. What this heightened perception does, however, is to consider the possible matrix of experiences within a space in much the same way as a plan drawing maps all the possible routes someone can take within a building or city. If something is available to be sensed, then it can be notated and described, further understood and applied as a model to other sites. A notation for the senses may suggest that there is a system, much like the notation for Classical music, to score a sensory environment in isolation, or a method for defining such elements in a process akin to drafting plan, section and elevation. What emerges in the place of this, however, is a system which works with existing architectural representation, taking full advantage of the familiarity and undeniable utility of such inscriptive practices. This additional layer of information exploits the layering capabilities of these descriptions of space, tracing lines of multi-sensory qualities interwoven with suggested narratives.

The enrichment of the urban environment suggested by attending to the full range of sensory experience is more than poetic and aesthetic. Such attention makes spaces more legible, more informative, and more complete. Unintended effects are avoided earlier in the process, as the presence of aural or olfactory sources is considered to be a part of the design rather than an afterthought. Places become more memorable as the engagement with space is richer, more complete, and more bodily.

A system of recording, sketching, assessing, and designing for all the senses is suggested but missing from most treatises on the sensory experience of place. Architectural history is also littered with valuable systems of representation which explore fascinating issues, but which have been abandoned by the profession as unworkable. This notation along with the movement towards a Sensory Urbanism attempts to move the debate forward in a practical, usable manner.

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## NOTES

1. Pallasmaa, *The Eyes of the Skin*, 6.
2. As described by E.C. Cherry, 'Some Experiments on the Recognition of Speech with One and Two Ears'.

3. Chion, *The Voice in Cinema*. 18.
4. Lynch, *The Image of the City*.
5. See the following for a fuller discussion of Laban notation: Laban, *The Mastery of Movement*.; Hutchinson Guest, *Choreo-Graphics*; Louppe, *Traces of Dance*.
6. Dell, C. *A Primer for Movement Description Using Effort-Shape and Supplementary Concepts*. 10-12.
7. Many more remain up for grabs, however. Mirko Zardini recognises this in *Sense of the City: an Alternative Approach to Urbanism*, p.28. accounting for animal senses such as the thermal sense of bats to the air pressure detectors of a butterfly. Also noted (p.31) are the notions of sense used in the development of robots, including proximity, slippage, and the distinction of audition from hearing.
8. Borges, 'On Exactitude in Science' *The Aleph*, 181.
9. Tanizaki, *In Praise of Shadows*, 9.
10. Ingold, *Perception of the Environment*, 209-217.
11. Zumthor, *Atmospheres*.
12. A review of the substantial contributions made towards understanding sound are outside of the scope of this essay. Blesser & Salter provide a useful understanding of the sense of space expressed in auditory terms which, with its temporal basis, can provide useful techniques for the other senses. Blesser and Salter, *Spaces Speak, Are You Listening?* 16-18.
13. A rigorous sourcebook on sonic effects is: Augoyard and Torgue. Augoyard and Torgue, *Sonic Experience*.
14. The special case of music in constructing identity is explored by: DeNora, *Music in Everyday Life*.
15. Similarly, personal spaces can now be constructed by using ubiquitous technologies such as personal stereos and MP3 players. Bull explores the social implications of this personalised space. Bull, *Sounding Out the City: Personal Stereos and the Management of Everyday Life*.
16. Lefebvre, *Rhythmanalysis*, 20.
17. Perec, 'The Street', *Species of Spaces and Other Pieces*, 46-56.
18. Gibson, *The Senses Considered as Perceptual Systems*. 50.
19. The Thermal qualities are a particularly important aspect of urban space, as further developed with specific reference to architectural design by Banham (1969) and Heschong (1979).
20. The travel sketchbook has a long history, with celebrated carnets produced by Le Corbusier (1994) and more recently explored as a mode of production for architectural theory by Unwin (2003).
21. The importance of routes is underlined by Ingold (2007: 75-79) as the activity of a wayfarer actively making their way in the world rather than following a pre-determined map. The process of iterative chacking and re-checking of the environment with one's immediate experience of it is engaged with in everyday walking, reinforcing the attentive model of perception from Gibson.