

# UNGUARDED MOMENTS

## Spectral spaces of the unsuspecting mind

*Marcel Proust's meditation as he picked over the crumbs of a long-eaten madeleine biscuit has inspired and informed several areas of inquiry into (the uncertain science of) memory and recall. The Proust-effect, defined by Cretien van Campen (2014) as 'an involuntary, sensory-induced, vivid and emotional reliving of events from the past' goes some way towards illustrating the experience of having a memory triggered by something ordinary. But where Proust's experiences all progress from a brief awakening through a slow unfolding of recollections to a full-blown memory, the experience that interests me is less gentle and a lot more immediate.*

*Strange word associations and sounds-likes are common enough experiences for bilingual people, and it is something that has been documented in cognitive science. But there's an altogether different occurrence, not unique to the bilingual mind although central to that experience, when something trivial—a shift in light, for example—throws the sense of reality and the experience of being to the other country and sometimes the other language.*

*Where Proust found that sensory experiences allowed him to unravel a memory, I have found that sensory experiences throw me directly into another space and its associated time. This paper documents these shifts and attempts to explore them via the metaphor of spectral space borrowed from mathematics.*

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In my dreams, I sometimes drive along a country road or through a forest; there is no median line and there is no traffic. And I am thrown: which side of the road am I supposed to be driving on? I check the car: which side am I steering from? At this point in my dream, I usually notice oncoming traffic that wasn't there a moment before, and I have to urgently work out where I'm supposed to be on the road. But I become unsure: does left-hand drive mean I have to drive on the left side? Or does it mean the steering wheel is on the left? Where am I sitting in the car? Which side is right and where is left? The level of adrenaline that accompanies this confusion always wakes me up before I collide head-on with the other car. But the confusion lingers as I try to work out which side is which, which country I have awoken in, and which country I was in while dreaming.

The familiar anchors us in the world and provides us with reference points by which to navigate as we move through our lives. Each event encountered and each day lived expands our library of experiences and builds our set of references which, in turn, provide us with the points of reference from which we can safely venture further. But safe as it may feel, the familiar has the capacity to become overly so; to the point where things and places begin to look the same even when they cannot possibly be the same;

to the point where we look twice in quick succession, or feel an involuntary shudder as our body tries to rattle the brain back into one, present and coherent reality. It was one such moment that inspired Marcel Proust's seven-volume oeuvre on involuntary recall, *In Search of Lost Time*, and it is one such moment that has inspired this essay.

When Marcel Proust had his famous madeleine moment, it was 'detached, with no suggestion of its origin' (Proust 2013 [1922]: 50-51), and from *Swann's Way* onwards, it is clear that Proust's moment of recall was experienced and explained temporally rather than spatially. His meditation as he picked over the crumbs of that madeleine biscuit has inspired and informed several areas of inquiry into the uncertain science of memory and recall. The Proust-effect, described by Cretien van Campen as 'an involuntary, sensory-induced, vivid and emotional reliving of events from the past' (van Campen 2014: 47) goes some way towards illustrating the experience of having a memory triggered by something ordinary. We can add to this the 'Proust-flourish', the creative licence Marcel Proust took when he recorded his madeleine moment in *Swann's Way*. Because when he wrote this, he took a wonderful writerly liberty and changed the trigger for his memory from a humble piece of toast to the dainty and far more intriguing madeleine biscuit (Cristafis 2015). In this essay, I will let Proust's creative gesture stand guard over the fallibility of all memory and as guardian of the new experiences that recollection, and thus writing, can create.

Memory Studies recognise that time often tends to be privileged over space in the way we think about, discuss and theorise memory (Reavy 2017). This, in turn, tethers us to chronology when we try to understand a moment of recall when the overly familiar made us shudder, and it restricts the opportunities available to us to try to explain this kind of experience. Reavy proposes the term, 'life-space' as a 'model of memory that acknowledges experiential flow and movement within particular settings' and suggests this concept is needed in the theories as well as the methodologies we use to 'examine experience' (2017: 108). The concept of 'life space' is a useful addition to how we can explore memory, but the name is somewhat misleading as it removes time from the explanation, unless, of course, we think of life as a span of time. As an alternative, the shudder we experience at the double-take is perhaps better viewed as an expression of the spectral in our reality or experience; complete with connotations of haunting—the return of something from another time or another place. It is possibly the collapse of time and space in the moment, rather than the return of one or the other, that is truly haunting. And while not all such hauntings are scary, they share the common trait of arriving unannounced and unexpectedly.

The mathematical concepts of topological and spectral spaces both lend themselves to metaphors of the human mind, so to attempt to illustrate what may be happening in the mind in the moment when we experience a haunting from the past, I would like to move away from the standard tropes and metaphors of the spectral turn of critical theory in the 1990s and into the field of mathematics where we find that a spectral space is defined as a topological space in which each part has a binary correlate that mirrors it. According to a popular joke in science circles, topologists are people who cannot tell the difference between a coffee cup and a doughnut—except when they are buying breakfast, of course. But in science-mode, the difference doesn't matter, because the way topologists look focusses

on the properties shared (namely that each item has one hole) rather than the difference in shape. For the rest of us, the internet is a generous source of GIFs that will show a coffee mug turn into a doughnut and back again to provide a fascinating experience of having our minds bent by things not being quite what they seem. These GIFs clearly illustrate the idea provided by topology, namely that a 'material's shape can be completely deformed into a new one without losing its core properties' (Hood 2015). Another way to think of a topological space is to imagine a collection of dots, each with a circle around it and each circle touching the ones next to it, but all governed by the same overarching set of rules and thus sharing the same properties. The sum of these points and their neighbourhoods is a topological space.

A topological space is considered spectral when each part of that space is replicated within the space itself as if mirrored. When that is the case, each part of the collection of neighbourhoods can anchor to its binary, which means that the space as a whole can remain intact even when parts of it are distorted or twisted. Thus, while a spectral space may look different depending on what affects it or the angle from which it is viewed, it is still the same collection of dots and circles; the same coffee mug–doughnut. Or the one person in two places at once.

Travelling south on Spring Street coming down the last of the slope that forms the eastern flank of Mount Eliza, I pull slightly to the left so I'm ready for the left turn onto Mounts Bay Road. On Google Maps, this particular intersection looks like a small serve of spaghetti; and it is not that different on the ground. From one lane of traffic on Spring Street the possibilities on Mounts Bay Road multiply in threes: three lanes for left-turning traffic; three to the right; and three going straight. And that's not counting several lanes that sprout Transperth busses from the Perth Convention Centre and into the city traffic.

It is perhaps mid-to-late afternoon and the sun is spring—or maybe autumn—gentle rather than summer-searing. There's a lot of green on the trees; juicy, light-refracting green of the kind that marks the Northern European spring, or, in Western Australia, times of the year when the light is bright enough to make the grey-green foliage on the trees look lusher than it really is, yet soft enough not to hurt your eyes.

The engine is idling and my mind is nowhere in particular. As the traffic light changes, I pull away, ease the gear from first to second, and turn left across two lanes towards the third in readiness for the right turn I need to make at the next intersection.

At that particular point in time and space, my mind decides to inhabit some distorted version of full attention and the turning curve is drastically broadened: I am now heading for the far side of the median strip and towards the 'wrong' side of the road.

Except, it feels right.

It feels right because in my mind I am driving in the country of my birth, Denmark. Like the dream, I see no oncoming traffic, so it is impossible to tell where I am supposed to be on the road relative to other cars. And like the dream, my brain has to parse the possible meanings of left-hand drive—does it

refer to the steering wheel or to where you are on the road? Is my car left-hand or right-hand drive? Is this determined by which hand you use on the gear stick? Or the position of the steering wheel?

Adrenaline affects the passing of time and I watch busses flow slowly out of the Convention Centre and on-coming cars that are heading straight towards me; on my left, I see traffic moving towards the intersection where I'll be turning right. My perception of time slows further, giving my brain a chance to catch up. A right turn is a short arc in Denmark, but the one I've been anticipating further down is wide. Yet the left turn I'm currently executing is wide ...

And then I know.

I know I am on the wrong side of the road, and I quickly swerve back into the far-right lane on the left side of the median strip. And I move along with the traffic, merge with busses heading east, and catch the green arrow that allows me to turn right—in a beautifully wide, safe arc—down William Street towards the river. I am once more driving in Perth on a softly sunny afternoon.

But what just happened? One scene became another: an image half caught my attention—the leaves and the light—and plugged my consciousness directly into a different place. I want to explore a two-part explanation for this: one that pertains to the initial link between overlapping images from different places; and one that pertains to the shift in consciousness and the perceived reality that follows. My understanding of the former relies on insights, borrowed from cognitive science and cognitive psychology, that explain how the brain deals with visual information, how it stores it, and how repeated information is categorised and retrieved. To elucidate the latter, I borrow the concept of spectral space from mathematics and give it a homeomorphic twist to bring it into service as a metaphor to capture a broader understanding of memory and recollection.

The haunting suggested by the word 'spectral' and the mirroring that is associated with the mathematical concept of spectral space can be brought together if we consider spectral spaces of the mind as the return of something that is associated with the person whose mind experiences it: the return of something from another time or place; something that is mirrored in the self. A spectral space of the mind can then be thought of as a collection of sets of events and experiences each of which occur or have occurred in two distinct places or at two distinct times, and which can transform or transition into one another and back again, momentarily distorting the mirrored memory into the current experience, yet never affecting the individual's sense of a coherent identity. The last qualifier is important because this concept is not intended to signal any deeper mental disturbance or to venture this paper into more complex and challenging realms of the human mind. The metaphor is simply intended as a way of explaining a momentary shift in experience; not a rupture of the self.

One scene recalled another in my experience on Mount Eliza. There is nothing odd about this: we recall images a lot faster than we recall words, for example, but cannot necessarily recall the images, or indeed any other memory, on demand. To appear in our conscious mind, they must be triggered—neuroscience calls this a 'passive effect' (Glaser 2016). And while we can't recall images at will, we recognise ones we've seen before. 'Passive' is important when considering the particular event I am

trying to understand: the dislocation of my mind from one set of road rules into another sparked by some idle sitting at traffic lights in the dappling light and colours.

Cognitive science tells us that visual information is categorised by the brain via representational systems 'that permit the brain to model the world, to identify objects and events, to attach meaning and significance to them' (Milner & Goodale 1998)—that is, all sorts of experiences are grouped together based on the same kind of likeness or shared traits. For example, my brain will often recall someone's name for me according to the number of letters in their name. Not the name itself. The brain's system of categorisation can be explained in general terms, but as individual experience is part of how meaning is attached to objects and events, each individual's brain has its own private quirks about which there is nothing particularly universal. Milner and Goodale go on to say that the brain's representational systems 'are linked to cognitive systems subserving memory' among other things. This means that our capacity for recall, the nature of our recall, relies on the brain's systems of representation and thus whichever order has been imposed on the information received.

The brain works hard to create order and it does so by creating links between information in ways that give meaning to those events; that is, the brain creates stories. This lovely narrative-like link between the models in our brain and the meaning it makes based on them reflects the fact that the ways we make sense of the world and our methods of recall are intimately linked back into our minds and anchored in our experiences. While the brain is inarguably efficient in how it stores information and processes information, it is also a bit fickle and has a preference for shorthand references. This means that the representational system it creates and relies on is in effect a point at which one memory can easily link to another, very similar recollection. For example, one scene that is categorised based on light and colour, that triggers a memory of a previous, similar scene.

The longer we've lived, the more experiences we've had, and the linked memories will increase exponentially. Based on her extensive work on memory and recollection, and by using herself as the object of study over several years, cognitive psychologist Marigold Linton concluded that:

Increased experience with any particular event class increases semantic (or general) knowledge about the event and its context. Increased experience with similar events, however, make specific episodic knowledge increasingly confusable, and ultimately episodes cannot be distinguished. (Linton 1982: 81)

The question she was seeking an answer to was this: 'by what mechanism do events or episodes become confusable with repetition?' (ibid.) Her conclusion suggests that the more times we experience an event or a scene, and which our brain will classify according to its own representational system, the less distinct or unique that scene will be. At one point, a scene will be new and fresh, but simply through our living and being, many scenes become repetitions of themselves. This is fortunate, because otherwise our brains would be forever parsing each scene as new and expend energy on relatively mundane images while potentially missing information of much greater importance.

The significance of the shift from the episodic to the semantic which Linton describes can be expressed via the moment I experienced on Spring Street, where the very unremarkable scene I was

witnessing at the traffic lights became overlaid with another scene; similar, but from a different place. Once upon many times, I will have seen Danish spring leaves, light and some road. The first instance of this event, the first episode, would have recurred enough times to become semantic knowledge long before I migrated to Australia. Armed with the repetition of this event, my brain has gained increased semantic knowledge of leaves, light and road. And the semantic knowledge which has now been created slots into the representational system of the brain; a system which can be explained as shorthand for more complex pictures; perhaps as a summary of the pertinent bits of an image. Similar to all the Danish leaves in my semantic knowledge bank, I have also experienced Australian leaves, light and a road many times, but the *specific* quality of the light and the *specific* colour of the leaves is what makes the Spring Street episode unique and what allowed it to insert itself into my existing semantic knowledge of this scene. The 'switch' the light and leaves created in my mind was remarkably unremarkable and would have remained so if it weren't for the very real and immediate action of driving 'in' the recalled image.

The topological space that constitutes our sense of being becomes increasingly spectral the more we see, learn, experience, know. It is possible my brain is particularly lazy or just pretty full already; it is certain that there are more and more instances of mirroring in my recollections. But the mirroring that sits behind this 'mind trick' does not fracture; rather it links. The set of binary correlates that created the spectral space in/of my mind were anchored in my own experiences in different places and at different times, and they are linked in a narrative form when recalled. In other words, they are all part of me and my experience of a coherent identity. I do not think these mirrorings and recollections are directly linked to nostalgia as such. Rather, it is simply an overlap or swap between places in one brief moment; of that 'other' place anyone who has left one home for another must always carry. And in that, of course, there will be elements of nostalgia.

Proust's trigger was the toast that became the madeleine in his published work—his experience of eating the toast pivoted from the present to the past and brought forth emotions which he then examined further. There is a clear link to memory recall there. But there is also an important difference between Proust's and my recall: where Proust's trigger led back to forgotten events from his childhood, that is, to significant recollections, my trigger was connected to the present place I was in and directly linked me to the specific characteristics of another place. Thus, where Proust's recollections were bound in time, mine were primarily bound in space. Where his were internal and connected him to older emotions and then to other recollections, mine, by virtue of driving *in the memory*—of being caught in the spectral space of my mind—were external and connected me to an older experience of a different place. The span of time between the two places was momentarily erased and my existence in two different places (and at two different points in time) was one. Yet my sense of a coherent identity never faltered. Like the coffee mug that becomes a doughnut, the spectral space of the mind is anchored to multiple correlates and while the relation between the experience of a scene and the physical reality may be completely distorted, for a moment at least, the core properties of the observing mind remain intact.

When I started writing this essay, it was never my intention to drill so singularly into one small event as I have ended up doing. Although, in comparison to Proust I haven't even started yet, and there is more to explore in the realm of spectral spaces of the mind and individual and cultural triggers for these. My use of Proust may border the gratuitous as I have used the temporality of his madeleine moment as a counterpoint to my spatial experience to explore how such moments arise. However, there is one final correction which places me right back in his good company. Just as Proust changed a piece of toast into a delicate biscuit, I changed the name of the road—and thus the exact location of the event—from Mill Street to Spring Street. Visually, when looking at the map, it works better. It is also the street I believed the event took place in and from; at least up until a few weeks ago when I was driving along the stretch of road in front of the Convention Centre and noticed Mill Street's position relative to the bus exit. It was quite a bit off; so much in fact that I looped back to come down Spring Street to check in a physical sense what I have written. The setting for my description is incorrect. But my memory of it is strong. Strengthened, perhaps, by that lovely semantic tie between the dappled light through the lush green leaves and the name 'Spring Street'—a link the name 'Mill Street' just doesn't offer. No doubt a final trick played by the brain's fondness for storing experiences in shorthand combined with the spectral spaces of the mind.

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