

Nervous Aesthetics: Cognitive Science, Literary Criticism and the Modern Novel

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Statement of Originality:

I certify that unless otherwise acknowledged in the text by due reference, this thesis represents my original work.

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Abstract:

Recent movements in literature and the humanities have drawn upon insights gleaned from cognitive science. For some scholars this is viewed as a renaissance while for others it represents a dangerous trend towards reductionism. This project offers to mediate between these two perspectives, showing the promise and the pitfalls of this new interdisciplinary engagement. This thesis argues that the role of perceptual processes in relation to aesthetic engagement with literature is ripe for further study.

The first two chapters present a combined literature review and methodology study. A detailed comparison of 'cognitive poetics' theorists Tsur and Stockwell in Chapter One is used to establish how cognitive science expands and revises literary criticism's critical toolbox. Chapter Two focuses on the 'neuroaesthetic' theories of Ramachandran, Zeki and Barry, and from this develops a framework to discuss perceptual tension in literature.

Following this, the thesis offers three case studies of modern authors whose literary style invites comparison with the current neurological understanding of perceptual and sensory processes. Chapter Three explores the notion that Jack Kerouac's prose style in *On the Road* is musically inspired, and conducts a detailed comparison of the key features common to both language and music, including rhythm and tension. Chapter Four re-examines the idea of Impressionism influencing Virginia Woolf's *Mrs Dalloway*, using evidence from cognitive science to fully articulate the connection between literary and visual Impressionism. Chapter Five is a study of Vladimir Nabokov's prose, framed around a critical investigation of the significance of his synaesthesia to his writing. By exploring the broader

nature of cross-modality and what it can inform us of the workings of the mind, this chapter shows how distinctive stylistic features influenced by cross-modality recur throughout Nabokov's writing, and how he exploits cross-modality for aesthetic effect.

Collectively these studies offer an account of how literary criticism infused with cognitive science can illuminate new understandings of aesthetic and perceptual engagement with literature.

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Abbreviations:

AL: Nabokov, V. (1995). *The Annotated Lolita*. London: Penguin.

An Introduction: Stockwell, P. (2002). *Cognitive Poetics: An Introduction*. London: Routledge.

In Practice: Gavins, J. and Steen, G (eds.) (2003). *Cognitive Poetics in Practice*. London, Routledge.

LT: Kerouac, J. (2000). *Lonesome Traveler*. Penguin UK.

LL: Nabokov, V. (1980). *Lectures on Literature*. San Diego: Harcourt.

MD: Woolf, V. (1925). *Mrs Dalloway*. London, Penguin.

OtR: Kerouac, J. (1957). *On the Road*. New York, Viking.

OS: Kerouac, J. (2007). *On The Road: the Original Scroll*. Penguin.

S,M: Nabokov, V. (1989). *Speak, Memory*. London: Penguin.

Towards a Theory: Tsur, R. (2008). *Towards a Theory of Cognitive Poetics*. Brighton: Sussex AP.

WW: Kerouac, J. (2004). *Windblown World: The Journals of Jack Kerouac, 1947-1954*. Viking Press.

Part One: Literary Criticism, Cognitive Poetics and Neuroaesthetics

Introduction: The Meeting of the Minds

“It seems to me that a good formula to test the quality of a novel is, in the long run, a merging of the precision of poetry and the intuition of science.”

(Nabokov, *LL*, p. 6)

In his introductory lecture to students taking his university course “Literature 311-312: Masters of European Fiction,” Vladimir Nabokov drew an intriguing comparison between science and poetry. Rather wittily, where we might normally associate precision with science and intuition with poetry, he inverts these notions and suggests that an ideal critical style draws on both. Yet this inversion is actually quite astute because while literary criticism has a well-developed analytical precision, particularly for poetry, much of this precision is based on intuitions that are capable of being further clarified by science. This is precisely the territory that will be charted by this thesis.

The recent and rapid rise of cognitive science as an interdisciplinary tool to expand the boundaries and explanatory scope of traditional academic disciplines has been dubbed ‘the cognitive turn’. A common nomenclature to designate this trend is the prefix ‘neuro’ – ‘neuroeconomics’, ‘neuropolitics’, ‘neuroaesthetics’, and so on. What this paradigm essentially offers is to connect a cultural theory, phenomenon or artefact with a neurological mechanism, which can supplement or expand knowledge of the former by articulation of the role of the latter. It purports to understand the human world by understanding the human mind.

Literary criticism is just one of the proverbial moths drawn to the flame of cognitive science; and, as with other disciplines, this shift has provoked internal reactions of both excitement and scepticism. The stakes for literary engagement with cognitive methods are particularly high: with the perpetual concern that the humanities are in crisis, the 'neuro' version of literary study has the potential either to reinvigorate an older discipline with new methods, or to unmake it by reducing all its mysteries to a matter of synapses.

Yet as this thesis will argue, the pivot towards the brain as a site of investigation for understanding literature is not without precedent. Some of the insights offered by both literary critics and authors into how novels and poetry connect with readers not only become more convincing when connected with contemporary science, but also show a kind of rudimentary understanding of some principles behind cognitive science. This thesis focuses on the modern fiction of Kerouac, Woolf and Nabokov; but examples of literary criticism's analytical precision that can be validated by cognitive science go back even further. One can be found as early as Samuel Taylor Coleridge's 'Lectures on Shakespeare':

And lastly, which belongs only to a great poet, the power of so carrying on the eye of the reader as to make him almost lose the consciousness of words – to make him see everything – and this without exciting any painful or laborious attention, without any *anatomy* of description (a fault not uncommon in descriptive poetry) but with the sweetness and easy movement of nature. (2006, p. 486-7)

Coleridge links the reader's mind and the author's mind through the workings of the literary imagination, extolling the power of imagery and feeling; and he even talks of the effect whereby the reader will almost "lose the consciousness of words". Contrasting this effect with a form of poetry where the 'anatomy of description' becomes laborious, Coleridge implies that being able to 'see everything' in literature involves not making everything available to consciousness; but instead to 'carry on the eye' of the reader. In effect, Coleridge argues that a poet such as Shakespeare not only draws on the heightened faculties of his own mind, but on the ability to fully involve the faculties of the reader's mind in the act of perceiving the poem: to encourage full use of the sensory faculties without resorting to 'painful attention': to *sense* rather than be told.

Nabokov put a similar sentiment forward a century and a half later in those lectures at Cornell University. "The mind, the brain, the top of the tingling spine, is, or should be, the only instrument used upon a book," he told his students (*LL*, p. 4). Like Coleridge, Nabokov finds fascination with the senses and the engagement between the reader's mind and the author's mind:

So what is this authentic instrument to be used by the reader? It is impersonal imagination and artistic delight. What should be established, I think, is an artistic harmonious balance between the reader's mind and the author's mind. We ought to remain a little aloof and take pleasure in this aloofness while at the same time we keenly enjoy - passionately enjoy, enjoy with tears and shivers, the inner weave of a given masterpiece...

In order to bask in that magic a wise reader reads the book of genius not with his heart, not so much with his brain, but with his spine. It is there that occurs the telltale tingle even though we must keep a little aloof, a little detached when reading. (*LL*, p. 4-6)

For Nabokov, the meeting of the author's mind and the reader's mind is important, but he further distinguishes between the brain (which in his critique represents the source of 'intellectual' readings of a book and obsession with socio-economic angles in criticism) and the spine, by which one can surmise he means the nervous system. He refers to 'tingling', 'tears' and 'shivers' – all physiological sensations, implying that the reader should be able to feel the impact of the book through this bodily feedback. Tingles and shivers might even be taken as an effect similar to that of 'chills' in music – the body's reaction to heightened patterns of harmonic tension.

The mind and its reach throughout the body via the nervous system may have been an object of fascination to critics, but for a long time the study of the mind in literature was most commonly exercised through psychoanalysis. This Freudian mode of criticism is not without detractors: Nabokov in particular was hostile to this kind of criticism, writing very early in his autobiography *Speak, Memory*: "Let me say at once that I reject completely the vulgar, shabby, fundamentally medieval world of Freud, with its crankish quest for sexual symbols (something like searching for Baconian acrostics in Shakespeare's works)" (*S,M*, p. 6). In spite of Nabokov's distaste, psychoanalysis was one of the dominant approaches to the mind for much of the twentieth century, along with behaviourism. As cognitive

science has developed, matured and progressed to the point where it can offer tremendous insights into the mind, it has become the most enticing prospect for cross-disciplinary study. Paul Stagard, writing in *The Stanford Encyclopaedia of Philosophy*, offers this definition of cognitive science:

Cognitive science is the interdisciplinary study of mind and intelligence, embracing philosophy, psychology, artificial intelligence, neuroscience, linguistics, and anthropology. Its intellectual origins are in the mid-1950s when researchers in several fields began to develop theories of mind based on complex representations and computational procedures. Its organizational origins are in the mid-1970s when the Cognitive Science Society was formed and the journal *Cognitive Science* began. (2014)

The potential to understand literature and its impact on the mind in terms of these additional disciplines, particularly with insights from neuroscience and linguistics, has attracted a small but growing body of literary scholars to this new paradigm. The appeal of this interdisciplinary approach, not only to literature but also other fields of humanities, particularly music and art history, has been described as the 'cognitive turn' by Mark Turner (2002, p. 9). Cognitive science has the potential to provide new insights into the relationship between literature and the mind, and even to provide some reinvigoration of the discipline, as Turner and others suggest.

In broad strokes, this thesis is both an exploration of this 'cognitive turn' in the humanities, examining the scope of critical insight offered by significant theorists

engaged in this interdisciplinary research; and a re-examination of key prose works by three major twentieth century authors—Jack Kerouac’s *On The Road* (1957), Virginia Woolf’s *Mrs Dalloway* (1925), and Vladimir Nabokov’s *Lolita* (1955)—using the methods and insights from this new scientific approach to literature to articulate fully their aesthetic impact. With each of the writers under discussion, readers and critics have made intuitive judgements concerning the sensory effects of their prose styles: bebop jazz rhythms in Kerouac, impressionist art in Woolf, a kind of multisensory hyperaesthesia in Nabokov. The aim of this thesis is to draw on the resources offered by the cognitive turn to explore these critical intuitions in greater detail.

The Critic’s Toolbox

In scientific terms, reading is an act that involves both sensation and perception. Sensation is the detection of stimuli by our sensory systems, and perception is the process by which our brains organise and interpret this sensory information. Literary criticism as it is generally practised is mostly concerned with perception, with interpreting a text after its words have been perceptually organised by the mind and initial impressions have been made. The transmission of sensory information that is eventually perceptually processed as language is normally of most interest to science; but the cognitive turn in literary study makes the processes of sensation as significant as the organisation and interpretation of the text. Emerging insights from the field of cognitive science allow us to articulate interpretations that until now have mostly been put down to intuition. It also

allows us to better understand how mechanisms of the mind that are not available directly to consciousness have an impact on our aesthetic appreciation of a novel.

Having said this, where scientific approaches are introduced to the humanities there exists the potential pitfall of reductionism in the application of theory and the subsequent analysis. By reductionism what is meant specifically is the habit of discussing a complex phenomenon entirely in terms of the simplest elements it can be distilled down to: for instance, while describing sexual attraction as 'chemistry' is merely shorthand, to discuss the phenomenon of sexual attraction in its entirety as a product merely of chemical processes within the brain is a reductionist approach. Chapters One and Two offer some more direct examples of how this narrow approach yields some almost farcically simplistic explanations for the appeal of the arts. The objective of this thesis, however, is not to reduce the appreciation of literature to a psychological or neurological phenomenon, nor to directly substitute science for literary theory. It is best understood as an interdisciplinary method of inquiry aimed extending the literary critic's toolbox by borrowing from cognitive science. This has the potential to unlock new interpretations in literary criticism, and to give older and more intuitive ones a newfound clarity. Most importantly, it is aimed at empowering the reader by giving them the tools to explain and articulate their aesthetic reactions to a text.

This is most pertinent among literary effects that occur in the most basic features of the text, as simple as the repetition of sounds or the arrangement of words. It is most intriguing when such an apparently basic part of the text generates strong and consistent aesthetic or emotional reactions. Here is one example of a literary

technique with such a consequence, taken from the *Dictionary of Literary Terms and Literary Theory*:

Cacophony (Gk 'dissonance') The opposite of euphony (q.v.). Harsh sounds are sometimes deliberately used by writers, especially poets, to achieve a particular effect. A well known example occurs in Tennyson's *Morte D'Arthur*:

Dry clashed his harness in the icy caves
And barren chasms, and all to left and right
The bare black cliff clanged round him, as he based
His feet on juts of slippery crag that rang
Sharp-smitten with the dint of armed heels –
And on a sudden, lo! the level lake,
And the long glories of the winter moon.

The alliteration and assonance (qq.v.) of the first five lines are self-evidently rough; the last two lines, containing the same devices, are mellifluously smooth and euphonious. (Cuddon (ed.), 1998, p. 103)

To elucidate the concept of cacophony, this extract draws comparison between two different instances of a poetic device. However, the effect of roughness is contained within the sounds of the words themselves: the alliteration merely draws attention to it. What is not explained is why the sounds alliterated upon – in this case, *b* and *k* – would be perceived as harsh. This is where the analysis can

only state that it is “self-evident”, reiterating the critic’s intuition that the sound has a particular quality. This is not to deny the existence of a ‘rough’ sound to the Tennyson lines, but rather to point out that literary criticism runs into difficulties attributing perceptual qualities to the use of sound in literature. To articulate this observation: these literary effects are conscious perceptions, but the process that gives rise to them is one that frequently occurs below the level of consciousness. The parsing of both textual signs and phonetic sounds into meaningful semantic units happens so automatically we might call it ‘non-conscious’, and if the source of the aesthetic effect lies in this lower level of mental processing we are unable to articulate the effect rationally. It is as if it simply *happens*, and our only recourse is to our intuitive judgement about the importance of this more basic element of sensory detail.

What is required then, is an extension of literary theory that uses the scientific understanding of the mind and the mechanisms of perception to fill in this gap in traditional analysis. Such an approach would largely be aimed at articulating intuitions about aesthetic sensations in scientific terms, and in doing so expanding the ability to explain literary techniques such as cacophony. Two distinct but related approaches from this cognitive turn offer some promise to achieve these objectives: they are known as ‘cognitive poetics’ and ‘neuroaesthetics’. Each of these approaches has a dedicated chapter in this work to surveying and critiquing its methods and achievements. Let us take a brief look at each of them in turn.

Cognitive Poetics

Cognitive poetics is a term used broadly to describe analysis that fits in with this new 'cognitive turn' in literature. To be more specific, it represents the application of cognitive science to the study of literary criticism. As noted earlier, cognitive science itself is an interdisciplinary grouping of subjects related by their interest in the human mind; so the theoretical approach behind cognitive poetics has scope to vary rather dramatically between different theorists. One kind of cognitive poetics may be more heavily influenced by linguistics, and dwell on the workings of the very basic levels of language and how they influence our perception of literary texts. Another kind may be so deeply entrenched in biological science that it feels compelled to create narratives explaining the purpose of literature in human evolution – this latter trend has been called 'Literary Darwinism.' Then there are theoretical approaches influenced by cognitive psychology and neuroscience that aim to provide new frameworks for textual analysis, and new windows into the relationship between reader and author.

Bringing all these disparate directions into a unified theoretical framework is a difficult task, but it is one that Peter Stockwell attempts in *Cognitive Poetics: An Introduction* (2002). Stockwell's interpretation of the term 'poetics' is to be understood as an Aristotelian system rather than focusing particularly on the poetic or the examples of poetry. Cognitive poetics for Stockwell is essentially any system of reading literature that attempts to retrofit the discipline with the new findings of cognitive science. Whether or not this definition is so broad as to become unwieldy is one of the topics to be investigated in Chapter One.

Since this thesis addresses itself towards novels rather than poetry, it is important to discuss the term 'poetics' in greater depth, which is here taken to refer to any literary discussion of the importance of sound in great detail. Sound based effects are normally the domain of verse, with rhyme, alliteration and rhythm being not only essential tools of the poet, but as literary devices they are more obvious in the confined space of poetry than in the novel. What this thesis aims to demonstrate is that effects traditionally considered 'poetic' could also heavily influence the creation and perception of prose.

As a consequence of this analysis, what will emerge is that the truly defining feature of a 'poetic' work consists in the extent to which the text works on a level that is not available to our direct consciousness; and that what we call the 'poetic' is our best attempt to grapple with this ineffable quality of a text. This is something that has begun already under the auspices of Reuven Tsur, a major theorist in cognitive poetics. Tsur writes:

One major assumption of cognitive poetics is that poetry exploits, for aesthetic purposes, cognitive (including linguistic) processes that were initially evolved for nonaesthetic purposes, just as in evolving linguistic ability, old cognitive and physiological mechanisms were turned to new ends... As will be emphasised time and time again in the course of the present study, quite a few (but by no means all) central poetic effects are the result of some drastic interference with, or at least delay of, the regular

course of cognitive processes, and the exploitation of its effects for aesthetic purposes. (2008, p. 4)

Tsur specifically uses 'poetry' here since his study in *Towards a Theory of Cognitive Poetics* takes most of its examples from English, French, Hungarian and Hebrew verse. Tsur's hypothesis offers two key ideas of what it means to be poetic. First, a delay of the normal cognitive processes that produces some aesthetic effect; second, an exploitation of cognitive processes that would normally fill other roles. These traits may occur either together or independently of one another: a succinct summary of both would be that they function by subverting the normal course of language processing – moving quickly from *signifiant* to *signifié* (signifier to signified) in the case of the expressive qualities of phonetics, for example. But essentially what Tsur suggests here is that poetry either delays or interferes with the normal operation of the mind.

The model of the poetic in cognitive poetics is not altogether new; in fact it rather neatly aligns with some older traditions such as Russian Formalism. Consider what Viktor Shklovsky writes of poetic perception in his essay 'Art as Technique':

In studying poetic speech in its phonetic and lexical structure as well as in its characteristic distribution of words, and in the characteristic thought structures compounded from the words, we find everywhere the artistic trademark - that is, we find material obviously created to remove the automatism of perception; the author's purpose is to create the vision which results from that deautomatized perception. A work is created

"artistically" so that its perception is impeded and the greatest possible effect is produced through the slowness of the perception. As a result of this lingering, the object is perceived not in its extension in space, but, so to speak, in its continuity. Thus "poetic language" gives satisfaction. (1965, p. 33) ¹

This of course is the same principle as Tsur's notion of cognitive processes being 'delayed' for some aesthetic effect. 'De-automatised' perception is an important concept to this thesis because it accounts for the manner in which material that would normally be processed automatically is, through compositional technique, made to delay the cognitive process and create a heightened awareness of that process. In doing so, what is normally perceived 'unconsciously'² becomes more directly available to consciousness. This effect is most notably paralleled by Impressionist art, where rather than being presented with a clear picture, the viewer is presented with the elements that they will then themselves use to create a clear picture. 'Impressionistic' is of course a term that has been used to describe the works of modernists such as Virginia Woolf who report individual sensations or perceptions as they happen, rather than interpreting them for the reader. This point will be revisited in more detail in Chapter Four.

The other facet that Tsur identifies, exploitation of cognitive processes that normally fill other roles in the mind, has some correlations in poetic theory: most notably with the idea that poetry bears important links with music. Ezra Pound, for

¹ Tsur (2008) also refers to this essay in his explanation of what constitutes poetry and poetic technique, and ties it to the general Russian formalist notion of cognitive processes being 'violated' by art. (p. 3-6)

² Wherever possible I have tried to avoid the term 'unconscious' so as to explicitly rule out any link to Freudian psychology: the preferred term will instead be non-conscious.

instance, expressed the sentiment in *ABC of Reading* that “poetry begins to atrophy when it gets too far from music” (1934, p. 14). Modern neuroscience has debated the extent to which music and language share the same cognitive mechanisms; Patel (2008) offers a definitive outline of some of the correlations between the two, generally concluding that they are at least closely related.³ Assuming then that they are not the same direct process, to use language in a way that exploits the perceptual mechanism that handles music would fit this concept of the ‘poetic’. Pound refers to ‘melopoeia’ as the poetic act of using sound to suggest or convey meaning (1934, p. 37-43). Where novels are concerned, the style of Jack Kerouac has borne out frequent comparisons with jazz. In most critical discussions of Kerouac this link is treated as largely symbolic, but given the insights of cognitive science it seems possible to explain how his style may, in certain passages, have direct recourse to the mechanisms used to process music. Consider this example from *Desolation Angels*, where he describes a scene in a San Francisco jazz bar:

The bartenders are the regular band of Jack, and the heavenly drummer who looks up in the sky with blue eyes, with a beard, is wailing beer-caps of bottles and jamming on the cash register and everything is going to the beat – It’s the beat generation, it’s *béat*, it’s the beat to keep, it’s the beat of the heart, it’s being beat and down in the world and like old time lowdown and like in ancient civilisations the slave boatmen rowing galleys to a beat and servants spinning pottery to a beat. (1965, p. 137)

³ See also Koelsch (2005) and Schnupp et al (2011) for discussion of the links between the two.

The word 'beat' is significant throughout Kerouac's fiction, but this is one of its most concentrated appearances. The effect is most noticeable when the passage is read aloud with emphasis on the word 'beat'.⁴ If the consonants *b* and *t* of the word are isolated, they produce a pair of percussive sounds that can be likened to a bass drum, *b*, and a snare drum, *t*, in terms of their timbre. As such, the passage imitates music by drawing attention to those features of the sounds that in western music are used for rhythmic purposes, and using this to supplement the rhythmic recurrence of the word 'beat'. Just as Tennyson's repetition of sounds draws attention to the expressive qualities of those sounds themselves; so too does Kerouac augment his prose by drawing attention to a feature of the language that would not ordinarily enter direct consciousness. By repeating the word 'beat', Kerouac draws out the percussive qualities of the sound and the reader may experience a sense that his writing imitates music. This hypothesis, along with the theory behind the way those sounds take on a particular quality, will be tested in greater detail in Chapter Three.

One of the major aims of the present study is to use Tsur's theory of cognitive poetics to explain how these traditional notions of particular qualities attributed to novelists – particularly 'musical' and 'impressionistic' – can be articulated in terms of how the reader might actually perceive them, and in particular, how the basic aspects of the text play a particularly strong part in creating these effects. Coupled with this is the ambition to articulate what is meant by the claim that a novel has a 'poetic' quality, as Steve Allen once specifically lauded Kerouac's prose (along with that of Thomas Wolfe) when he appeared on his show in 1959 to promote *On the*

⁴ A recording of Kerouac reading this extract, with very obvious emphasis of the word 'beat', can be found on the disc *On the Beat Generation: Readings by Jack Kerouac*, Rhino, 1990

Road (*What Happened to Kerouac*: 1986). My aim is to show that in general a 'poetic' novel or one with a particularly aesthetically minded style functions by exploiting the neurological processes that normally occur automatically and non-consciously. This may be achieved by exposing that process to consciousness, or by producing a conscious effect for the reader that has its origins in a non-conscious mechanism.

Cognitive poetics as a method for literary analysis is not without limitations and pitfalls, particularly with different scholars taking it in disparate directions. Having relied heavily on Tsur for this introduction, Chapter One will pit him more closely against Stockwell to consider competing examples of the contribution cognitive poetics can offer. This is not purely to establish who has the more thorough or effective approach, but more importantly to set a framework for my own diverging analysis of novels in terms of cognitive science.

Neuroaesthetics

Closely entwined with this thesis taking an interest in the 'poetic' mode of expression in the novel lies an additional interest in aesthetics. Here it must also be immediately clarified that by 'aesthetics' we do not mean the notions of 'good taste'. Nor are we talking specifically of what might be considered beautiful or pleasant. Instead it attempts to advance the idea of aesthetics as a series of artistic techniques and mechanisms that are responsible for human engagement with art, regardless of whether or not the reaction they have is entirely pleasurable. Having acknowledged that aesthetics is a term with multiple meanings, it is important to

settle on a more definite set of boundaries to work within. As Helen Grace explains in the introduction to *Aesthesia and the Economy of the Senses*, aesthetics can be thought of as many disparate fields with a singular purpose:

‘Aesthetics’ refers to a disciplinary field whose borders are determined by the necessity to define a problem within the confines of a formal or professional pursuit of knowledge, one directed towards the understanding of the sensual in order perhaps to capture this field for logic – to make it knowable. (1996, p. 1)

The key term in this definition is ‘the sensual’, which we might take to mean the aspects of sensory processing that are normally not available to direct consciousness, but whose effects are nonetheless felt as intuition by the critical faculties of the mind. These include perceptions of beauty and pleasure, but also of negative emotions or sensations, and most importantly feelings of tension in multiple forms – narrative, semantic, rhythmic. Access to this sensory realm, long the interest of writers and poets, is now increasingly possible with the insights of cognitive science.

From this collision of interests we can derive the emerging critical approach which has been named differently by individual scholars, but in this thesis will be consistently referred to as ‘neuroaesthetics.’ Here is what one of its theorists, Ann Marie Barry, has to say about this idea of a neurological and scientific approach to the study of aesthetics:

When Immanuel Kant (1790) called aesthetics a “science which treats the conditions of sensuous perception,” he emphasised three areas: science, the senses, and the experience of the sublime. Present-day neuroaesthetics combines this triad of interest in the study of neural systems that determine pleasure, how information from the senses becomes meaningful in the brain, and how emotion governs the experience of both life and art. (2006, p. 136)

Again, we see the focus on sensory information as being at the heart of an aesthetic response. We also can see some parallels with the approach of cognitive poetics, in drawing on information from cognitive science to better elucidate the emotive and sensual experience associated with art. We can distinguish between cognitive poetics and neuroaesthetics by noting two general (although not prescriptive) points of comparison. Firstly, cognitive poetics is largely restricted to literary study, whereas neuroaesthetics has explored multiple artistic mediums (although a number of key theorists tend to study the visual arts as their primary source of evidence). Secondly, cognitive poetics is frequently practised by literary scholars looking to expand their terms of reference, while much of the work in neuroaesthetics comes from theorists of a scientific background.

Neuroaesthetics is particularly important to this thesis because, as alluded to in the earlier references to Kerouac and Woolf, one of the ambitions is to offer a compelling critical account of the relationships between literature and its artistic counterparts of music and visual art. As present-day neuroaesthetics has delved deeply into cognitive accounts of the workings of music and art, I hope to

demonstrate that the neurological and artistic principles behind these art forms have analogous principles in literature and literary criticism. Furthermore, by discussing what cognitive science can tell us of the nature of connections between different senses, I aim to show how recourse to multiple sensory modalities becomes an important source of aesthetic engagement across these case studies.

Cognitive Dimensions

In the bulk of contemporary literary scholarship purporting to be ‘cognitive’, fewer studies have addressed themselves to novels or works of prose. This is not exactly a fault: poetry provides some exceptionally good and succinct case studies for a new movement to test itself against. In the coming chapter I will examine the field of cognitive poetics in greater detail; for the moment it is important to demonstrate the contribution that cognitive science can make to this field of inquiry. This will become important because several scholarly works identified as ‘cognitive’ take an extremely lax approach to using cognitive science to articulate what is not already known and understood by literary study. Without this crucial element, these studies fail to offer any new insights that could not simply have been achieved through ordinary literary criticism. A truly cognitive study, if it hopes to break any new ground, needs to fully draw on the resources of cognitive science to answer questions that literary criticism cannot.⁵

⁵ Tsur concurs on this point: “A discussion becomes cognitive when certain problems are addressed which cannot be properly handled without appealing to some cognitive process or mechanism in the specific discussion. A critical discussion does not become cognitive by virtue of the amount of past research invested in the elements it handles, but by virtue of the cognitive research applied to the solution of problems that arise in the text under discussion. Being able to push an electric switch does not mean that we are doing physics, even though much physical research went in the past into its invention.” (2008, p. 600)

It is important to reiterate that this study is not seeking to reconceive of literature and reading entirely as psychological phenomena. However, in order to understand how various cognitive mechanisms produce the effects we are seeking to articulate, it is helpful to understand how reading is an example of information processing within the mind – since this act of processing and perception is what the poetic effect draws attention to. Tsur cites a study by Liberman, Mattingly and Turvey (1972) which measures in bits the difference between processing an acoustic signal (meaning a soundwave with a particular spectral pattern) and a phonetic symbol (meaning in this case the mental representation of that speech sound), finding that the phonetic symbol represents a saving of one thousand percent when measured in bits per second (Tsur, 2008, p. 6). The acoustic signal is more suited for transmission and reception, whereas the phonetic symbol is more suited for storage in our short term memory.

This is one instance of recoding: Tsur's idea, appropriated from Polányi (1967), is that various levels of recoding occur throughout the cognitive process to form an information hierarchy (2008, p. 3-7). In considering literature as a stream of information, we can see how this principle of recoding for long term memory creates additional and arbitrary levels of recoding that become focal points for literary criticism. We do not store an entire novel in our memory. Instead, we categorise and distil the novel into essential components: themes, plot and character arcs, symbols and ideas. Mandler (1984) refers to this concept specifically as the "levels effect". In principle, these basic elements of literary theory represent a recoding of the novel for the efficiency of storage and recall.

I wish to use this analogous mode of thinking about reading as information processing in order to explain two of the points that underpin my thesis. Firstly, novels such as *On the Road* present a problem to traditional criticism in the way that the textual elements we normally are drawn to remember (through the cognitive processes) are highly insubstantial. The novel shows almost no regard for a plot, features only sporadic and inconclusive character development and is often thematically chaotic and inconsistent. Despite this, it has sold over three million copies (Tytell, 1999, p. 57) and been adapted as a feature film. Noted Kerouac scholar Regina Weinreich, writing in 2009 about the imminent film adaptation stated: "The language cannot be filmed," as the reason the production had lingered so long at the screenplay phase of production (2009, p. 187-9). In her view, what makes *On the Road* significant is Kerouac's experimental use of language. The appeal lies at the most basic levels of the novel: the expressive use of sound, the attention to rhythmic detail and the exploitation of syntactic tension for poetic effect. These are principally literary features and resist a simple transposition to a different medium, unlike the higher streams of information such as the characters, plot and themes. As such, to properly evaluate the significance of a novel like *On the Road*, it is beneficial to assess these basic levels of the text through the methods of cognitive poetics and neuroaesthetics.

The second point concerns novels that are more traditionally rich in plot, character and motif. What is the merit of scrutinising their phonetic, semantic and syntactic structures? In the normal course of information processing, we quickly move beyond these elements to extract the vital information – an instinctive survival

mechanism.⁶ Take for instance the word ‘chasm’. If we see this word printed on a sign, the phonetic elements of the word are barely acknowledged by our consciousness because it moves very quickly to the meaning of ‘deep hole’. However, if we return to the Tennyson extract in the previously quoted example of cacophony, where the word appears in verse as follows: “And barren chasms, and all to left and right”; we may now find the phonetic elements significant because of similarities between ‘barren’ and ‘chasm’. The versification itself draws us towards this similarity, stressing the first syllable of both words and disrupting the natural flow onto the next word by the placement of a caesura after ‘chasms’. The reason we investigate information normally considered redundant is because poetic devices direct us to do so. Yet once again we are without recourse to explain the significance of this sound. Because the normally unconscious nature of cognitive processing masks the production of this effect, it is normally associated with the issue of ‘feeling’ in literature, in the sense that we are relying on intuition.

For the purpose of this debate, it is important to iterate that we are not necessarily dealing with emotional responses here, as ‘feeling’ may sometimes be used to indicate. There is a hyponymic relationship between the two in that all emotions are feelings, but not all feelings are emotions: they may also be sensory perceptions. Distinguishing between the two is important because the poetic

⁶ There is a theory that the brain actually functions more like a resistor than a central processing unit, called the Filter Theory of Consciousness. The notion here is that sensory systems can process vast amounts of information, but the brain acts to filter out all but the most important information for survival purposes, as cognition would otherwise be quickly overwhelmed with redundant information. This idea originated from philosophers such as Henri Bergson and C. D. Broad, and was notably taken up in Huxley’s *The Doors of Perception*, where he used it to validate his experiences on mescaline, claiming the brain’s filtration function was dampened by the drug. Regardless of which theory of the mind is correct, both support the principle of differentiating the most important information as a survival mechanism, and this principle is important to cognitive poetics. For more detail see Tsur, 2008, p. 17-18, and also Massumi (2002, p. 144-161), where he talks about how we experience ‘chaos’ as we reach sensory overload in vision.

quality as argued by Shlovsky may invoke emotions but more importantly it evokes basic feeling by making us more aware of our own sensory processes that normally proceed unconsciously. In this work, therefore, basic sensory perceptions are referred to as *sensations*, and *feelings* can connote either sensation or emotion. This distinction between sensation and emotion we might recall is one already made above by Nabokov during his lectures on literature at Cornell, where he distinguishes between the 'heart' and the 'spine'. In this context, the 'heart' can be interpreted as it is traditionally understood as a symbolic centre of emotion, and the 'spine' refers more scientifically to the function of the spinal cord to deliver sensation throughout the body.

Another major ambition of this thesis is to articulate these readings that come from the "spine", or in clearer terms, those that seek to achieve heightened awareness of sensory processes. The premise is that poetic or aesthetic technique can be used to make literature an experience that either directly stimulates sensory perceptions not normally triggered by language processing, or by delaying the sensory processing of reading to make the reader feel more involved in directly experiencing and processing what the writer evokes through the text, both falling under the conception of 'poetic' as outlined by Tsur. These sensations involve the senses in a way far beyond ordinary use of language and give poetic texts a captivating power of their own. To quote again from Shklovsky: "Art exists that one may recover the sensation of life, it exists to make one feel things, to make the stone *stony*. The purpose of art is to impart the sensation of things as they are perceived and not as they are known." (1965, p. 12)

Parameters of Investigation

The cognitive approach to this work is intended to be descriptive rather than prescriptive. It does not assume that all readers will experience the same or even any reaction to a poetic text: what I am concerned with is providing evidence to corroborate the intuitions of those who feel that the basic elements of a particular text are especially significant. To this end, my study will focus largely on authors for whom the critical and/or the public reaction is indicative that their writing style either creates intuitive responses masked by non-conscious processing, or makes this basic processing more available to consciousness and thus makes the reader more aware of sensory information they might otherwise discard. This is particularly relevant when studying the modernist novel, as we might categorise the work done in the Woolf and Kerouac case study chapters. The modernist writers experimented with language and drew upon the resources of external art forms, including poetry, film and music, in a bid to remake literature so that it more appropriately reflected the world around them. Their departure from conventional forms of narrative and prose alienated some critics at the time but impressed others, and the same divergence of opinion frequently continues among readers today. This thesis will attempt to show how familiarity with other art forms may have been a guiding influence behind these judgements of the novel.

As was outlined earlier both 'cognitive poetics' and 'neuroaesthetics' are far from a uniform system in contemporary practice; so to avoid confusion the first chapter will set out, in greater detail, which theoretical approaches are most relevant to the ambitions of this thesis. As has been iterated earlier, this study is primarily about

extending the critical toolbox to properly articulate certain effects, and clarifying the meanings of any terms that are presently too vague. It is important to establish this boundary because as we shall see, some of the cognitive poetic scholars or neuroscientists purport to offer a complete reconfiguration of either literary study or of aesthetics within the specific boundaries of cognitive science. My argument is that this is unnecessary where existing theory does the job well enough, and amounts to nothing more than a homogenisation of terminology.

There are a number of parameters that will be frequently referenced as the 'basic aspects' of a text during this investigation. These represent essential structures of the prose that are not generally of significance to direct consciousness, but are parsed quickly and automatically so as to allow the reader to move on to deriving meaning from the text. In the case studies for this thesis, the prose will often be constructed in such a manner that significant aesthetic impact arises from these 'basic aspects', whether or not the reader is aware of their involvement or whether they only receive an impression or intuition. I will now quickly discuss these in turn.⁷

Phonetics and acoustics, as outlined earlier, are a significant source of aesthetic effect in the way poetic technique triggers our knowledge of the acoustic signal and exploits this for particular effect. Poetic devices such as alliteration direct us to the particular sounds of the text, and encourage us to draw out expressive qualities based on the sound that carries the phoneme in oral transmission. Tsur's research

⁷ If the bulk of references in these next two pages are to Tsur it is because he structures his own theory around a similar set of distinctions and it provides for an easy point of comparison with the territory charted out by this thesis.

on the expressive qualities of sound patterns act as a strong starting point for understanding their importance, since he has used cognitive science to account for decades of intuitions surrounding the qualities of particular phonemes. In keeping with the notion that this study is meant to be descriptive rather than prescriptive, it is worth mentioning that Tsur specifically accounts for the same sound having differing or even opposing qualities, a phenomenon he calls 'dual-edged'.

Additionally there is the semantic level of perception, where the meaning of the line is processed. This level is significant because in poetic diction particular words may seem more salient than others. In Tsur's work he talks about how semantics lead to the activation of a mental 'script', and certain language can disrupt this for particular effect. Consider T. S. Eliot's famous line from 'The Love Song of J. Alfred Prufrock': "I have measured out my life in coffee spoons" (1954, 51). The poetic quality of the line is reinforced by the fact that 'measure' and 'coffee spoons' activate a trivial, everyday script, but the word 'life' confuses this and activates a more serious, existential script. This cognitive process can be exploited for more than just poetic effect: consider a line from the Woody Allen film *Midnight in Paris*, where the protagonist encounters T. S. Eliot in a taxi:

Gil Pender: "Listen. Where I come from, people measure out their lives with coke spoons."

This joke serves as a neat example of 'delayed decoding'. It assumes the reader has some understanding of Eliot's poetry, so they automatically activate a similar mental script, interpreting 'coke' as the popular beverage. But the fact that one

doesn't drink Coke from a spoon disrupts the automatically deployed script, and then another, more illicit script emerges. In Pender's experience as a modern scriptwriter for Hollywood, 'coke' most definitely is meant as shorthand for a lifestyle vastly different from that of Eliot's Prufrock. The interplay between semantic features and the mental scripts they activate can be exploited for both poetic and grotesque purposes; this study is mostly concerned with the former, and how the text subverts these ordinary cognitive processes for particular effect. In addition, there is a dictum observed by poets from Wordsworth to Whitman and reiterated in Barfield's *Poetic Diction* (1952) that poetry favours concrete terms to abstract ones. Barfield's theory was informed by a somewhat rudimentary cognitive approach, as his study engages with the theories of the mind expounded by Locke and Hume. This delayed decoding occurs notably in some of Nabokov's puns in *Lolita*.

Lastly, we can also consider the importance of syntax in the novel, and explore the idea that a writer can produce certain poetic effects in the way they construct and organise their writing. This section is largely an articulation of the effects of punctuation and rhythm in cognitive terms. Traditional prosody has very strong intuitions about these effects; part of this study is to combine rhythmic analysis of passages from the novels in question with evidence from cognitive science to account for those effects. Tsur has applied gestalt theory to explain the perceptual effects of, amongst other things, the sonnet form: I intend to use this as a point of departure and apply more recent cognitive science to explain the perceptual effects of the syntax in novels, since gestalt theory is a somewhat archaic method of psychology.

Key to this latter effect, but also significant for the poetic effects rooted in the sound and semantic dimensions, is the concept of tension and the subsequent relaxation of tension. This is an aspect that seems to be particularly pronounced in certain styles of writing, but at present the critical terminology to discuss tension in a meaningful manner is somewhat lacking. It is my ambition here to use insights from research on how tension functions cognitively as an organising principle to show how poetic texts can exploit this for aesthetic purposes. Barry (2006) has put together some important insights on this subject already. The investigation of this topic will further demonstrate the significance of the sound, semantics and syntax of prose, since the research will demonstrate that they themselves can create or combine to create a sense of tension.

Case Studies

We have already met the authorial subjects of this thesis throughout the course of this introduction: they are Kerouac, Woolf and Nabokov. Binding these three together is the simple familiarity that they are all twentieth century writers of prose, but I hope that through an investigation of the basic aspects of their texts, more similarities will emerge between them.

With Kerouac, there is still a gap between the critical scholarship on his work and the apparently visceral nature of his writing. The sound stratum seems particularly significant in Kerouac's work, and yet analysis of sound patterns in his writing has so far tended to be somewhat *ad hoc*. It is also well documented that Kerouac's

style was heavily influenced by the bebop form of jazz that developed in the 1940s: this thesis aims to demonstrate just how pervasive this influence is in terms of the basic aspects of his writing. As mentioned earlier, *On the Road* offers a good example of a novel that has been questioned in terms of its traditional literary merits but remains pervasively popular, and a part of this cognitive investigation is to further explain the novel's effects, as well as to trace some other examples throughout his fiction. Chapter Three delves into these musical inquiries in greater detail.

From music we move to visual art, where Chapter Four focuses on the relationship between Virginia Woolf and the school of painting known as Impressionism. In a literary context, the term is normally used to describe the way a writer reports sensations or perceptions directly, and lets the reader undergo the act of interpreting them rather than doing it for them. This chapter, focused largely on Woolf's *Mrs Dalloway*, attempts to challenge some of these conventional explanations of the link between Impressionism and literature. It offers a glimpse into some of the mechanisms of the mind that contribute to the appeal of Impressionism as a form of visual art and builds an analogous mode of understanding the function of Woolf's prose structure and style in *Mrs Dalloway*.

Finally, having built a narrative around the link between different sensory domains in the works of Woolf and Kerouac, the final chapter takes us deeper inside these connections through an exploration of the phenomenon of synaesthesia. As a neurological condition where a perception in one sensory domain can be triggered by another perception in a different sensory domain, synaesthesia offers a

fascinating window into the function of the mind. This chapter aims to pair these insights with a closer look at Nabokov, one of literature's most famous synaesthetes. This case study is not offering a complete re-reading of Nabokov's fiction, but rather argues that trace elements in his works become more significant in light of our increased understanding of his neurological condition. As a journey towards Nabokov's mind, it concludes the thesis and brings it full circle by showing the importance of his critical theory on the relationship between author and reader in terms of the mind.

These case studies are not purporting in any way to be complete readings of the novels in question. There are two basic reasons for this: the first is that there is already a strong body of scholarship that can fill those requirements of providing complete readings where necessary. Instead, this thesis is aiming to highlight elements of the novel that are significant either for traditional readings or for giving more credence to some more radical theories, such as the idea of Kerouac being musical in his prose style. Secondly, because it deals so frequently with the basic aspects of a text, it would be overwhelming and repetitive to examine the entire text on the basis of sound, semantics or syntactic structures. Instead it aims to show that in some of the crucial (and often early) passages, our authors establish these aesthetic effects so that they will linger in the reader's mind and colour their overall impression of the text by recourse to non-conscious processing.

Essentially, there are three principal and interlinked aims of thesis. The first is to demonstrate where cognitive science might truly be able to add to our

understanding of literature by extending the critical toolbox. The second is to show how cognitive science can clarify and articulate key intuitions about the nature of literary texts. The third is to re-examine the question of 'aesthetics' by seeking new insights from cognitive science that can explain the significance of neurological processes that are not immediately accessible to consciousness, and particularly by showing the importance of different sensory modalities to aesthetic effects and engagement with a novel.

As this thesis falls into a gap between the distinct but analogous methods of cognitive poetics and neuroaesthetics, I have chosen not to label the critical accounts on offer here as belonging explicitly to either camp. The title, 'Nervous Aesthetics' is not intended to supplant or amalgamate these two methods, but rather encapsulate the aspects I find most relevant between the two of them: the science of sensation and perception, and its application to the study of aesthetic effects within the arts.

Chapter One: Cognitive Poetics

'Cognitive poetics' was a term coined by the Israeli academic Reuven Tsur in 1983 to both describe and categorise a trend within his body of work. He published a major treatise on the subject in 1992: *Towards a Theory of Cognitive Poetics*, and he has continued to build on these theories through other publications. *Towards a Theory* was updated in 2008 to include revised theory taking advantage of new research technology in neuroscience and linguistics. Tsur is something of a latter-day Russian Formalist (and indeed he makes frequent reference to Shlovsky and Jakobson): much of his work begins with an interest in the most basic aspects of a literary text, such as sound or semantics. Based on these observations he builds systematic and formalist readings of poetry that expand upwards to broader critical concepts. *Towards a Theory*, for instance, first discusses the importance of sound in terms of rhyme, metre and expressive qualities; then moves to discussing "units of meaning" which constitutes semantics and metaphor. He then builds on these insights to categorise 'poetry of orientation and disorientation' and 'poetry of altered states of consciousness', where he discusses some of the general aesthetic effects attributed to poetry. A chief idea in his theory, reflected in this structure of his major treatise, is that literature replicates a mental process of 'recoding' information for the purpose of mental storage:

The principles of literature may be said to govern the boundary conditions of a cognitive system – a set of conditions that is explicitly left

undetermined by the laws of lower processes, physical, cognitive and linguistic. If one knows that is the set of boundary conditions left undetermined, and by what laws of what “lower” processes, one may get a better understanding of the principles of literature that govern those boundary conditions. (2008, p. 4)

As we shall see, Tsur’s work is extremely formalist, but it does so because he attempts to use the resources of cognitive science to account for the otherwise unaccountable aesthetic effects of poetry; hence his choice of the term ‘cognitive poetics’. However, despite Tsur’s foundational work in the field, when taking a broad surveys of the body of works labelled under or referring to ‘cognitive poetics’, they are instead dominated by references to an entirely different academic, Peter Stockwell. This chapter is a comparison of their distinctive methods of criticism.

Stockwell’s *Cognitive Poetics: An Introduction* (2002) is pitched as a textbook-level entry into the subject of cognitive poetics, and has an accompanying volume called *Cognitive Poetics in Practice* (Gavins and Steen, 2003) to demonstrate its principles in action. The choice of topics in the two volumes includes the notions of figure and ground, deixis, cognitive grammar, schema theory, conceptual metaphor and ‘text world’ theory. Stockwell acknowledges that all of these topics are major theoretical features in cognitive linguistics, and that his treatment is intended to be as broad as possible, compared to what he describes as Tsur’s “very precise and particular sense” (Stockwell, 2002, p. 8). Another highly influential name associated with cognitive poetics is Mark Turner, whose book *Reading Minds* was published in

1991, and is described by Stockwell as a 'manifesto' (2008, p. 165). Turner used this work to broadly challenge literary scholars in general to relocate literary study in general within the framework of the mind, and his approach is influenced mostly by linguistics and stylistics.

Stockwell's treatise on cognitive poetics is undoubtedly the public face of the field. Hamilton (2005, p. 744) credits him with the following accolade: "Stockwell has successfully re-defined the field." In *An Introduction*, Tsur is mentioned in passing for coming up with the name, and during *In Practice* Tsur's essay on deixis is accompanied with the following warning from the editors: "It is best appreciated if it is studied as one of the last chapters of a course, for its topic and treatment are pitched at rather an advanced level of discussion" (2003, p. 3). For his own part, Tsur has been highly critical of Stockwell's book (see chapter 24 of the revised edition of *Towards a Theory*).

Stockwell and Tsur both admit to having different interpretations of the term 'cognitive poetics'. By his own admission, Stockwell's is the broader definition, and the editors of *In Practice* support his vision for cognitive poetics:

"[It] does not have a precisely demarcated borderline which would stamp other variants of cognitive poetics, including Tsur's, as non-canonical. Indeed, one of the most interesting things about cognitive poetics today is that it is in such a state of excitement and unscripted development in a multitude of directions." (2003, p. 3)

Their suggestion that this unscripted development in a multitude of directions is both interesting and exciting must be tempered with some caution. First and foremost, cognitive poetics, regardless of whether Stockwell or Tsur is the principle theorist, the defining feature of cognitive poetics is its interdisciplinary framework. It concerns the interplay of biological sciences with literary criticism, often mediated by linguistics or psychology. While reviewing this 'cognitive' trend in literary study, Jackson (2000 and 2002) warns of the difficulties that arise in combining an empirically based science with the more theoretical humanities. Having a solid framework or borderline to work within does not preclude the development of interesting and unscripted findings: the very nature of interdisciplinary study will guarantee such outcomes. But there is a certain danger that in casting the net too wide, the Stockwell style of cognitive poetics fails to establish a clear sense of immediacy and relevance for itself. And although the Tsur system of cognitive poetics has very meticulously drawn boundary lines, they fall right on the territory of empirical science and in doing so set an extremely high bar for his claims.

In his review of *Cognitive Poetics: An Introduction*, Jackson makes a rather damning comment about the 'cognitive' methodology behind Stockwell's analysis:

Stockwell's reading is not dependent on the cognitive terms. In fact, this is an example of close-reading skills. I am not claiming that I myself or anyone else would necessarily have come to just this reading without Stockwell's prompting. But I am trying to show that he does not need the cognitive poetic terms in order to make the statements he makes. (2005, p. 529)

This does not suggest that Stockwell's analysis is not insightful in of itself, but asserts that his analysis does nothing to demonstrate what cognitive poetics can offer in terms of a unique contribution to literary criticism. This would not be quite a brutal observation but for the fact that Stockwell's ambition for *An Introduction* is indeed to present to the world a whole new method of reading literature. In fact, his opening statement is rather simply: "Cognitive poetics is all about reading literature" (2002, p. 1). Given these lofty parameters for success, failing to offer any new insights to literary criticism raises some questions as to whether or not this system presents an adequate methodological foundation for the study of cognitive poetics.

The aim of the present chapter is to examine how literary scholars are attempting to utilise cognitive science to supplement traditional literary analysis. This is contrasted with Chapter Two, which looks at how successfully or unsuccessfully cognitive scientists are bringing their insights to elucidate the arts and the study of aesthetics. Since there are consistent methodological differences and guiding ambitions between the 'cognitive poetics' of Stockwell and Tsur, outlining and contrasting these distinctions will pave the way for the study of novels undertaken by this thesis, and show more directly how cognitive science can begin to inform literary study – as well as outlining some pitfalls that can emerge when combining the two. Additionally, as something of literature review it sets out how the literary studies formally identified as 'cognitive poetics', as well as those more generally interested in cognitive science, approach the territory of novels and their aesthetic effects as demarcated by this thesis.

As outlined above, Tsur's basic framework for his theory of cognitive poetics involves a movement from non-conscious aspects of language processing to conscious aesthetic reactions associated with poetry, along the simple spectrum of sound-semantics-feeling. Stockwell's structure of *An Introduction* involves a similar but distinct approach of taking small elements from linguistics (such as deixis) and building towards what are ostensibly higher level cognitive processes, such as how the reader becomes 'transported' by the text. Although their two systems are not exactly analogous, it will be helpful to compare them in a side-by-side fashion so as to see how they go about creating literary criticism, and what contribution they offer to the debate. This will be done through an examination of their respective treatments of sound, figurative language and 'feeling' in cognitive poetics.

Sound in Cognitive Poetics

Stockwell's *Cognitive Poetics: An Introduction* (2002) does not cover the sound stratum in great detail, but his subsequent book *Texture: A Cognitive Aesthetics of Reading* (2009) includes an attempt to tackle the relationship between sound and meaning. His explanation is that these elements are largely symbolic:

A text about contemplation – 'Thou still time unravished bride of quietness, thou foster child of silence and slow time' (Keats' 'Ode on a Grecian Urn') – lends shushing to sibilants, and the /s/es then take on a symbolic value; a comic book text about fighting makes the plosives in 'bam' and 'kerpow'

take on a belligerent symbolic value, and so on. It is in the readerly interaction and assignment of symbolic value that pure sounds take on aesthetic significance. (2009, p. 59)

The question we must ask here is what, if anything, is cognitive about this explanation? Applying symbolic value to any element of a text is something well within the boundaries of traditional criticism, and although he invokes cognitive linguistics, Stockwell does not use it to explain why certain words demonstrate this symbolic association better than others. Why do plosives lend themselves so well to being symbolically associated with fighting, for instance? His example shows that this association is far from just arbitrary, but it does nothing to articulate why particular sounds match up so well.

Further on, he applies this symbolic value to a reading of Browning's 'In a Gondola':

The moth's kiss, first!
Kiss me as if you made me believe
You were not sure, this eve,
How my face, your flower, had pursed
Its petals up; so, here and there
You brush it, till I grow aware
Who wants me, and wide ope I burst.

A brief analysis of the articulatory patterns that this text produces in the mouth suggests a repeated attempt to create pouting or pursing lips in the speaking reader. Matched with the semantic content of the poem, this physical gesture is inescapably a kiss. For example, there are a number of words in the first stanza that require open, rounded lips in their articulation: 'moth's', 'first', 'you', 'You', 'were', 'sure', 'How', 'your', 'flower', and, of course, most pointedly, 'pursed'. (2009, p60)

This is a very astute observation and suits the context of this particular poem. If we recall the notion that a 'poetic' text can make the reader more aware of sensory processes, this is one example of how it could function. However, the best example Stockwell can give is a better demonstration of kinaesthesia than of the possibility that certain phonemes lend themselves well to symbolic associations. In kinaesthetically re-enacting the mouth's position during a kiss, the reader is being made aware of muscular movements rather than a quality that is a property of the isolated phonetic *sound*, as he hints at the possibility of when he discusses how particular phonetics can take on various expressive qualities. What Stockwell effectively demonstrates here is how poetry can evoke sensory systems not normally activated in language processing, but he does so simply by stating the similarity between the gesture of a kiss and the gesture of a bilabial consonant like *m* or *w*. There is potential here to do use cognitive science to show far more than just direct correlations such as these.

Tsur's discussion of sound in *Towards a Theory of Cognitive Poetics* (2008) draws on his earlier work *What Makes Sound Patterns Expressive? The Poetic Mode of*

Speech Perception (1992). His study begins with statistical evidence to support the correlation between particular phonetic sounds and particular generic moods, finding that in poems by Verlaine and Hugo, and citing another study by Fónagy on the Hungarian poet Sándor Petőfi, there is an overwhelming correlation between tender moods and nasal consonants, with a contrasting correlation between aggressive moods and voiceless stops (1992, p3). In an effort to provide some causation to match the correlation, he turns to research on speech perception conducted at the Haskins Laboratories.

As we shall see, there is no one-to-one relationship between the segments of perceived speech and the segments of the acoustic signal that carries it. According to the Haskins theory of speech perception (for example, Liberman, 1970; Liberman *et al.*, 1967), there is between the two a mediating step of “complex coding.” (1992, p8)

This principle of coding has particular perceptual consequences based upon how it proceeds. Tsur quotes Liberman *et al.* (1972) to explain:

The special process that decodes the stops strips away all auditory information and presents to immediate perception a categorical linguistic event the listener can only be aware of as /b, d, g, p, t, or k/. Thus, there is for these segments no auditory, precategorical⁸ form that is available to consciousness for a time long enough to produce a recency effect. The relatively unencoded vowels, on the other hand, are capable of being

⁸ By ‘pre-categorical’ Tsur refers to the auditory information that is used to transmit a sound prior to being ‘recoded’ as a phonetic unit.

perceived in a different way... In the experiment by Crowder we may suppose that these same auditory characteristics of the vowel, held for several seconds in an echoic sensory register, provide the subject with rich, precategorical information that enables him to recall the most recently presented items with relative ease. (Tsur, 1992, p. 33-4)

Tsur uses this distinction between the encoded and (relatively) unencoded speech sounds as an explanation for the apparent correlation outlined earlier:

Now, the perception of rich sensory material and the making of fine distinctions precisely presuppose that openness, responsiveness and susceptibility of adaptation characteristic of tender feelings and which seem to be lacking in aggressive behaviour. Reliance on rich precategorical information makes greater emotional and behavioural adaptability possible. It should be noted that Gestaltists (for example, Ehrenzweig, 1965) have observed that in visual designs clear-cut shapes assume a high degree of 'plasticity' when perceived against a background of shadings, "inarticulate scribbling," or, in the present terminology, rich precategorical information. This is particularly true when gestalt-free⁹ sensory material is subliminally perceived. The richer this precategorical sensory information, the greater the plasticity of the consciously perceived visual shapes. (1992, p. 34-5)

⁹ It can be assumed here that Tsur is referring to sensory material that is perceived as being individual (not part of a larger whole, as a gestalt would be).

Liberman's account demonstrates this principle in action: the relative 'plasticity' of the unencoded vowels means that they can be more effectively adapted to assist in the recall of information than the encoded stops, owing to the ability of the precategorical auditory information to function as a differentiating background. In his analysis, Tsur's association between the quality of 'plasticity' and an emotional quality seems to be largely symbolic, which is something of a weakness in the theory, especially since it is only supported at this point by gestalt theory (which we will examine more further on). However, since this work was published, modern neuroscience has taken some steps towards supporting this supposition that 'plasticity' has implications for emotion. Davidson *et al.* (2000) indicate in their research that neural plasticity – the ability of neural pathways to change and adapt – is a key component of emotional learning.¹⁰ In other words, it may well be possible that a reader may unconsciously utilise the recency effect of the precategorical information to more quickly connect with the emotional content of the poetic text, and this is where the comparative 'tenderness' of vowels and relatively unencoded consonants emanates from. It could be inferred that Tsur is right, but for the wrong reasons. The vowels and liquids are not inherently emotional, but they can be used to reinforce the emotional content of a text far better than the stops or the fricatives.¹¹

Tsur does not exclusively rely on a single feature such as relative encoding to support this hypothesis, however. He organises the data from Fónagy's study

¹⁰ Another correlating piece of data for the link between neural plasticity and emotion comes from a study by Strait *et al.* (2009), whose research indicates that the enhanced auditory plasticity observed in trained musicians allows them to be more adept at detecting emotion in speech.

¹¹ Voiced fricatives include *v* and *z*, voiced stops include *b*, *d* and *g*, voiceless fricatives include *f* and *s*, and voiceless stops include *p*, *t* and *k*. It should be noted at this point that 'stops' are also referred to in linguistics as 'plosives' and 'liquids' can be referred to as 'approximants'.

(1961: p. 194-218) along the basis of other such distinctive features including periodicity:

Thus, the sequence vowels, liquids and nasals, voiced fricatives, voiced stops, voiceless fricatives, voiceless stops, constitute a scale of decreasing periodicity or sonority, in this order... The optimal tender sounds are periodic (voiced), continuous, and relatively unencoded; the optimal aggressive sounds are aperiodic (voiceless), abrupt, and highly encoded. (1992, p. 32)

This scale is based on the following account from Fry (1970, p. 35-6): "In normal speech, all vowel sounds, semi-vowels, liquids and nasals are periodic sounds, while noiseless consonants are aperiodic." Periodic sounds present a smoother waveform to the ear, while aperiodic sounds are experienced as harsher with more erratic waveforms (Tsur, 1992, p. 44). Although he sketches a simple continuum here, Tsur acknowledges that the reality is far from clear-cut. For example, he points out how *r* falls on the periodic end of this scale but can be frequently associated with aggressive moods (1992, p. 32). For Tsur, this "double-edgedness" is of particular interest, and by putting these two scales of encoded-unencoded and periodic-aperiodic together, he is able to account for the supposed suitability of sibilants to both onomatopoeic imitation of noise *and* to a hushing quality. The former, he argues, derives from the aperiodic nature of the consonant, while the latter can be derived from the relative 'unencodedness' of the sibilants in relation to other consonants.

These examples are not the only expressive qualities he attempts to account for; he also discusses the perception of 'bright' and 'dark' vowels, along with 'metallic' consonants such as *k*. He also uses these insights to craft an interpretation of the perceptual blending of colour and sound in Rimbaud's 'Les Voyelles'. Like Stockwell, he interprets these emotional qualities as being generally the product of emotional correlations formed by the reader, but his research is particularly eager to explain why certain symbolic associations seem most appropriate to particular phonemes, which Stockwell cannot explain. Moreover, his study is built on cognitive science, psychology and linguistics to support his assertions, while Stockwell's claim to being cognitive hinges on the mere evocation of cognitive linguistics.

Although we might award round one to Tsur, a note of caution should be sounded about exactly how formalistic his work on sound patterns is. His theory behind the symbolic associations of phonetics in poetry, despite the inclusion of provisions for 'double-edged' qualities, is highly prescriptive. Moving forward to the case study chapters, what should be taken as the most important aspect of Tsur's work on sound qualities is that he accounts for them largely in terms of non-conscious processes. This is a helpful way of explaining why the qualities associated with the sounds often come across as merely intuitive perceptions about the nature of the text, rather than clearly articulated connections.

Figurative Language in Cognitive Poetics

In Stockell's *An Introduction*, discussion of figurative language occurs in a chapter where the focus is on 'conceptual metaphor'. This is the idea that "many ordinary expressions and ways of representing the world rely on metaphorical mappings, even when most of us do not realise the fact" (2002, p108). These include such well worn concepts as "life is a journey," "love is war," and "time is money." The idea comes from Lakoff and Johnson's *Metaphors We Live By* (1980), a fairly influential work that argues metaphorical relationships such as those mentioned in this paragraph actually represent direct mental connections between two concepts, in spite of the fact in terms of language a metaphor is most commonly understood as having a non-literal relationship between those concepts.

In light of this chapter's focus on how poetic technique can be articulated in terms of cognitive science, the question of how metaphor functions on a mental level seems quite pertinent. However, no sooner has Stockwell introduced cognitive metaphor than he takes the very idea of it for granted. Take his analysis of David Gayscone's 'And the Seventh Dream is the Dream of Isis':

there is an explosion of geraniums in the ballroom of the hotel
there is an extremely unpleasant odour of decaying meat
arising from the depetalled flower growing out of her ear
her arms are like pieces of sandpaper
or wings of leprous birds in taxis

In the first line of this extract, since any cognitive model of geraniums is unlikely to include an explosive feature, it is most likely that ‘explosion’ is read metaphorically as a poetic representation of the impact of the colour of the flowers. Indeed, I have just realised that the word ‘impact’ with which I just described the effect is another expression of the same conceptual metaphor SEEING IS BEING HIT. (2002, p. 113)

The question raised in response to this example is simple: what is the evidence that this use of ‘explosive’ suggests that the metaphorical mapping relies on a *conceptual* metaphor of “seeing is being hit”, rather than an *expressive* one? This is taken from Stockwell’s own terminology, where he defines “expressive” or poetic metaphors as tending to have “low clarity but a high degree of richness” (2002, p. 108), with ‘richness’ being defined as how many predicate relations are carried in the metaphor. We could easily argue that the predicate “there is an explosion” conveys a number of relations: the geraniums appeared suddenly, the geraniums presented a visual spectacle, the geraniums were scattered everywhere. Given this, it seems a much better candidate for expressive metaphor than a conceptual one, since ‘explosion’ does not automatically specify the semantic feature ‘HIT’. Indeed, this example is taken from a surrealist poem, and Stockwell’s point is to demonstrate how surrealist poetry disrupts the normal process of following conceptual metaphors to their conclusion:

This metaphorical resolution of the line, however, does not seem satisfactory in the context of the next few lines. Incoherence is introduced by the cognitive models which are next mentioned... none of which are

semantically connected with geraniums... however, recalling surrealist ideology, the framing world can be imagined as the metaphorical level in general. Framing the text as having unconscious or irrational status allows the strange images to be read literally. (2002, p. 113)

Before he has even given a sustained example of how conceptual metaphor works, he is discussing how the conceptual metaphor is supposed to *not* be read metaphorically. This would be less of a problem had Stockwell included some cognitive analysis to indicate *why* 'explosion is sight' is normally a conceptual metaphor, but he simply takes the theory for granted at this point. In light of this, his chapter contributes nothing to literary theory that could not be explained more simply by the fact that certain metaphors have become dead metaphors, and that surrealism subverts these clichés to disorientate the reader.

Tsur, by comparison, makes the distinction that the mere frequency of a metaphoric representation is not enough evidence to argue that it becomes the more direct representation in the cognitive hierarchy.¹² His use of semantic theory in a discussion of figurative language attempts to explain why certain metaphors function without entering consciousness, despite seeming to violate the ordinary principles of language when examined closely. Chapter Nine of *Towards a Theory* is replete with analysis and examples; but first they require some grounding from the introductory chapter.

¹² In the second (2008) edition of *Towards a Theory*, Tsur includes a chapter that is a response to Lakoff's *Contemporary Theory of Metaphor*. He critiques at length the theory of conceptual metaphor, more specifically its applicability to the study of poetry. He is rather hostile to the idea of conceptual metaphor offering anything that conventional literary criticism has not already been able to account for.

Contemporary linguistics analyses the meaning of words in terms of semantic features: Quillian (1966) proposed a hierarchical model that indicates how numerous features are categorised in a single word. The word 'terrier' for instance, includes the feature 'dog', and above that, 'animal', where animal is the highest level and terrier is the lowest. At each level, there are particular associations with each feature: 'animal' specifies it is capable of movement, 'dog' specifies it has four legs, and 'terrier' that it is small and typically very active. In ordinary language, using the word 'terrier' would specify these features associated with the lower level rather than the higher ones: that is, the sentence "we have a terrier" asserts that one has a small and active dog, rather than simply that one has a dog.

What Tsur makes of this seemingly trivial information is that figurative language makes use of this same principle of the lowest hierarchical features being the dominant ones. His example is as follows:

On the other hand, metaphors tend to delete all the higher features in the figurative term, and transfer the lowest feature(s) to the headword:

(5) His wife is a gem.

Gem is a hyponym of *stone*; the former is differentiated from the latter by the opposing features [\pm PRECIOUS]. In the process of understanding, the understander transfers in this sentence [+PRECIOUS] to *his wife*, and deletes all other, higher features that conflict with the features of the proper term (*wife*), such as [+MINERAL, -ANIMATE]. (2008, p. 14)

In simple terms, this analysis can be used to state explicitly why we understand “X is a gem” to mean that the subject is ‘precious’ rather than that they are, for instance, ‘made of stone’. Tsur then builds on these principles in Chapter Nine:

One must distinguish, following Brooke-Rose (1958, p155), “functional metaphors” (*A* is called *B* by virtue of what it does), and “sensuous metaphors” (*A* is called *B* by virtue of what it looks like or, less frequently, by virtue of what it sounds, smells, feels, or tastes like). In terms of [the boy next door is a mischief doer with exhaustible energy], *a ball of fire* in [the boy next door is a ball of fire] is a functional metaphor, in terms of [the boy next door is roly-poly, and has red hair], it is a sensuous metaphor. There seems to be in human nature an inclination to prefer functional to sensuous metaphors. (2008, p. 248)

Let us consider Stockwell’s example again, in light of this theory. Understanding that when used metaphorically, ‘explosion’ more naturally specifies an ‘attention-grabbing event’ rather than its physical characteristics, such as ‘a combustion’, is a far more convincing explanation for this being the default reading than it being an example of “conceptual metaphor”. The mind automatically processes this as a functional metaphor, and it is only after reading the sensuous content of the rest of the poem that the more sensuous interpretation as the flowers appearing in a scattered fashion occurs – an example of delayed decoding. Tsur postulates on the cognitive groundings of this theory:

One of the assumptions of cognitive poetics is that in relation to poetic language, cognitive mechanisms originally acquired for survival in man's physical and social environment have been turned to aesthetic ends. For the purpose of survival, it is less important to know what an object looks like than to know what it can do. This seems to be the reason for the cognitive tendency to first notice the functional elements in a figurative construction and only when this fails to account for the metaphor, to notice – if at all – the sensuous elements. In certain styles, of course, poets may capitalise on this preference, in an attempt to achieve the effects of markedness, by having recourse to sensuous metaphors. (2008, p. 248-9)

Tsur gives an example of this poetic preferencing of sensuous metaphor from Baudelaire's "Correspondances", a famous example of the Symbolist movement's focus on evoking sensations:

Vaste comme la nuit et comme la clarté.

(Vast as the night and as the light)

This simile somehow makes *light* equal *night* in an indirect manner and generates a powerful, though implicit oxymoron. The simile being "somehow" unsatisfactory, its oxymoron directs attention away from the simile to the fact that both night and light are treated in the lines as "vast". (2008, p. 259)

This figurative association is sensuous rather than functional, since functionally *night* and *light* are opposites of one another. Instead, the metaphorical mapping compares how they are *experienced*, in terms of the sense of their scale.

When one compares the basic approach they take towards figurative language, Tsur's emerges as more thorough and accounts for the preferencing of different types of metaphor in a method that is demonstrably cognitive, in the context of adaptive use of survival mechanisms, rather than Stockwell who simply relies on the notion that particular metaphors just happen to be the way by which people tend to ordinarily think. As with his research on sound, Tsur does not simply accept that some figurative associations occur more frequently than others, he attempts to account for it within cognitive theory. In terms of what the two approaches contribute to literary criticism, Stockwell's only restates the principle of cliché, while Tsur's allows for functional criticism of the perceived effects of symbolist and surrealist poetry in relation to their stated ambitions.¹³

'Feeling' in Cognitive Poetics

This last example does not directly compare the two scholars in terms of a direct aspect of reading, but rather how they treat the issue of feeling in literature. Given that cognitive poetics can call upon the resources of modern psychology and neuroscience to clarify outstanding problems in literature, it seems exceptionally suited to articulating feeling in terms of cognitive processes and hence applying a

¹³ The example from Baudelaire receives contextual elaboration in Chapter 20 of *Towards a Theory*, where Tsur considers this sonnet as an example of 'ecstatic poetry', in a systematic investigation that not only considers the figurative aspects of the poem but also the use of sound and the effects of its syntactic construction in the achievement of this ecstatic state.

measure of objectivity to the topic. This concern is something Stockwell touches upon in the final chapter of *An Introduction*:

However, reading can also be an emotional process, a felt experience, even offering a bodily frisson of excitement and pleasure, the prickling of hairs on the back of your neck and a line or an idea or a phrase or an event that makes you catch your breath, and remember it for a long time afterwards. (2002, p. 151)

In some ways this passage recalls Nabokov's idea of reading "with the spine", as mentioned in *Lectures on Literature*. Having captured the reader's excitement with this eloquent summary of the allure of reading, Stockwell then launches into a discussion of the aesthetic effect which forms the focus of his chapter – the effect of 'transportation':

First there must be a reader (traveller) who is transported. This involves the reader adapting themselves to new conditions, taking on assumed characteristics and attitudes, even assumed perceptions and beliefs, in order to make sense of the literary scene. In order to engage in the simple deictic projection that allows us to track a character's point of view, we must take on an imagined model of that other point of perception and belief. This ranges from a very simple adjustment, such as understanding that the 'you' addressed to the character is not really a direct address to the reader, right up to being able to model and make predictions about views and beliefs we do not actually hold. Even in extreme cases (such as reading

Hitler's *Mein Kampf*), part of the sense of distaste and revulsion for most people comes with having to engage with ideas that are not naturally their own and feeling too close to them for comfort. It is the same cognitive process that makes reading literary narratives or lyrical expressions of a poetic persona attractive and pleasurable, since it involves an aspect of 'dressing up' in another's ideas. (2002, p. 152-3)

Two things stand out here. First, this passage includes absolutely no theory from cognitive science, psychology or neuroscience that would provide empirical or even theoretical grounding for these ideas: lacking this, it amounts to nothing more than a layman's account of some of the basic ideas offered by reader-response theory. Two, it represents a massive step back from the bold territory of feeling that Stockwell alluded to in his opening to the chapter: we have gone from talking about physically feeling the hairs on your neck stand on end to merely imagining yourself in a character's place. To draw a link between the two, Stockwell would presumably need to provide some kind of evidence from cognitive science that suggested it was possible to articulate how the physical senses could be physically stimulated by the mere act of imagination, but nowhere does he do so.

Instead, his chapter focuses entirely on the act of being 'transported' into the world of the text, which is very much a reduction of the ambition signalled at the start of the chapter. Being 'transported' or 'immersed' in a text as he discusses it is not necessarily linked incontrovertibly to experiencing an emotion, a physical sensation, or even being captivated by a phrase. Stockwell could address cognitive

poetics to elaborating even further upon the emotional and sensory effects of literature, but instead he tackles the issue of emotional and physical feedback in an extremely roundabout manner, in a way that does not diverge too far from an ordinary critical discussion of identifying with a character.

What is more, his analysis of the effect of 'transportation' barely yields anything of significance. He offers a lengthy analysis of the basic plot complexities within *The Importance of Being Earnest*, which only points out the most obvious details and rechristens the shifts in narrative flow as 'framing':

Keeping track of all these facts is quite a feat for the audience. Not only do enactors proliferate as different permutations of relationships emerge or are disconfirmed, but the audience has to monitor each particular permutation and identify it correctly within the belief frame of the appropriate character. Even more complexly, they have to remember different apparent belief frames as held by the enactors 'Jack' and 'Earnest', and also have to recall different points in the ongoing frame modification at which different belief frames were held earlier in the play. (2002, p. 161)

This is an extremely roundabout way of saying that the play is a farce, and central to its appeal is the ability to keep the audience in a suspended state of indeterminacy. Nothing at any point in this analysis indicates how the audience could be as emotionally involved or feel direct sensory stimulations in the manner he signals at the beginning of the chapter. Moreover, once again there is nothing cognitive about this analysis.

By contrast, Tsur immediately grounds any attempt to discuss the feeling associated with literature within an actual cognitive template, although I question how useful some of his associations actually are. First, let us take his discussion of the perception of how “gestalt-free” qualities reflect the sense of the other-worldly or ineffable, from the first chapter of *Towards a Theory*:

In much Romantic and Symbolist poetry, on the other hand, low-categorized meanings can arouse the impression of being in the presence of the ineffable, the other-worldly, of getting a glimpse into some super-sensory, spiritual reality. On the semantic level, low-categorized information, or attitude, or affect, can be present in poetry as what Ehrenzweig (1965) called gestalt-free or thing-free qualities; as weak gestalts, or as meaning components in words, or as abstracted from the things they described. (2008, p. 21)

To articulate this, ‘low categorised’ specifies the same as ‘pre-categorised’ in the analysis of the sound stratum. To paraphrase Tsur, this kind of information normally passed over by consciousness is perceived as ‘gestalt-free’ according to the laws of gestalt psychology, which is that consistent units tend to be perceptually grouped together. As such, information that is hard to categorise arouses the perception of being in the presence of something inaccessible to consciousness.

There is a problem with this being used as a psychological grounding for the source of the effect, in that gestalt psychology has been criticised in recent years for the tendency to be descriptive rather than explanatory. In the area Tsur draws upon, the law of Prägnanz describes how elements that form a 'strong' figure tend to group together perceptually, and conversely disorganised elements are perceived as a 'weak gestalt'. To use this to state that diffuse or low-categorised elements are perceived as having a lack of tangible presence is only relabeling the effect, without giving any explanation of *how* the gestalt-free quality arouses the feelings of the ineffable.

It is not that the laws of gestalt psychology seem to be untrue, only that they have no direct recourse to the science of perceptual processing and are thus somewhat vague (Mather, 2009, p. 277). So it is not that Tsur is wrong, but that he is exhibiting the same tendency as Stockwell has for using a new descriptive term to categorise an effect without fully articulating how it functions cognitively. In further elaboration on the effect of 'diffuse' features in the updated version of *Towards a Theory*, he has more recourse to modern cognitive science:

In the nineteen-seventies I came across cognitive psychologist Robert Ornstein's study of consciousness, in which he put forward the conception (which became the 'received view') that while logical and rational consciousness is typically related to the left hemisphere of the brain, meditative consciousness is related to the right hemisphere... Orientation, emotions and mystic experiences are all typically right-hemisphere activities (cf. *supra*, Chapter 15). Regarding the poetic structure discussed

in the present section, I claimed, the emphatic deixis evokes a coherent scene arousing imagined orientation which, in turn, transfers a significant part of language processing from the left to the right hemisphere, rendering the related percepts more diffuse. Orientation involves not only a perception of the surrounding space, but also a sense of one's own body position. (2008, p. 612)

Tsur used this principle to build on the idea that 'mystic poetry' relies on activating the right hemisphere in his work *On the Shore of Nothingness* (2003). By this time, he was able to introduce evidence from neuroscience to support Ornstein's supposition, taken from a brain imaging camera study of Franciscan nuns and Tibetan monks at prayer:

The left orientation area is responsible for creating the mental sensation of a limited, physically defined body, while the right orientation area is associated with generating the sense of spatial coordinates that provides the matrix in which the body can be oriented. In simpler terms, the left orientation area creates the brain's spatial sense of self, while the right side creates the physical space in which that self can exist. (Newberg *et al.*, 2001, p. 28)

The imaging found that the left orientation area was inhibited during meditation, allowing the meditator to reduce this sensation of a 'physically defined body'. Moreover, the study produced a cognitive account of how 'active meditation', stimulated by chants or mantras, took place in the brain:

In [active meditation], since the intention is to focus more intensely on some specific object or thought, the attention facilitates rather than inhibits neural flow. In our model, this increased neural flow causes the right orientation area, in conjunction with the visual association area, to fix the object of focus, real or imagined, in the mind. (Newberg *et al.*, 2001, p. 120)

Tsur connects this with another insight from Jensen *et al.* (2000), where it was found that mapping the brain activity during the processing of concrete nouns showed that such cognitive activity involved intense activation in the areas of the right hemisphere known to be responsible for spatial schemata (Tsur, 2003, p. 96). As such, he theorises that an effect that mildly mimics the process observed in meditation – the inhibition of the left orientation area and the resulting heightening of the awareness of the body’s surroundings – can be achieved in literature by a marked use of concrete terms. In a chapter from *Towards a Theory*, on ‘Poetry and Altered States of Consciousness’, Tsur deals with an extract from Whitman’s ‘Song of Myself’ that has been described by Goodblatt (1990) as “meditative”:

The smoke of my own breath,
Echoes, ripples and buzzed whispers... loveroot, silkthread, crotch and
vine,
My respiration and inspiration... the beating of my own heart... the
passing of blood and air through my own lungs,

The sniff of green leaves and dry leaves, and of the shore and dark-
coloured sea rocks, and of hay in the barn,
(Song of Myself, 1860 II:13-17)

Note how this poem moves very rapidly between a myriad of concrete nouns: crotch, vine, blood, leaves, and so on. If Tsur is correct about the principle that concrete nouns can activate spatial schemata, it would stand to reason that this poem can create the meditative affect to which he is referring. Although his research on this aspect of mystic poetry came after his work on the 'meditative poetry' of Whitman in *Towards a Theory*, he connects these two aspects of his research in the revised edition (2008, p. 616)

Compared to Stockwell's discussion of how the reader can be 'transported' by literature, Tsur seems to have created an explanation for the phenomenon of being in a meditative or 'out of body' state based around evidence from cognitive science. The flaw underpinning his logic, however, comes from his interpretation of brain activity. As a brain imaging procedure, fMRI only shows the 'peak activations' of neural networks: they do not map out the equally significant processes that go on beneath them. As such, it is not scientifically rigorous to take one study that discusses activation in a particular area and directly compare it to another study of the same area but with a different effect being studied. It would be possible to design a study that tested whether these two effects happen in conjunction, but of course this is not what Tsur does. This kind of speculation should be treated not as clear evidence that poetry is capable of producing a meditative effect. This is not to say that it does not exist, and Tsur does seem to have found an intuitively

important connection between the methods of meditation and the categorical nature of images in 'meditative' poetry. It only demands more evidence for some concrete connection between the two.

Comparison of their two studies reveals that neither scholar's methodology actually comes close to meaningful articulation of any feeling as long as the 'cognitive' part of the discussion amounts to little more than evoking the terminology of cognitive science. But although Tsur may leave us somewhat wanting because his explanation of this meditative effect relies on a link between two findings of cognitive science that are not causally linked, he at least attempts to push the discipline in an extremely challenging direction. In a critique of cognitive poetics, David Miall states: "Given that literary reading is so often imbued with feeling, it is surprising that feeling has still received so little attention from cognitive poetics. Of the major scholars in this field, only Reuven Tsur and Keith Oatley have made significant contributions" (2006, p. 43).¹⁴ Having compared Tsur to Stockwell, who represents the broader trend in cognitive poetics, on how they tackle the issue of feeling, and also considering the insights generated from Tsur's work on the expressive qualities of sound patterns, one can see his point.

¹⁴ Oatley, nominally a psychologist straying into literary studies (the opposite of most scholars of cognitive poetics) has published such relevant works as: 'A Taxonomy of the Emotions of Literary Response and a Theory of Identification in Fictional Narrative' (1995), 'Meeting of Minds: Dialogue, Sympathy and Identification in Reading Fiction' (1999), 'Emotions and the Story Worlds of Fiction' (2002). Oatley also contributed the final essay 'Writing and reading' to *Cognitive Poetics In Practice* (2003).

A Functional Methodology for Cognitive Poetics

Having observed the basic distinction between the methodology employed by Stockwell and Tsur, we can now return to examining the influence of the two on the actual published field of cognitive poetics. In spite of the preference for the methodology of Tsur that this chapter has been driving towards; the majority of contemporary studies in cognitive poetics have adopted ideas from Stockwell, and before him, Turner, who is equally reliant on ideas such as conceptual metaphor. Consider a recent publication by Wójcik-Lesse (2010), which purports to be the “first full-length cognitive poetic study of a single author”, in this case, Elizabeth Bishop. When Wójcik-Lesse asserts the usefulness of ‘cognitive poetics’ to the study of this particular author in her introduction, she cites Turner and Lakoff as the major influences on the theory, and footnotes Tsur merely as the one who came up with the title. Another recent collection of papers on the subject: *Cognitive Poetics: Goals, Gaps and Gains* (Brône and Vandaele, 2009), offers Tsur a little more credit and includes an essay of his on metaphor, but only three of the other scholars in the collection engage with his ideas.

The other major essay collection for cognitive poetics, Gavins and Steen’s *Cognitive Poetics in Practice* was released in 2003, intended to be companion volume to Stockwell’s *An Introduction* by mirroring the focus of each of his chapters with an essay on each subject. Tsur contributed an essay ‘Deixis and Abstractions’, but later criticised the way in which Stockwell uses the concept of deixis for demonstrating cognitive poetics in *An Introduction* (Tsur, 2008, p. 595-622). More

importantly though, the introduction to this collection provides a clue as to the general discord between their two approaches:

There are then, two kinds of cognitive poetics. One is more tightly related to the rise of cognitive linguistics, and is represented in part by the chapters by Burke and Crisp. There are two further chapters in our collection which also take this cognitive linguistic inspiration for their starting point, those by Hamilton (Chapter 5) and Stockwell (Chapter 2), but we will return to these in a moment. The other kind of cognitive poetics is more generally oriented towards cognitive science. It includes work by psychologists such as Oatley and Gibbs as well as by poeticsians who have been attuned to cognitive science for a long time, such as Tsur. (2003, p. 5)

My interpretation of this notion that there are 'two kinds' of cognitive poetics is that Stockwell, aided by Margaret Freeman (2000), took Tsur's very specific use of 'cognitive' and 'poetics' and applied it as an umbrella term for a much broader trend in literary study. Where Tsur explicitly meant 'cognitive' to mean the application of cognitive science to the structure of literary texts and their perceived effects (Tsur, 2008, p. 1), Stockwell uses it in the broadest possible sense to incorporate any approach that discusses our 'cognition' of a literary work. Where Tsur borrowed Bierwisch's (1970, p. 98-99) definition of 'poetics' as "the particular regularities that occur in literary texts and determine the specific effects of poetry" (Tsur, 2008, p. 1), Stockwell used poetics in the more general sense of a 'system', after Aristotle. If this analysis makes it sound like Stockwell's concept of cognitive poetics would encompass literally any literary study that offers an

account of how we perceive a text, that unfortunately seems to be the case. A review of the companion volumes by Jackson (2005) puts it fairly bluntly: “Why learn a whole batch of new terms in order to do what I take it that most of us already know how to do: close read literary texts?” (2005, p. 532).¹⁵

Oddly enough, Jackson makes the point that he recommends these books to anyone who has an interest in what kind of work is being done in cognitive poetics, even though his opinion is that it does not contribute much that we cannot already do practically as close reading. Jackson is a notable critic of the general cognitive trend in literature, but he also has expressed some interest in its potential. In an earlier article titled ‘Issues and Problems in the Blending of Cognitive Science, Evolutionary Psychology, and Literary Study’ (2002), he argues that there is indeed an ideal process for combining cognitive science and literary study to achieve interdisciplinary outcomes:

In what seems to be the ideal model, the brain is shown by neuroscience to perform a certain function in a certain way, the architecture of a certain mental capacity is shown by cognitive science to operate in a way analogous to the brain function, and a psychological or cultural artifact or process is shown to operate in the same analogous way. (2002, p. 165)

¹⁵ Tsur’s opinion has a similar ring to it: “Nor would I regard a statement like: “Reading is creative in this sense of using the text to construct a cognitively-negotiable world, and the process is dynamic and constantly shifting” as sufficient justification for calling my work cognitive. I make this comment not because Stockwell’s work doesn’t endorse my conception of cognitive poetics, but because if one accepts this as cognitive poetics, then nothing remains in linguistics or literary theory that is not cognitive poetics. Certainly, everything that is language or literature goes through the cognitive system of authors, readers and critics.” (2008, p. 601)

Further on, Jackson cites Tsur's 'Some Cognitive Foundations of "Cultural Programs"' (2002), stating: "In some ways this piece is exemplary." (2002, p. 170). He elaborates:

In the last paragraph of his essay Tsur alludes to just what I mean when he speaks of the metaphysical conceit as a form of "adaptation devices turned to aesthetic ends" that tend to show up in times of "great social, political, and ideological upheaval." If cognitive literary studies is to become truly interdisciplinary (on which more below), its explanations of difference will have to involve some dialectical interaction between cognitive universals and variations of cultural forms, for example, great social, political, or ideological upheaval. Otherwise, though the reasoning may be convincing, it will still read as if we are being persuaded only that a cognitive affect is present in a literary object, and that is not likely to interest most scholars in the humanities. (2002, . 170-1)

One need not fully agree with Jackson's dictum that cognitive literary study needs to address itself to 'great social, political or ideological upheaval' in order to be relevant (and this sentiment recurs in his review of Stockwell), though it certainly could be useful. What is significant though is that Jackson approves of Tsur's idea that the metaphysical conceit represents an adaptive device turned to aesthetic ends, since this is a major claim that Tsur reiterates many times throughout *Towards a Theory*, for more techniques than just the metaphysical conceit.

The general conclusion we can draw from this is that Tsur's methodology

represents the more promising model for considering how cognitive science can be integrated with literary study. It is by no means perfect, with some examples of psychological concepts being pushed too far as a universal explanation for the perceived effect (most notably gestalts). However, it has not only demonstrated compelling application of empirical evidence from cognitive science to supplement theory, which distinguishes it from Stockwell's approach; but also it addresses itself to answering a perceivable gap in literary theory, rather than simply rechristening the terminology for existing theory. It can be used for more categorical discussion of the effects of poetry that are likely to be unconsciously observed.

This is not to suggest that there is nothing of value in the work of Stockwell, Turner and their contemporaries, but that their research is of less relevance to this thesis because it does not successfully engage with the questions of feeling in literature and attempting to broaden our understanding of literary aesthetics.¹⁶ By contrast, Tsur engages with some of these questions and offers a framework for a 'cognitive' investigation that can be further built upon.

¹⁶ It is worth mentioning that Stockwell and Turner are both actively criticising literary study for failing to address itself to everyday life and everyday people. In *Reading Minds* Turner describes literary criticism as "an exclusive Disney World" (1991, p. 4), while in *Texture* (2009) Stockwell begins by stating: "literary scholarship has become an arid landscape of cultural history" (2009, p. 1) and that: "discussions of literature become ever more abstruse, further distant from the works themselves, divorced from the concerns of natural readers outside the academy, self-aggrandising, pretentious, ill-disciplined and, in the precise sense, illiterate" (2009 p1). For critics who are engaged in the business of spruiking a whole new method of literary study, it is somewhat ironic that their solution to this problem largely of supplanting existing terms with new ones that 'natural readers' would still be generally unfamiliar with. A far more convincing approach would be to demonstrate extensively what a cognitive approach could offer that traditional theory cannot.

Cognitive Poetics and the Novel

The last part of this chapter is aimed at surveying some more of the ground covered by cognitive poetics and related 'cognitive' scholars. A general focus on addressing cognitive poetics to poetry specifically characterises not only Tsur's work but also the bulk of cognitive studies in general. Furthermore, those that have addressed themselves to prose have been more interested in articulating the very traditional aspects of the novel such as character, plot, and narrative. *In Practice* (2003) includes Semino's analysis of Hemingway's 'A very short story' but focuses on articulating it in terms of the 'mental space' and 'possible worlds' theories, and is essentially dedicated to plot rather than aesthetics. Emmott's essay in the same volume is addressed to the idea of 'reading for pleasure', analysing the Roald Dahl short stories 'Dip in the pool' and 'Taste', *The Hanging Garden* by Ian Rankin and *Tulip Fever* by Deborah Moggach. This focuses largely on how plot reversals are handled by readers according to 'frame theory'. Gavins' essay concerns Donald Barthelme's *Snow White* and how it can be analysed in 'text-world theory'. This paper is largely an articulation of the narrative structure of a postmodern novel in a very linguistically driven fashion. These approaches are regularly characterised by their use of diagrams to illustrate relationships between text, reader and character, and they are not concerned with the aesthetic effects of the text.

Similarly, *Goals, Gain and Gaps* (Brône and Vandaele, 2009) contains an essay by David Herman applying cognitive theory to narrative analysis, which again applies frame theory to works like *Dubliners*, as well as *The Incredible Hulk*. The remaining

references to fiction in this collection are largely incidental ones, and not about anything that might be considered 'poetic'. The trend in these two collections can be summarised as follows: where an example of a very basic structural element is given it generally comes from poetry; where a more elaborate textual structure is being considered it may come from either poetry or prose. A recent compilation of essays, *Mindful Aesthetics* (2013), while not labelled a study in 'cognitive poetics' includes some cognitively grounded discussion of works by J. M. Coetzee, George Eliot, Lloyd Jones and Ian McEwan.¹⁷

Other cognitive studies focused on novels have taken very particular focuses. *Strange Concepts and the Stories they Make: Culture, Cognition, Narrative* (Zunshine, 2008) uses the theoretical model of childhood essentialism (which is a psychological term for a cognitive bias formed during childhood) to compare narratives across different historical and cultural contexts. *Cognitive Poetics and Cultural Memory* (Gronas, 2011) is more aesthetically focused, but it argues largely that the aesthetic pleasure we derive from literature arises out of a cognitive need to store and transmit vital information, appropriating Dawkins' theory of memes and critiquing Russian Literature in terms of how it functions as a 'mnemonic'. *The Language of Stories: A Cognitive Approach* (Dancygier, 2012) uses mental space theory and 'blending' (another of Turner's theories) to identify what makes stories 'special'. There is a trend emerging here, it must be said, to direct cognitive literary study to explain why literature is so pervasive in human society – another example

¹⁷ This collection of essays is an ideal place to find discussion of how cognitive literary study fits alongside with post-structuralism. Because my case studies are drawn by and large from the era prior to post-modernism (with the possible exception of Nabokov), and also because I am more focused on the suitability of cognitive science to expand the techniques of close reading, I have left discussion of post-structuralism to more capable hands.

being Nabokov biographer Brian Boyd's *On the Origin of Stories: Literature, Cognition and Fiction* (2009).

Boyd's work delves into arguments for the pervasiveness of literature across human history that are structured in terms of the idea that literature must have an evolutionary value in order to have survived. This latter trend has been dubbed 'Literary Darwinism', and other relevant works include David Dutton's *The Art Instinct: Beauty, Pleasure, & Human Evolution* (2009). In what can only be described as a scathing account of this new direction, Jonathon Kramnick (2011), puts Literary Darwinism in the simplest of terms:

Literary Darwinism has two defining features: an adherence to evolutionary psychology as an explanatory theory of human behavior and a weariness bordering on hostility to the current state of the humanities. (2011, p. 317)

Some parallels can be drawn to the relative hostility Stockwell and Turner display towards the contemporary discipline of literature, and echoes of the explanation of literary devices being adaptive cognitive mechanisms occur in the writings of Tsur. But for all intents and purposes, Literary Darwinism should be considered a related but distinct critical trend from cognitive poetics. One that, as Kramnick so clearly articulates, fails to live up to its own promise:

Literary Darwinism promises to show that literature played an important role in the evolution of the species, but what adaptive function could be served by bare themes, by subject matter as such? Failing to describe how

“the adapted mind produces literature,” literary Darwinism often falls back on more general and even genteel notions of improvement. The move has a certain logic. Literary Darwinism has a difficult time finding a place for literary forms in the story of adaptation under selection pressure. At the same time, it is committed to the proposition that literature must have helped us become the species we are. The result of this curious imbalance is that literature simply is about who we are in a relatively straightforward and uplifting sense. Literary texts provide “lively and powerful images of human life suffused with the feeling and understanding of the astonishingly capable human beings who wrote them.”... Yet value laden ideas like complete humanity have no meaning in the terms of evolutionary or any other science and tell us very little about any cultural artifact. And this is precisely my point. With the turn to a kind of pabulum, Darwinian criticism seems not very scientific at all. (2011, p. 345-6)

It remains only to be said that this thesis does not purport to be related in any way to the ideas of Literary Darwinism.

One particular study rates mention because it includes two of the same texts this thesis has chosen to focus on, and I wish to differentiate the sphere of investigation for my analysis. Another work by Zunshine, *Why We Read Fiction* (2006) includes some interesting interpretations of *Mrs Dalloway* and *Lolita*, included in the context of applying cognitive theory to a discussion of what motivates us to read (a similar ambition to Gronas, although they approach it through different paradigms). The reading of *Mrs Dalloway* is intended to illuminate levels of

'intentionality' with a view to explaining why people feel challenged by the novel. In general, the primary cognitive theory informing this work is 'theory of mind', which refers to our ability to find explanations for how people behave in terms of their mental state. With regards to *Mrs Dalloway*, Zunshine does explain how the novel is complex on the level of how we understand the experience of the characters. However Woolf's use of sound and syntax in the creation of aesthetic engagement adds to this complexity and there is the potential to articulate this effect more closely. Most of all, Zunshine does not discuss the novel's Impressionism or the non-conscious effects of the 'stream of consciousness'. In regards to *Lolita*, she discusses how we are 'tricked' into accepting Humbert's perspective. I believe there is a chance to discuss this from another angle, by articulating how the novel utilises perceptual tension as a literary device, and how an understanding of the sensory information of *Lolita* is relevant to the novel's appeal.

Also in regards to *Mrs Dalloway*, we must consider 'How Stories Make Us Feel: Towards an Embodied Narratology' (Gallese and Wojciehowski, 2011) because it too includes a brief analysis of the novel, but focuses on the 'feeling of body' rather than the theory of mind. This paper contains an intriguing reference to neuroscience in the form of 'mirror neurons', which can activate neural pathways associated with actions by simply observing that action in another being (2011, p. 12). Unfortunately, this paper does not stipulate exactly how the mirror neurons could be used creatively or adaptively: if anything, it seems like this amounts to a more scientific explanation for the reader's imaginative identification, and

subsequently the analysis of *Mrs Dalloway* is extremely brief and reads like a very conventional piece of criticism.

To conclude this chapter, what differentiates the focus of this thesis is that it finds far more value in the work of Tsur than of his colleagues in what has been called cognitive poetics. The gap this work aims to fill concerns the aesthetic engagement with the modern novel, using a similar approach of taking techniques from the cognitive sciences to shine new light on the appeal of such works as *Lolita*, *Mrs Dalloway* and *On the Road*. In the process I hope to demonstrate the value of cognitive literary study, with the focus being on using cognitive science to fully articulate perceptual effects, rather than simply providing theoretical models for literary study that already exist under different names. The next chapter, which looks at how neuroscientists have themselves approached the question of aesthetics, is equally crucial to building a methodology that can direct this line of inquiry.

Chapter Two: Neuroaesthetics

The Neurological Turn

As we observed in the previous chapter, cognitive poetics has had its share of territorial disputes and criticisms from observers – not unusual for an emerging theoretical approach. These attacks, however, pale in comparison to what the even newer theoretical mode known as ‘neuroaesthetics’ (amongst other names) has attracted in such a short space of time. Part of this is timing: neuroscience has already been targeted towards explaining many aspects of human behaviour including economics, politics and now the arts. Consequently, concerns are growing about a potential over-application of such an approach. Popular controversies such as the question of whether neuroscience-backed ‘brain training games’ have serious benefits, or the downfall of Jonah Lehrer (whose work spanned both art and neuroscience) over claims of plagiarism and falsification of quotations, have made it a highly contentious topic in general. *New Yorker* columnist Gary Marcus notes the sudden rise of blogs criticising the claims and application of neuroscience (2012).

Not only has neuroaesthetics emerged at a difficult juncture for cognitive science, but it has attempted to bring scientific reasoning to the arts and the general question of what we find beautiful. This gives rise to several points of concern: firstly, the idea that a reductionist approach will not account for individual tastes and push a ‘correct’ version of how to interpret art. Secondly, that scientific inquiry will reduce the aesthetic impact of the arts by removing an essential element of

mystery from the process. Finally, there is the concern that scientists are ignorant of the concerns and endeavours that the humanities have contributed to our understanding of the arts, as it is their primary domain. Writing for his *Nature* column 'Muse', Phillip Ball goes as far as titling his critique of the new theory: 'Neuroaesthetics is killing your soul' (2013).

For one thing, to suggest that the human brain responds in a particular way to art risks creating criteria of right or wrong, either in the art itself or in individual reactions to it. Although it is a risk that most researchers are likely to recognize, experience suggests that scientists studying art find it hard to resist drawing up rules for critical judgements... Even if neuroaestheticists refrain from making similar value judgements, they are already close to falling prey to one. Conway and Rehding discuss this field primarily as an attempt to understand how the brain responds to beauty. As they point out, beauty is not a scientific concept — so it is not clear which questions neuroaesthetics is even examining. (2013)

Ball notes a key issue with the very term 'neuroaesthetics', that aesthetics has traditionally not been simply about defining beauty, but has also been a byword for taste and judgement. These somewhat elitist perceptions have imbued a healthy dose of concern in the humanities for the emergence of an aesthetic 'standard', particularly since the advent of reader-response theory. Moreover, Ball is dismissive of what neuroaesthetics can actually offer us:

And what will a neuroaesthetic 'explanation' consist of anyway? Indications so far are that it may be along these lines: "Listening to music activates

reward and pleasure circuits in brain regions such as the nucleus accumbens, ventral tegmental area and amygdala”. Thanks, but no, thanks. Although it is worth knowing that musical ‘chills’ are neurologically akin to the responses invoked by sex or drugs, an approach that cannot distinguish Bach from barbiturates is surely limited. (2013)

The concerns are all on display here: neuroaesthetics risks making value judgements about what is in good taste, it ignores key debates and approaches in the humanities, and it can render complex objects in unflatteringly simple terms.

Ball is not entirely critical: he credits Semir Zeki, the founder of the Institute of Neuroaesthetics at UCL as one with ‘a deep and sincere appreciation of art, and an awareness of the limitations of the scientific approach to the way we experience it’ (2013). It is also important to note that Ball has a foot in both camps: in 2010 he published *The Music Instinct*, which draws heavily on the work of neuroscientists studying the processes behind our experience of music¹⁸. Indeed, the title of his article – “Neuroaesthetics is killing your soul” – seems overly dramatic when it is considered that Ball is not against the idea of the arts and neuroscience being brought to the same table.

Ball’s concern that it is not clear which questions neuroaesthetics purports to examine is compounded by the fact that several different scholars are writing in parallel on neuroscience and the arts, and they do not all use the same terms to describe their work. Barry (2006) refers to ‘Perceptual Aesthetics’, Ramachandran

¹⁸ In the article discussed here, Ball cites ‘a rash of books and articles’ that proclaim “(in a profoundly ugly trope) ‘this is your brain on drugs/music/religion/sport’”. His article does not make clear precisely how his own work differs, other than in its choice of title.

(2011) to the 'Universal Laws of Aesthetics', and Zeki (2011) to 'Neuroaesthetics'. For his part, Zeki provides the following questions in a statement on Neuroaesthetics listed on the Institute's website: "What is art, why has it been such a conspicuous feature of all societies, and why do we value it so much?" These seem to form his terms of inquiry.

One issue with neuroaesthetics that Ball does not touch on is that, at least for the present, the majority of studies that can be categorised as 'neuroaesthetics' are dealing with the visual arts as their primary source for examples and evidence. This is despite 'aesthetics' being a term that can also be applied to film, music and literature. Brattico and Pearce (2013) have recently collated the various neuroscience studies of the experience of music under the title 'The Neuroaesthetics of Music', but literature has lagged behind dramatically in attracting studies in neuroaesthetics. Literary study in this domain has tended to either be corralled under the banner of cognitive poetics, Literary Darwinism, or otherwise defies categorisation. The way neuroaesthetics favours the visual arts as case study can be explained by the specialisation of major theorists, such as Zeki or Margaret Livingstone, who are both neurobiologists with a research background in the mechanisms of visual perception. Comparatively, linguistics offers the most direct correlation from cognitive science to literary study – as can be seen in how eagerly the models of linguistics have been taken up by the scholars of cognitive poetics.

This is not to say that there has been some movement in the direction of incorporating literature and poetry into neuroaesthetics: most notably, A.S. Byatt

(2006, p. 247-258) wrote in favour of using neuroscience to explain the poetry of John Donne. Tellingly, the response was one of scathing criticism, particularly evidenced by an article by Raymond Tallis (2008) titled 'The Neuroscience Delusion':

But there is something more important (and more worrying) in Byatt's neuroaesthetics than its failure to explain the distinctive effect of certain poems. By locating aesthetic pleasure in the stand-alone brain, and indeed in small parts of such brains, and invoking data obtained in part from animal experimentation, she is performing a reduction that even the most hard-line Marxist literary critics might shrink from. In her discussion of "The Cross", she argues that the comparison Donne makes between different crosses, including the crossed sutures in the skull containing the brain, "is nonsense at any level of logic except the brain's pleasure in noticing, or making, analogies". Note: the brain's pleasure – not the poet's pleasure. John Donne the poet is reduced to John Donne the brain and the latter to "Everybrain". (2008, p. 3)

The extent to which Byatt is claiming a universal reading of Donne based on neurobiology can be debated, but once again we see the familiar concerns of reductionism, universalism and the prescription of readings on display. Tallis is even more scathing than Ball: he uses the piece to toss a barb at Zeki for coming up with a neural definition of "love", while lamenting the general trend of literary critics being taken in by neuroscience (although curiously enough the only example he offers is Norman Bryson, who has a foot in both the literary and art

theory camps). He offers his unambiguously derisive view on the general application of neuroaesthetics:

When they are presented with such claims from respectable sources, it is hardly surprising that even intelligent, though scientifically naive, critics believe that the future of aesthetics is in neurology. If neuroscientists are claiming to find love among the neurones, one can hardly blame critics for being deceived into imagining that neuroscience can explain something as complex as reading or writing a poem, and that the experience of a poem, and the differences between the experiences of different poems, will be found in the tingling of a certain constellation of neurones. Little wonder they forget that different people read quite differently; or that there is a difference between reading a poem for a first, a second, or a hundredth time; or between reading it as a naive, delighted, or bored reader, and reading it as an erudite critic. (2008, p. 4)

Tallis' critique of neuroaesthetics may be scathing, but it does raise an important point. A purely universalising view of the neuronal processes underlying the experience of reading literature would be problematic for acknowledging the varying interpretations of critics and readers, as much as it would be an example of reductionism. Rather than deter us from seeking answers in neuroscience, as Tallis suggests, this should be taken as an encouragement to use this knowledge of the differences between individual brains as a means to give unconventional or challenging readings of a text more authenticity, by giving readers and critics the tools to understand mental processes behind their own intuitions.

In order to demonstrate the potential value in the application of neuroaesthetics to literary study, let us examine some of the existing theorists and their work. The bulk of these are critiquing the brain's experience of 'beauty' in the visual arts, so as well as considering how valuable these are to the study of art, it is worth asking whether any of these ideas might have relevance for literary study as well.

Ramachandran's Laws of Aesthetics

Ramachandran is a neurologist whose writing and research examines the broad field of what makes up the 'human experience'; he has applied the methods and insights of neuroscience to topics such as creativity, consciousness, language, evolution and philosophy. He has also addressed his research towards aesthetics:

The solution to the problem of aesthetics, I believe, lies in a more thorough understanding of the connections between the thirty visual centers in the brain and the emotional limbic structures (and of the internal logic and evolutionary rationale that drives them). Once we have achieved a clear understanding of these connections, we will be closer to bridging the huge gulf that separates C.P. Snow's two cultures – science on the one hand and arts, philosophy and humanities on the other. (2004, p. 59)

He does not stipulate exactly what is the 'problem' with aesthetics in the work this quote is taken from; although in a later book *The Tell-Tale Brain* (2011, p. 200), he seems preoccupied with the search for principles uniting different styles of art.

Ramachandran puts forward the claim that there are nine 'universal' laws of aesthetics, based on contemporary understanding of the neurological processes.

These are:

1. Grouping
2. Peak shift
3. Contrast
4. Isolation
5. 'Peekaboo', or perceptual problem solving
6. Abhorrence of coincidences
7. Orderliness
8. Symmetry
9. Metaphor

Of these laws, he writes:

Some I believe are genuinely new, or at least haven't been stated explicitly in the context of visual art. Others are well known to artists, art historians and philosophers. My goal is not to provide a complete account of the neurology of aesthetics (even assuming such a thing were possible) but to tie strands together from many different disciplines and to provide a coherent framework. (2011, p. 199)

There are several things that must be acknowledged before we proceed to analysis: firstly, Ramachandran's methods as a neuroscientist draw more on

observing subjects with abnormal behaviour than on more 'high tech' methods like electroencephalography and fMRI, which makes him an interesting counterpoint to the charge that neuroscience relies too heavily on brain scans for information. Secondly, he does not call his work in this area 'neuroaesthetics', he is simply a neuroscientist writing about aesthetics (his work has influenced others writing on neuroscience and aesthetics, as we will see). Thirdly, by 'universal' he means any ability that emerges in all human brains that develop normally can be considered 'universal' (2011, p. 218).

Finally, Ramachandran appears to limit his theory to the visual arts, as these constitute the majority of his examples. Yet this is confused by his choice quotations on the subject of 'art' which headline the two chapters dealing with aesthetics; Picasso's "Art is a lie that makes us realise the truth," and Wagner's "Art is the accomplishment of our desire to find ourselves among the phenomena of the external world." Both of these quotations are ambiguous in whether they refer to merely the visual arts or 'art' as a broader concept of human creativity and expression. Ramachandran's book is subtitled: "A Neuroscientist's Quest for What Makes Us Human", so it seems the reader is easily led to believe he is speaking about the wider definition of art. Ramachandran's own definition barely makes things clearer:

First, I want to make a distinction between art as defined by historians and the broad topic of aesthetics. Because both art and aesthetics require the brain to respond to beauty, there is bound to be a great deal of overlap. But art include things such as Dada (whose aesthetic value is dubious), whereas

aesthetics includes things such as fashion design, which is not typically regarded as high art. Maybe there can never be a science of high art, but I suggest there can be principles of aesthetics than underlie it. (2011, p. 193)

This paragraph displays the very pitfall that Ball cautions against: making elitist assumptions about what is considered 'high art'. On the one hand, Ramachandran wants to assert that the principles of neurological aesthetics apply to both 'high art' and more common applications of human creativity, but on the other he denies that Dada has any aesthetic value. This is a problem for neuroaesthetics in general: how to account for the impact of 'art' that is not explicitly meant to be considered 'beautiful', yet nonetheless still has an impact on our senses.

Ramachandran goes even further into the territory of what is the difference between high art and 'kitsch' by stating:

In this chapter, I'll speculate on the possibility that real art – or indeed aesthetics – involves the proper and effective deployment of certain artistic universals, whereas kitsch merely goes through the motions, as if to make a mockery of the principles without a genuine understanding of them. (2011, p. 195)

One can only imagine the reaction of Ball and Tallis to such a statement. Ramachandran demonstrates fully the danger of reductionist thinking in blending neuroscience and the arts, all while whimsically pondering how a theory of art can be "complete" without accounting for distinctions between high art and kitsch

(2011, p. 195). It must be said that Ramachandran's book is pitched at a more general reader than an academic one, but that hardly excuses the ill-founded accusation that the theory behind the arts cannot be complete while ambiguity prevails over questions of what is canonical and what is kitsch.

Having shown the pitfalls of ultimate reductionism in neuroaesthetics, it is still worth examining what Ramachandran's 'laws' can contribute to our understanding of the reaction of the brain to art. Grouping, according to Ramachandran, draws on the same principles of gestalt theory that Tsur references frequently in his work. It is essentially the brain's need to unite perceptually similar elements, but Ramachandran contends that there is a sensation of delight accompanying this process: "Vision scientists frequently overlook the fact that successful grouping feels good. You get an internal "Aha!" sensation as if you have just solved a problem" (2011, p. 202). He gives an example of how grouping can affect the impression of a Renaissance painting, in the way that the eye groups similar colours across the painting. This is essentially an involuntary process that has basic evolutionary value:

They found that if a monkey looks at a big object of which only fragments are visible, then many cells fire in parallel to signal the different fragments. That's what you would expect. But surprisingly, as soon as the features are grouped into a whole object (in this case, a lion), all the spike trains become perfectly synchronized. And so the exact spike trains *do* matter. We don't yet know how this occurs, but Singer and Gray suggest that this synchrony tells higher brain centers that the fragments belong to a single object. I

would take this argument a step further and suggest that this synchrony allows the spike trains to be encoded in such a way that a coherent output emerges which is relayed to the emotional core of the brain, creating an “Aha! Look here, it’s an object!” jolt in you. (2011, p. 205)

Ramachandran does not speculate on how significant this effect is within the overall aesthetic experience of art. That said, considering his earlier claim to use these laws to distinguish between ‘kitsch’ and ‘high art’ (not to mention ‘high art’ and ‘fashion’), it is surprising to see him note that this same principle is responsible for the decision to pair a red scarf with a red skirt (2011, p. 205). From this analysis, it is difficult to see what value this principle presents to aesthetic theory, as ‘like objects go well together’ is not specific enough to be used in meaningful analysis.

His second law, ‘Peak shift’, is a term taken from behavioural ecology, which Ramachandran uses to explain what might otherwise be termed ‘abstraction’ in aesthetic theory – although he relates it to the effects of caricature (2011, p. 207), so we should keep hyperbole in mind as another aesthetic attempt he might be offering an explanation for. According to Lynn *et al.* (2005, p. 1300), peak shift is “a behavioral response bias arising from discrimination learning in which animals display a directional, but limited, preference for or avoidance of unusual stimuli.” Ramachandran offers an example where rats that are trained to discriminate rectangles from squares prefer the rectangles that are least proportionally similar to squares (2011, p. 206-7). He does not, however, offer a neurological explanation for this behavioural phenomenon, other than suggesting that it could ‘probably’ be related to mirror neurons (2011, p. 208). His argument for how it relates to art is

built on another example of peak shift: a herring gull chick that preferred a stick with three stripes of red over its mother's beak:

The mother gull has a prominent red spot on her long yellow beak. The gull chick, soon after it hatches from the egg, begs for food by pecking vigorously on the red spot on the mother's beak... In fact Tinbergen found that you don't even need a beak; you can just have a rectangular strip of cardboard with a red dot on the end, and the chick will beg for food equally vigorously... You can readily fool these neurons by providing a visual stimulus that approximates the original... To his amazement, Tinbergen found that if he had a very long thick stick with three red stripes on the end, the chick goes berserk, pecking at it much more intensely than a real beak. It actually prefers this strange pattern, which bears almost no resemblance to the original! (2011, p. 209-10)

Ramachandran notes that this example, of what he terms 'ultranormal stimuli' (2011, p. 212) the stick with three stripes, is "hardly an exaggerated version of a real beak" (2011, p. 211), and as such it is unclear exactly which neurological processes are behind it. This however is not enough to stop Ramachandran drawing his next conclusion:

This brings me to my punch line about semiabstract or even abstract art for which no adequate theory has been proposed so far. Imagine that the seagulls had an art gallery. They would hang this long thin stick with three white stripes on the wall. They would call it a Picasso, worship it, fetishize it, and pay millions of dollars for it, all the time wondering why they are turned on by it so much, even though (and this is the key point) it doesn't

resemble anything in their world. I suspect this is exactly what human art connoisseurs are doing when they look at or purchase abstract works of art. (2011, p. 212)

There are a number of major errors with this reasoning. First of all, the seagull example shows how an infant, non-human subject responds to a stimulus it associates with food, as opposed to an adult, human subject responding to a stimulus that is not necessarily associated with food. Secondly, there is more to abstract art than just its 'ultranormal' quality. Livingstone, who we will examine more closely further into this chapter, discusses how colour luminance is significant to Picasso's *The Tragedy* (2002, p. 36-7) and spatial imprecision is important for Cubism in general (2002, p. 77) to name just a few other perceptual processes it can evoke. Ramachandran however treats 'peak shift' as a general principle rather than a specific neural mechanism that he can relate to individual aspects of Picasso's work.

By trial or error, intuition or genius, human artists like Picasso or Henry Moore have discovered the human brain's equivalent of the seagull brain's stick with three stripes. They are tapping into the figural primitives of our perceptual grammar and creating ultranormal stimuli that more powerfully excite certain visual neurons in our brains as opposed to realistic looking images. This is the essence of abstract art. It may sound like a highly reductionist, oversimplified view of art, but bear in mind that I'm not saying that's *all* there is to art, only that it's an important component. (2011, p. 212)

Not only is this reductionist, as he admits, but it adds nothing to what we already know about abstract art, which is that it can make forms appear ‘ultranormal’ or ‘hyper-real’. This is something of the reverse of the process we saw in the previous chapter, where literary scholars appropriated the terms of cognitive science without fully advancing our knowledge of how they function. Had Ramachandran been able to offer an explanation of the mechanisms of peak-shift that would allow one to predict why a rectangle elicits a better reaction than a circle, it could be of some use to critical theory.

The pattern continues with his later laws. Contrast and metaphor are obviously well known to both the visual arts and literature, but Ramachandran does not offer much of an insight beyond reiterating that they are neurologically based phenomenon and therefore important. He also has two laws which brush up rather uncomfortably against one another: ‘abhorrence of coincidences’ is defined as the brain’s desire to find a plausible alternative to symmetrical arrangements (such as a tree perfectly positioned between two hills), whilst going on to note the preference for symmetry at other times. There is no attempt here to speculate on how two such ‘universal’ laws can contradict one another and in what circumstances one might be favoured over another, which is a pity, as it would constitute a welcome attempt to bring the possibility of individual tastes into the picture. When Ramachandran does examine the notion of individual tastes (2011, p. 213), he suggests that we all share and undergo the same responses, but that for some of us other cognitive mechanisms inhibit aesthetic appreciation from taking place: again, this is an extremely reductionist approach.

Overall, Ramachandran's 'universal laws' are of dubious value to neuroscientists, art historians and literary critics alike. They are insightful only so far as offering some speculation on the evolutionary origins of certain principles, but not applying detailed accounts of how the artist can exploit these principles. Ultimately it fails his own test, as one could easily find examples of several or more of his laws in a work of art that would otherwise be considered 'kitsch'. Ramachandran may well be stimulating debate with his theory, but it seems to be such reductionism as this that is also stimulating the hostility with which some critics regard the intervention of neuroscience in the art world.

It is possible though that Ramachandran's explanatory powers are not quite up to articulating the link between these neurological mechanisms and the aesthetic traits he recognises as being significant. It is important to keep this in mind as we examine some of his contemporaries in the study of neuroaesthetics.

Zeki and Livingstone

Having seen how Zeki's name is mentioned in critiques of neuroaesthetics, let us now turn to examine his actual theories. What should become immediately apparent is that his approach differs slightly but significantly from Ramachandran's extremely prescriptive claims:

Nor do we sufficiently acknowledge that the almost infinite creative variability that allows different artists to create radically different styles arises out of common neurobiological processes. By probing into the neural

basis of art, neurological studies can help us to understand why our creative abilities and experiences vary so widely. But it can only do so by first charting the common neural organization that makes the creation and appreciation of art possible. (2001, p. 99)

Rather than focusing on how neurological functions are directly responsible for our perception of 'art' as beautiful or pleasant, Zeki is careful to acknowledge that art varies radically, and suggests that neuroscience can help account for this by understanding the mechanisms that make art possible. He also offers a striking opinion about the role of artists:

Similarly, long before the visual motion center of the brain (area V5) was charted, kinetic artists composed works that, in different ways, emphasized motion and de-emphasized color and form. Their compositions were thus admirably suited for stimulating the cells. This is why I believe that artists are, in a sense, neurologists who unknowingly study the brain with techniques unique to them. (2001, p. 99)

The ultimate aim of an artist, according to Zeki, is to find a form of expression that elicits the most reaction in neurological terms from as great an audience as possible. Calling artists 'neurologists' seems something of a long bow to draw: it does not automatically follow that attempting to communicate or express as an artist does precludes a desire to understand the mechanisms underneath that process. Another writer who claimed this same link existed between artists and neurologists was the now discredited Jonah Lehrer in his bluntly titled work

Proust was a Neuroscientist (2008). Zeki puts a more acceptable proposition not long afterwards.

But visual art also obeys the laws of the visual brain, and thus reveals these laws to us. Of these laws, two stand supreme. (2001, p. 99)

The term 'laws' should once again flag some concern about reductionism, but let us examine what he has to suggest:

The first is the law of constancy. By this I mean that the function of the visual brain is to seek knowledge of the constant and essential properties of objects and surfaces, when the information reaching it changes from moment to moment. The distance, the viewing point, and the illumination conditions change continually, yet the brain is able to discard these changes in categorizing an object. Similarly, a great work of art tries to distill on canvas essential qualities. A major function of art can thus be regarded as an extension of the function of the brain, namely, to seek knowledge about the world. Indeed, it was an unacknowledged attempt to mimic the perceptual abilities of the brain that led the founders of Cubism, Pablo Picasso and Georges Braque, to eliminate the point of view, the distance and the lighting conditions in their early, analytic period. (2000, p. 99-100)

This analysis can be found somewhat wanting. There is a difference between merely 'seeking knowledge about the world', and 'distilling' that knowledge into the most essential properties, as Zeki puts it. The former might be considered a

behavioural trait in individuals, the latter is, based on his outline above, an essential function of the brain's perceptual processes. One could also take issue with the suggestion that a great work of art is one that 'distills' its most essential properties – it could easily be argued that for a style of art such as realism, minimal 'distillation' is involved on the artist's part; instead it is the myriad of detail which is essential to its impact. 'Constancy', rather than 'distillation', seems to be the unique insight from the neural world that Zeki offers to explain the aesthetics of art. Elsewhere, Zeki writes of the importance of constancy:

A simple and excellent example of perceptual constancy is provided by what is usually called color constancy. This refers to the fact that the color of a surface changes little, if at all, when the surface is viewed in different illuminants. A green surface, for example, remains green whether viewed at dawn, at dusk, or at noon on a cloudy or sunny day. If one were to measure the amount of red, green and blue light reflected from the leaf in these different conditions, one would find considerable variations. Yet the brain is somehow able to discount these variations and assign a constant color to a surface. (2011, Chapter 1)

Further into this same work, Zeki explains that the significance of this property of 'constancy' is essentially that colour as we often think of it is actually better understood as a 'language of the brain' rather than as a property of the physical world. Here we can see again how the criticisms of neuroaesthetics have some justification, as Zeki tends simply to relocate aesthetic experience to neurological

terminology without actually attempting to show how it can offer new insights. Let us also consider what Zeki's second law has to offer:

The second supreme law is that of abstraction. By abstraction I mean the process in which the particular is subordinated to the general, so that what is represented is applicable to many particulars. This second law is intimately linked to the first, because abstraction is a critical step in the efficient acquisition of knowledge; without it, the brain would be enslaved to the particular. The capacity to abstract is also probably imposed on the brain by the limitations of its memory system, because it does away with the need to recall every detail. Art, too, abstracts and thus externalizes the inner workings of the brain. Its primordial function is thus a reflection of the function of the brain. (2001, p. 100)

Zeki, it seems, would have a different view to Shlovsky, who argued that 'distilling' or 'abstracting' objects (as Zeki puts it) into their most notable features to permit the economy of perception was antithetical to the purpose of art (1965: 12). Like Ramachandran, Zeki's laws are rather reductionist in scope, attempting to derive the most essential properties of art from some key perceptual processes of the brain. What this suggests is that neuroaesthetics could be more successful if its theorists were less concerned about coming up with prescriptive 'laws' and more devoted to enhancing our understanding of some of the effects of aesthetic engagement.

It is worth mentioning at this point that despite Zeki's implicit focus on visual art, he is also concerned with literature in his neuroaesthetics. But his critique of Balzac's *The Unknown Masterpiece* in Chapter Fourteen of *Splendors and Mysteries of the Brain* (2011), while offering a credible reading of the novel, contributes very little to our understanding of Balzac and his writing that we could not have arrived at without using cognitive science. Rather disappointingly, Zeki mostly focuses on the relationship between Balzac and Cézanne as the lynchpin in his analysis, rather than bringing his understanding of visual perception fully to bear.

In spite of this criticism of Zeki's laws, his work does provide some cognitive explanations for a few famous examples of what might be termed optical illusions, such as the Kanizsa cube and the Rubin vase. He discusses these in terms of their 'ambiguity'. The Rubin vase, which can appear as either two faces or a vase, is explained by Zeki in cognitive terms:

Imaging experiments have shown that the switch from one percept to another during the presentation of bi-stable images (when the stimulus remains the same but the percept changes) is indeed accompanied by a shift in the activated areas. For example, a shift from faces to vases entails a shift in the site of activation, from the region of the visual brain that is specialized for the recognition of faces to the one that is specialized for object recognition. (2011, Chapter 10)

This ability to explain how an optical effect works by exploiting, either consciously or non-consciously on the part of the artist, a feature of design in the visual system

is a better example of how neuroaesthetics can contribute to our understanding of art. It can offer a concrete explanation that also outlines a principle of the mind which can in turn be applied to explain other artistic effects, and that artists can be mindful of when attempting to create work with aesthetic impact.

This a direction pursued further by Margaret Livingstone, whose work *Vision and Art: The Biology of Seeing* (2002) is most informative when it comes to explaining the defining features of art in terms of the visual system. We mentioned her take on luminance in connection with Ramachandran's 'laws'. She tackles some intriguing notions in her work, such as the idea that the expression on the *Mona Lisa* varies depending upon the where the viewer's eye falls on the canvas. This she attributes to the effect of low visual acuity (what is otherwise known as 'resolution') in the areas not in the centre of our gaze:

The fact that our vision has the highest acuity in the centre of gaze does not mean that vision in the rest of the visual field is inferior – it's just used for different things. Foveal vision is used for scrutinizing highly detailed objects or surfaces, whereas peripheral vision is used for organising the spatial scene, for seeing large objects, and for detecting areas to which we should direct our foveal vision. Our foveal vision is optimised for fine details, and our peripheral vision is optimised for coarser information. (2002, p. 68-71)

Like the different sites of visual cortex activation involved in the Rubin Vase, this discusses a feature of design in the visual system, and how it can be exploited for

artistic effect. Livingstone discusses how this relates to the idea that the *Mona Lisa's* smile diminishes depending upon the point of viewing for the audience:

The fact that her expression changed systematically with how far my center of gaze was from her mouth suggested to me that her lifelike quality might not be so mysterious after all, but rather that her smile must be differentially apparent in different ranges of image detail. To see how the *Mona Lisa's* smile would look at various eccentricities, I processed an image of her face to selectively show fine, medium or coarse components of the image. A clear smile is more apparent in the coarse and medium component images than in the fine detail image. This means that if you look at this painting so that your center of gaze falls on the background or her hands, *Mona Lisa's* mouth – which is then seen by your peripheral, low resolution vision – appears much more cheerful than when you look directly at it, when it is seen by your fine detail fovea. (2002, p. 71)

This explanation is extremely compelling, and illustrates exactly how neuroaesthetics can be of functional value to criticism and art theory in general. By explaining how an aspect of design such as the separation between foveal and peripheral vision can be exploited to create a visual effect that gives the painting an almost human quality – that is, being able to appear to vary the facial expression and thus convey a different emotion – Livingstone articulates the intuition of critics such as Gombrich (1950) who refers to the “amazing degree to which *Lisa* looks alive,” and “Like a living being, she seems to change before our eyes and to look a little different every time we come back to her”. Moreover, an

explanation such as this avoids the reductionism demonstrated by Ramachandran: although it explains the effect associated with the *Mona Lisa* in terms of a neurological process, it accounts for varying responses within its own critical scope. A person who only briefly glances at the *Mona Lisa* may focus their gaze on the centre of her face and thus pick up only the smile, whereas a viewer who takes time to cast their eyes across the portrait is more likely to get the sense of a changing expression on the canvas.

Since Livingstone's work deals explicitly with visual arts, we will return to her critical insights into art in Chapter Four, when we consider the links between Virginia Woolf's literary Impressionism and the Impressionist painters. For now, we can continue in this vein towards another important neuroaesthetic theorist.

Barry's Perceptual Aesthetics

The work of Ann Marie Barry is also particularly focused on visual forms of communication; one of her most notable books is *Visual Intelligence: Perception, Image, and Manipulation in Visual Communication*. (1997). Some of her more recent work on aesthetics and perception is of interest to us because she takes some aspects of the work of Ramachandran and Zeki, but builds upon their theories. In a paper titled 'Perceptual Aesthetics' (2006) she works towards creating a model that accounts for interactions across different areas of the brain that are in some way responsible for aesthetic impact.

The brain is a meaning-seeking mechanism, and this suggests that recognition of pattern is at the heart of all perception, the process by which we make meaning from both stimuli from the outer world and prior experience stored in memory. As our brains have evolved, the mechanism that has kept us alive and learning is the brain's reward system, guiding us toward what we need to have or do to survive, warning us to avoid danger. Aesthetics, which might be defined as the pleasure we find in the experience of art, is based on this reward system and represents a level of pleasure that involves all of the brain's basic systems to some degree: left and right hemispheres, emotional-cognitive pathways and processes, and neurological networks. Perceptual aesthetics, then, seeks to trace the sense of pleasure we get from art through natural perceptual processes, to isolate those mechanisms at work, and in the process, to understand more fully how art enhances the quality of our lives. (2006, p. 135-6)

One can take some issue with the definition of aesthetics that Barry offers here, as once again it defines aesthetics in terms of what is pleasurable and potentially omits categorising art that makes employs sensations which are not pleasurable. Barry compounds this further by discussing how aesthetic theories share a common idea that pleasure from images leads to euphoria (2006, p. 136). She does immediately demonstrate an awareness of several mechanisms of perception and the mind: pattern recognition, the reward system (dopamine pathways), left and right hemispheres, and the emotional and cognitive methods of processing, all of which she identifies as being relevant to the aesthetic experience.

Although largely focused on visual perception, Barry touches upon the notion of aesthetic experience being common across different artistic media. She refers to evidence from the research on the observable effects of music by Ludwig (1966) and Blood and Zatorre (2001); the latter of which demonstrates that music can have both emotional and physical effects on the body, including cardio rhythms, nervous system activity and breathing. Barry takes some great strides towards addressing the way in which different mediums display and convey similar themes with her discussion of 'images':

Neurologically, an image may be defined as a neural network whose potential meaning is realised through synchronous firing. As neurologist Antonio Damasio (1999) describes, "From the perspective of neurobiology... the brain makes neural patterns in its nerve-cell circuits and manages to turn those neural patterns into explicit mental patterns which constitute the highest level of biological phenomenon... images". Thus, although a picture is an image of sorts, it does not constitute all of imagery. Images are neuron clusters of meaning, a kind of "euro" currency that allows free trade between sensory experience and the image maps of past experience. (2006, p. 138)

This definition of imagery in terms of neural networks is particularly important. By distinguishing between 'pictures' as specific, visual stimuli or representations; and 'images' as a neuronal representations of meaning, it offers a compelling explanation of how the term 'imagery' extends so readily across literature, poetry,

visual art, film and even music. The *Penguin Dictionary of Literary Terms* offers the following definition of imagery in literary criticism:

The terms *image* and *imagery* have many connotations and meanings. Imagery as a general term covers the use of language to represent objects, actions, feelings, thoughts, ideas, states of mind, and any sensory or extra-sensory experience. (Cuddon, 2008, p. 413)

Relating this to Barry's concept of imagery as derived from Damasio, we can see how this definition illustrates the principle of an image being principally a cluster of meaning, not necessarily bound to a specific sensory domain. Imagery can and often does appropriate visual stimuli, but imagery can also attempt to evoke more complex forms of mental representation: those "feelings, thoughts, ideas," as they are noted by the dictionary. By way of example, consider this extract from *On the Road* where Sal prepares to head back to New York, having abandoned his West Coast ambitions:

With the bus leaving at ten, I had four hours to dig Hollywood alone. First I bought a loaf of bread and salami and made myself ten sandwiches to cross the country on. I had a dollar left. I sat on the low cement wall in back of a Hollywood parking lot and made the sandwiches. As I laboured at this absurd task, great Kleig[sic] lights of a Hollywood premiere stabbed at the sky, that humming West Coast sky. All around me were the noises of this crazy gold-coast city. And this was my Hollywood career – this was my last

night in Hollywood, and I was spreading mustard on my lap in the back of a parking lot john. (*OtR*, p.93)

The passage is replete with imagery, much of it visual: the Klieg lights associated with film, the crude materials of the wall he sits on, the meagre ingredients of his sandwich. At no point though does Kerouac explicitly tell the reader that Sal feels insignificant and rejected in this scene: he simply says, "This was my Hollywood career." The juxtaposition of the different images, Sal's banal and solitary surroundings against the glamorous symbols of Hollywood and its gregarious quality suggested by the humming and noise, is what allows Kerouac to allude to Sal's dejection with Hollywood. In Barry's neurological terms, what happens is that the words on the page stimulate the individual networks that represent the images of Hollywood, and for a reader who is familiar with the frequency of rejections from Hollywood, the images of Sal's poverty and isolation help to realise additional meaning by firing at the same time. This allows us to better understand the neural mechanisms behind imagery and the effect of juxtaposition.

As with cognitive poetics though, it is important not simply to take what is already known and accepted in literary criticism and simply recategorise it using labels taken from cognitive science. Barry demonstrates how this knowledge can add to our critical toolbox in her analysis of images. She highlights that while pictures and imagery are distinct, 'mental imagery' does make use of the visual system:

Even the congenitally blind, it seems, dream in visual images. Although senses other than the eyes gather information from the outside world, they

may process it partly by borrowing mechanisms in the unused visual cortex. In cases of early-onset blindness, reading Braille script also utilises part of the visual cortex. And because the brain continually rewires itself, parts of the visual cortex may be adapted for sound localisation skills as well. If blindness occurs in the eyes, in fact, this doesn't mean that the brain is incapable of representing line, color or perspective. (2006, p. 138)

Barry cites as examples artists who can still make striking paintings or other forms of visual art despite being blind, including one who is blind from birth. This evidence that the brain is capable of forming mental representations in the visual domain without direct visual stimulation should be of great interest to the study of aesthetics, as Barry explains:

Imagery, it seems is a product of brain plasticity, not of retinal stimulation (Gazzaniga, 2004), and it is this characteristic that allows words to be turned into mental images in literature, and tactile information into paint on a two-dimensional surface. Although it is believed that the brain's plasticity does decrease with age, it never disappears. The principle of image formation seems to be a basic characteristic of how the brain forms meaning, from the most basic to the most complex and sophisticated level. (2006, p. 138)

One can see how Barry's discussion of aesthetics, despite the referent terms coming primarily from the visual sphere, is not as limited to visual arts as that of Ramachandran or Zeki. This information is useful to literary studies, as it not only

reinforces the understanding of imagery as a literary device that can be used to create 'mental images' and evoke other sensations; but also because by discussion of brain plasticity it also goes some way towards accounting for the varying aesthetic response across different individuals. Barry herself does not state it here, but plasticity is essentially the antithesis of Ramachandran's argument that we all undergo the same neural processes when viewing art, only for some of us the responses are inhibited. The brain's overall capacity for plasticity varies in individuals, particularly with age (Mahncke *et al.*, 2006), so one can see a plausible explanation for how imagery can be more evocative for some than it is for others.

Earlier in this chapter, we discussed Ramachandran's theory of aesthetics: one of his principles was "grouping", which he referred to as an "aha!" moment. Barry also takes up this idea in her own analysis: she refers to research by Crick (1994) who suggests that visual awareness occurs when neurons fire in a pattern at a rate of 40hz.

Metaphorically speaking, this 40hz is the frequency at which the light bulb goes on and meaning occurs. The moment when the brain experiences the "ah-HAH!" is a gestalt in two senses: first, the cluster network has meaning in itself as an entity different from the sum of its parts, and second, as it embodies the potential for larger meaning beyond itself... In this most basic perceptual process, the achievement of visual meaning from visual inputs results in aesthetic pleasure simply for the sake of problem solving alone as everything comes together in a unified concept. (Barry, 2006, p. 139)

While explained slightly more lucidly than as attempted by Ramachandran, the issue remains that it is not directly articulated how this results in aesthetic pleasure – at least in terms of neural mechanisms. In referring to it as a gestalt, it evokes the problem associated with gestalt psychology that it tends to simply reiterate principles of organisation rather than fully explaining the mechanisms behind them. Barry does attempt to move beyond this limitation:

Although brain development “is controlled and guided by the precise machinery of genes” (Gazzaniga, 1998, p. 4), all learning is accomplished through chemicals that draw neural axons toward the right destination and that are reinforced emotionally through direct connection with the brain’s limbic structures. The key to creating a lasting memory or concept that retains its neural circuitry (ie: learning) lies in the limbic system, which gives continual emotional feedback to every part of the visual process, adding an emotional weight that thereafter affectively biases related perceptions. (2006, p. 139-40)

This analysis suggests that if there is aesthetic pleasure associated with making connections in the manner of perceptual grouping, as discussed by Ramachandran, it stems from feedback generated by the emotional systems which associated positive emotion with perceptual consistency. This at least denotes a particular mechanism that can be considered responsible for the aesthetic principle, but it still does not suggest exactly how understanding this mechanism could be used in a nuanced and articulate explanation of aesthetic reaction to a work of art. This is

possibly due to reasons of brevity in Barry's work, as she moves on to discuss some further systems of the mind and their contribution to aesthetic response.

Forms of Tension

From this section of Barry's analysis, we can see how her model of perceptual aesthetics is more promising than Ramachandran's, even if it does continue to show some elements of reductionism and shares of Ramachandran's tendency to offer neurological insights without fully explaining their unique contribution to aesthetics. It also offers more to the field of literary study than Ramachandran does. Continuing with Barry's work, we find that she moves directly into discussing an element of aesthetic response that is best identified with literature: namely the story.¹⁹

Story, as the term is used here, parallels both what neuroresearcher Gazzaniga has called the interpreter, a left-brain function that keeps our personal sense of our own continuous identity intact, and what E.M. Forster (1927) in his *Aspects of the Novel* called *plot*, the inner causal and logical structure that holds together the various events. Gazzaniga (1998) describes the interpreter as a kind of public relations agent that puts its spin on everything meaningful to us. Immediate emotional response utilizes stored emotional memory to prepare each conscious thought, and the interpreter fills in the gist of memory with plausible details. Both the writer

¹⁹ While we are skipping over Barry's discussion of 'symmetry' as the next aesthetic principle due to constraints of space, it is worth briefly noting that she suggests the search for visual symmetry also feeds into our appreciation of stories with a symmetrical plotline of 'rising action' and 'falling action'. (2006, p. 140-2)

and the neurologist refer to the imposition of a causal and logical structure that connects events in a meaningful way, and both recognize conflict as an essential tension in emotional and cognitive response. (2006, p. 142)

To unpack this terminology, what Barry is suggesting is that the brain appropriates a function used for tracking continuous identity to attempt to impose its own logical structure upon a series of events, so the desire to find a consistent narrative is part of aesthetic reaction to the story. Additionally, she suggests that the perception of conflict or tension is an essential part of this aesthetic response:

The mandate on symmetry of plot – and the tension that is resolved through it – is traceable to at least Aristotle, who defined narrative tension as an essential part of the satisfaction of drama. (2006, p. 142)

It is worth mentioning here that Aristotle also figures in neurological art history as one of the earliest theorists, whose early ideas are now being re-examined in light of existing knowledge of the mind (see Onians, 2007, p. 18-29). 'Narrative tension' is how we might best define this particular mechanism of aesthetic response. While narrative technique is largely dependent upon a particular writer – consider the contrast between Nabokov's use of a chronological narrative and a singular point of view with Woolf's style of dramatic shifts in temporal sequence and point of view – narrative tension is what the reader imposes on the work as they take it in. The author can of course attempt to facilitate this narrative tension through their ordering of the plot, by making events fall in a manner that keeps the tension consistent but also hints towards resolution, so that the reader can impose a

similar order on the story. This principle is touched upon by Nabokov in his lectures on literature when he says: "What should be established, I think, is an artistic harmonious balance between the reader's mind and the author's mind." (1980, p. 4)

Again though, much of this material largely recasts already understood theories of narrative and plot in cognitive terminology. What holds the most potential to add to the critical toolbox is the idea that tension is a device not restricted purely to narrative, where it is represented as conflicts or character arcs in which the reader feels a desire for resolution; but also as a device that influences other elements of aesthetic response to a text. Barry suggests that tension has greater significance than just plot:

The tension associated with unresolved ambiguity so fundamental to literary and visual art is part of the mind's innate search for synthesis. This search forms the basis for aesthetic response. Contemporary theorists Williams and Newton, in fact, propose that a balance between the emotional and the cognitive is the key to all satisfaction in life, and they fault a post-Renaissance, rational-cognitive cultural bias for much of the mental restlessness of modern life. (2006, p. 143)

There are two things to note here. First, that we can understand how a variant of literary ambiguity, where two possible meanings are in opposition with one another (as opposed to multiple but consistent meanings), functions on an aesthetic level in that it provokes a sense of tension for the reader. Tension thus

can be seen to influence the level of semantic processing as well as the mechanism behind imposing narrative order. Secondly, the suggestion that a cultural bias towards the rational response creates a 'mental restlessness' is intriguing for aesthetic theory: it creates the possibility of a form of tension that relies on a potential disharmony between emotional and rational conclusions, and the cultural preference to value the rational over the emotional. This is similar to ambiguity in that it stems from inconsistent but equally compelling meanings co-existing in a text, only in this case it is a more complex form of processing.

As an example of this latter form, consider how in *Lolita* there exists a significant source of tension for the reader: between the temptation to accept Humbert's lust for Lolita as a natural form of sexual desire, and the rational understanding that his actions are unlawful and immoral. As Lionel Trilling puts it, in reading *Lolita* it is all too tempting to "condone the violation" (1958, p. 14) that Humbert commits. Although the rational response is culturally preferred, the emotional response is hard to discount. Barry references the work of neurologist Joseph LeDoux, who specialises in emotions, to account for their impact. Here is what LeDoux has to say on the connections between the amygdala (a region involved in emotional processing) and the cortex (the upper area of the brain more involved in rational processing), and how arousal mechanisms bias our attention towards the emotional response:

You *can't* have a sustained feeling of fear without the activation of arousal systems. These play an essential role in keeping conscious attention directed toward the emotional situation, and without their involvement

emotional states would be fleeting... particularly important to the persistence of emotional responses and emotional feelings is the activation of arousal systems by the amygdala. Amygdala-triggered arousal not only arouses the cortex but also arouses the amygdala, causing the latter to continue to activate the arousal systems, creating the vicious cycles of emotional arousal. (1996, p. 298)

LeDoux's point is that emotional response of this kind, despite links to the cortex, is ultimately self-sustaining and very difficult to shut off. As such, where there exists a serious disconnect between an emotional response and a rational response, the mind cannot simply discount the emotional response despite what our cultural biases might dictate, and must ultimately push on for resolution. This form of tension, bound to a form of literary ambiguity that can be manifested in the response to a character, a theme or an event in the text, is one system responsible for what drives a reader to search for this resolution. It shows that the impetus to read a novel is not necessarily bound to narrative tension, and for a novel such as Kerouac's *On the Road* it explains how the lack of sophisticated plot development is compensated for by other forms of tension in the novel. These include the tension created by Sal's perpetual search for states of enlightenment and transcendence that he never completely finds, as well as rhythmic and thematic structures that emulate the musical tension employed by jazz – which we will examine more closely in the coming chapter.

For now though, let us conclude this analysis of Barry's work with a few more notes on what she has to say about tension, as well as the interaction of different

pathways of neurological response (such as emotional-rational). If we recall the issue flagged at the outset of our discussion of Barry, the tendency to describe aesthetic impact purely in terms of pleasure, we find that although she does not acknowledge it openly, this analysis of tension has provided something of a more nuanced picture of aesthetic response. Art can obviously inspire emotions that are negative, such as Dean's selfish behaviour in *On the Road* when he continues to string the women in his life along and lie to them. But whether or not the reader is actually repelled from the work depends upon whether or not the writer can harness a source of tension between different responses. What Kerouac does at the moment where Dean is being castigated by Galatea Dunkel is fairly instructive of how this can be exploited by the writer:

'You have absolutely no regard for anybody but yourself and your damn kicks. All you can think about is what's hanging between your legs and how much money or fun you can get out of people and then you throw them aside. Not only that but you're silly about it. It never occurs to you that life is serious and there are people trying to make something decent out of it instead of just goofing all the time.'

That's what Dean was, the HOLY GOOF. (*OTR*, p. 176)

The capitalisation of 'HOLY GOOF' draws so much attention to itself that it seems as if Sal has just had a serious epiphany about Dean's character. This undercuts the way Galatea attacks Dean's character, creating a sense of tension between the rational evidence she presents that Dean is inconsiderate and selfish, and Sal's continual intuition that his behaviour is somehow the key to a form of

transcendence, as the 'holy goof' implies here. Negative emotions are mediated by perceptual tension, inviting the reader to continue to experience the novel in the hope of seeing this resolved in some way. Eventually, Sal comes to realise that Dean is incapable of changing his ways after Dean abandons him in Mexico, right before the end of the novel. In some ways this is a resolution of this tension, as the emotional and rational experiences of Dean's character start to align.

Barry discusses later in 'Perceptual Aesthetics' how aesthetic pleasure can be understood in terms of neuroanatomy. Part of this can be explained by the release of dopamine through the brain as a behavioural reward mechanism. Dopamine is particularly important when considering the neuroaesthetics of music, as it has been shown to be released in anticipation of resolution to patterns of harmonic tension (Menon and Levitin, 2005; Salimpoor *et al.*, 2011). This too will be discussed in more detail in the coming chapter, but it is briefly worth mentioning here that it is the *anticipation* of resolution to tension as opposed to the *actual* consummation of that resolution which seems to trigger the release of dopamine (Huron and Margulis, 2009, p. 581). As such, we can see how in music at least, tension is itself a source of aesthetic pleasure, based on neurological research. Having suggested that Barry is continuing the idea that aesthetic response is entirely pleasurable, it must be said in fairness to her that the neurological experience of pleasure does appear to be particularly significant.

As a whole, Barry's theory of perceptual aesthetics is, despite treating the subject with some broad strokes rather than detailed textual analysis, perhaps the most insightful of the neuroaesthetic theorists, and by far the most relevant for literary

study. There are some other insights she offers on aesthetic theory that we will touch upon in the coming chapters, particularly the distinction between 'bottom up' and 'top down' processing in the analysis of *Mrs Dalloway*.

Cognitive Poetics versus Neuroaesthetics

Let us now bridge the gap between these two chapters of methodology and literature review by comparing the two approaches to interdisciplinary study involving cognitive science and literary criticism.

Cognitive poetics as practised by Stockwell is primarily based upon bridging some of the gap between literary theory and linguistics by appropriating terms and some ideas from cognitive science: particularly linguistics, with concepts like deixis figuring heavily in his analysis. By the same token, if we consider Ramachandran's work, we can see that he takes some aesthetic techniques from the art world and gives them new terms, such as 'peak shift', which he uses interchangeably to refer to either caricature or abstraction as aesthetic techniques. One can see the flaw with both approaches is that they do not contribute to advancing the field of aesthetics or adding to the critical toolbox, and by adding new terms they only further complicate the existing theory.

In contrast, the approaches of Tsur and Barry are more fruitful where aesthetic experience is concerned. Although both authors occasionally display this tendency to re-categorise rather than expand our existing understanding (such as through their use of 'gestalt' as a referential principle rather than being able to explain the

neural mechanisms behind it), they attempt to answer more difficult questions about literary study by using evidence from cognitive science. In particular, Tsur's analysis of the qualities that can be associated with sound, while undoubtedly tending towards the normative in its approach, does give literary criticism an excellent framework upon which to discuss the effects of sound in literature and poetry.

Likewise, Barry provides us with a clear framework to understand imagery, particularly how it transcends simply being equivalent to a pictorial or visual representation, and how it links multiple artistic media together by relating meaning in a manner that is not bound to specific sensory systems. Most promising though is her analysis of the systems that contribute to tension, as she identifies this as important element of aesthetic engagement with a text. Tension is a concept used in literary criticism, but it deserves more clarification, particularly in terms of the neurological mechanisms that give rise to tension. As before, let us examine what the *Penguin Dictionary of Literary Terms* offers on the subject of tension:

Tension: A term used in a particular sense by Allen Tate to designate the totality of meaning in a poem. He derives it from the logical terms 'extension' and 'intension' by removing the prefixes. Extension = literal meaning; intension = metaphorical meaning. The simultaneous coexistence of these sets of meaning constitutes tension. It may also refer to 'conflict structures'. For example, the counterpoint between the rhythm and meter of a poem and speech rhythms; or between the concrete and the abstract. Some critics, following the theories of Anaximander and Heraclitus, take it

to mean the balance of mental and emotional tensions which are held to give shape and unity to a work. (Cuddon, 2008, p. 904)

Although one can see that Tate's derivation of 'tension' from 'extension' and 'intension' is more of a clever example of wordplay than of using the appropriate term, there is definitely some continuity with Barry's notion of tension making use of a clash between emotional and rational reactions. In this definition there is also the hint of tension existing at the level of rhythmic structure, which we will examine further in the next chapter. But from this it is easy to see how this kind of broad definition of tension that is currently available to literary theorists is somewhat unwieldy.

Barry's work allows us to expand on this limited definition of tension by firstly accounting for it in cognitive terms, and by showing how there are different applications of tension: narrative tension, semantic ambiguity, and tension between the emotional and rational responses to an aspect of the text. In the coming chapters, we will explore these distinct forms of tension in more detail through our case studies.

These approaches of Tsur and Barry provide some of the methodological framework to inform the approach of this thesis, requiring a careful synthesis of their insights and the way they utilise cognitive science to support their intuitions about the aesthetic impact of art. Of course, there are gaps in their research to be filled. What I particularly hope to demonstrate in the coming chapters is how the novels of Kerouac, Woolf and Nabokov show that their aesthetic impact is crucially

intertwined with their ability to evoke sensory information from cross-modal sensory domains, such as how Kerouac borrows from the structures of jazz, and Woolf structures her 'Impressionism' in a similar manner to the Impressionist painters. The aim of this is to further show how aesthetic response makes use of the brain's capacity for utilising pathways beyond those directly responsible for processing the relevant sensory information, as Barry touches upon in her analysis. The key to this is in exploring what has been discovered by existing neurological approaches to aesthetics, including the neuroscience of music and the research of Zeki and Livingstone that explains the aesthetic impact of visual art.

We might now return to the criticisms of neuroaesthetics flagged by Ball and Tallis at the beginning of this chapter, and ask if they still seem justified given what we have examined of the leading theorists. For Ramachandran's heavily reductionist approach, their criticism is valid, as Ramachandran attempts to account for varied individual response by dismissing it as the product of inhibitions. But for Zeki, Livingstone and Barry, the claim that neuroaesthetics is simply reductionist and offers no new interpretations does not hold up. An effective neuroaesthetic reading does not come down simply to the arrangement of "a certain constellation of neurones", as Tallis puts it, but to understanding the mechanisms that shape and influence human perception, and using them to expand and clarify aesthetic theory. The neurons themselves are not the source of aesthetic experience, but the mechanisms of cognitive science can help to articulate the experience of art; and they can even do so accounting for the varied aesthetic response across individuals.

Part Two: Case Studies

Chapter Three: Kerouac and Music

Kerouac's Jazz

Kerouac's cult novel *On the Road* is closely intertwined with the musical culture of mid twentieth century America. There are the episodes where Sal and Dean haunt the jazz clubs of New York and San Francisco, with Dean raving about the musicians as if they were prophets. Kerouac's own obsession with jazz comes through to the point that during Part Three he gives the reader a crash-course in the history of the genre. In 1959 on The Steve Allen Show he read the final passage of the novel aloud, with Allen's band playing behind him – a performance that no doubt added to the public association of the Beat Generation with music. There were also notable friendships and exchanges of influence between the beat poets and some rock musicians of the Sixties, such as that between Allen Ginsberg and Bob Dylan, or Michael McClure and Jim Morrison. Think also of the commonly caricatured image of the beat poets sitting around playing bongo drums to accent the rhythm of their compositions.

But still more captivating than the thematic prominence of jazz is the idea that Kerouac's writing was literally modelled on or evoked the sensations of music. This notion has existed as long as *On the Road* itself: among the earliest encouragement Kerouac received after completing his legendary scroll manuscript was from Seymour Wyse, an old friend from his days at Horace Mann. Wyse wrote

from England in 1951 to tell Kerouac that *On the Road* “really swings” and that he was “in an entirely new groove now” (Nicosia, 1983, p. 353). The choice of words is likely more than figurative: Wyse is credited with introducing a young Kerouac, who then imagined that a Dixieland group was the best jazz on offer, to the likes of Count Basie and Lester Young in New York (Nicosia, 1983, p. 65). Nor is it confined to *On the Road*: although Kerouac’s subsequent publications never achieved as much acclaim, later critics have devoted substantial analysis to the extent of the influence of jazz on these works. Most evidence for this correlation comes from Kerouac’s own writings, particularly the summary of his technique he produced for Burroughs and Ginsberg: ‘Essentials of Spontaneous Prose’.

Procedure: Time being of the essence in the purity of speech, sketching language is undisturbed flow from the mind of personal-secret idea words, blowing (as per jazz musician) on subject of image. (Kerouac, 1993)

Generally speaking, this analogy has been interpreted as an attempt to achieve a literary version of an improvised performance. To paraphrase: he takes an image the way a jazz soloist takes a melody, and creates an original representation of the image based on the first thought he has, in a similar way to the manner in which the musician reworks the melody into an original phrase. Kerouac also stated in an interview for *Paris Review*:

“Yes, jazz and bop [are influences] in the sense of a, say, tenor man drawing a breath and blowing a phrase on his saxophone, till he runs out of breath, and when he does, his sentence, his statement’s been made... that’s how I

therefore separate my sentences, as breath separations of mind." (Plimpton (ed.), 1974, p. 361-95)

What this indicates is that Kerouac not only attempted to follow the style of improvised music, he also adopted what he believed was a similar measure of phrasing.

How deep, though, does this actually run in his printed works? The *Paris Review* interview is cited by both Hunt (1981) and Weinreich (1987) in their convergent arguments that Kerouac's use of sound is organised in a way that structurally resembles jazz. Both critics examine *On the Road* and *Visions of Cody*, and both arrive at a similar conclusion that *Cody* offers a better example of the technique at work. Weinreich's chapter about *On the Road* is titled: "The Road as Transition." In other words, *On the Road* was the vehicle for the development of a style that was more fully realised in *Cody*.

A dissenting opinion comes from Malcolm (1999), who charges that the associations with jazz are not felt as formal influences on Kerouac's structure. Malcolm interprets Kerouac's statements of theory the same way he interprets the abundance of jazz scenes in *On the Road*: as evidence of Kerouac's obsessive desire to associate with African-American culture. In dismissing the arguments of Hunt, Weinreich and Hipkiss (1976), Malcolm charges that "little formal [musical] terminology is employed by either the critics or Kerouac." Malcolm also argues that Kerouac's spontaneous style owes more to the stream of consciousness of Woolf and Joyce than to improvised jazz performances. Yet his own argument also

references the fact that improvisation in jazz is never truly created on the spot, but crafted out of phrases and patterns practised and heard by the musician before he takes his solo (1999, p. 88). This has a direct correlate in the way Kerouac crafted his prose, particularly during the composition of *On the Road*: when he wrote a complete draft of the novel in 1951, he reworked extracts from his travel journal into the new draft, embellishing or honing them slightly (Theado, 2009, p. 17). What Kerouac's craftsmanship style and improvised jazz have in common is an illusion of spontaneous composition that hides a technique of cobbling together disparate phrases and ideas from practice sessions.

Malcolm's essay does raise an important point in that Kerouac's published dictums on the craft of writing have generated a lot of confusion about his use of jazz. Firstly, 'Essentials of Spontaneous Prose' was written before *On the Road* was published, but *after* the bulk of it had been composed. The media frenzy that surrounded Kerouac at the time *On the Road* was published dredged up his old ideas and incorporated them into the evolving legend of *On the Road's* spontaneous composition over three weeks in Manhattan. So it is common to associate *On the Road* with spontaneous prose, where in reality the published version of *On the Road* is highly edited. Although Weinreich observes this distinction, she too finds reason to connect Kerouac's cultivated 'Spontaneous Prose' technique to the structure of *On the Road*:

A continued examination of Kerouac's essay "The Essentials of Spontaneous Prose" in tandem with a close reading of sections of the text of *On the Road* will provide concrete evidence of a compositional process analogous to the

structures of jazz and of a repetition of these musical structures that provides a deeper pattern than the novel's linear surface might suggest. (1987, p. 43)

Weinreich's analysis of Kerouac's body of work also touches upon an important point that comes close to the heart of the engagement with music: namely that Kerouac has an acute awareness of sound patterns and employs them in a poetic manner, particularly to suggest meaning in key areas:

Note the pacing in the "unconscious" exposition that follows: "[at a place called Port Allen.] Port Allen – where the river's all rain and roses in a misty pinpoint darkness and where we swung around a great circular drive in yellow foglight and suddenly saw the great black body below a bridge and crossed eternity again" [1957, p141]. First, the repetition of Port Allen creates force. Second, the poetic affects are tighter. The rolling *r*'s of "where", "river", "rain", "roses" are picked up by "darkness," with "where" again creating a circular motion. The word "swung" is repeated, "around" picks up the rolling *r* as does "circular drive," which actually states what the writing accomplishes at the levels of both sound and sense. And the alliteration of the *b*'s in "black body below a bridge" suggests something still mysterious as the passage comes full circle in crossing the Mississippi (and eternity) again. (1987, p. 45)

The strength of this analysis lies in its ability to identify what seems significant in the passage, namely the pacing and the sound. The problems with this extract are

the vague attempts to account for some kind of effect. First she states that the repetition of Port Allen creates “force.” How? What kind of force? Does she merely mean force as in ‘emphasis’, or force as in ‘kinaesthesia’? Next, it is claimed that the *r* sounds are “rolling”. Does this mean the text encourages the reader to ‘roll’ the *r*, sounding more like the French uvular fricative than the English alveolar liquid? Is there sound kind of ‘rolling’ effect inherent in the repetition or even the natural sound of the *r*? Or is ‘rolling’ simply a figurative term for alliteration? Echoing what we saw earlier from the Penguin Dictionary, alliteration of *b* is signalled as being responsible for an effect, described as “something mysterious”. How exactly does it achieve this? Weinreich also states that the writing replicates a ‘circular drive’ in both sound and sense: yet the ‘sound’ part of her analysis merely boils down to instances of repetition. What exactly is circular about Kerouac’s use of sound?

None of this should be taken as a disagreement with Weinreich’s intuition that the language is capable of producing effects for the reader, but rather to highlight the problems in resorting to intuition to characterise those effects. In general, Weinreich is to be applauded for attempting to tackle Kerouac’s conspicuous use of sound, as she is practically the only one to do so in the critical scholarship. There is an entire book of essays about *On the Road*, and not one of them covers sound in any significant detail. To me it seems that the simplest explanation is that literary criticism lacks a systematic approach to analysing the sound of a text, so the majority of critics ignore it.

In this single passage from Kerouac – a mere four lines – Weinreich identifies four effects, vaguely described as “force”, “rolling”, “circular motion” and “something

mysterious". Leaving aside the latter, the perceptual theme seems to be momentum: the passage not only describes momentum but also apparently imitates it. So how do we begin to articulate momentum in strict literary terms? I mentioned kinaesthesia earlier: Penguin's dictionary defines it thus: "A sense of movement or muscular effort ... inherent in the rhythm, momentum and energy of words." (1998, p. 443) So either the words themselves must have momentum or 'energy', or the rhythm of the line must produce it. Now the question becomes *how* do we explain the perception of the sensation of momentum through the use of either rhythm or particular words? In search of answers, we come closer and closer to the cognitive mechanisms of perception.

The determination among Weinreich, Hunt, and more recently Hrebeniak (2008) to find a relationship between the structure of jazz and the structure of Kerouac's writing, coupled with the testament of Wyse and Kerouac's own ideas, suggests that the notion of something musical about his style is a fairly strong intuition. The ambition of this chapter is to reopen the question of this link, by focusing on whether or not his style could cognitively be perceived in a manner similar to music. The aim is to go where previous critics have been unable to travel: deeper into the mind; and to take up Malcolm's call to use the terminology of music to its full.

A Note on Texts

The bulk of this chapter focuses on *On the Road* for its case study, although some parallels are drawn with some other examples from Kerouac's prose. It is

important to discuss the focus on *On the Road* as opposed to one of his more experimental works, particularly for a sound-based analysis. Hunt and Weinreich certainly make the case that *Visions of Cody* adheres closer to Kerouac's spontaneous prose style, and as a reworked form of *On the Road* it might seem truer therefore to his overall vision. In regards to the supposed musicality of the text, however, my argument is that *On the Road* offers a far better example of the musical dimension to his work.

The principal reason for this lies in the rhythmic and syntactic style of the novel, which is a key component of its musical appeal. Paradoxically, Kerouac's musical analogy in 'Essentials of Spontaneous Prose' quashes this dimension of the text when put into practice. Kerouac began to regard regular punctuation as an impediment when his focus became jotting down his thoughts as quickly as possible:

Method: No periods separating sentence-structures already arbitrarily riddled by false colons and timid usually needless commas-but the vigorous space dash separating rhetorical breathing (as jazz musician drawing breath between outblown phrases)--"measured pauses which are the essentials of our speech" (1993)

In adhering to the idea of letting his thoughts rush out like the notes from a saxophone, Kerouac forgoes his ability to use other forms of punctuation for rhythmic patterning. In traditional prose it is true that punctuation is generally dictated by the demands of syntax, but the resulting prosody holds standards of

how long different forms of punctuation are held in breath. A comma, for instance, is generally shorter than a full stop. Without varying these pauses, the oral quality of his prose diminishes as the tendency becomes to read out words in long strings – the longer they become, the less individual words are spoken with the key stresses, and rhythmic patterns disappear. With *Visions of Cody*, Kerouac reduces his reliance on full stops: by ‘October in the Railroad Earth’, he barely uses anything but dashes.

This style, taken in conjunction with Kerouac’s claims about his compositional style, suggests that he would actually read the whole sentence aloud without pauses for breath. Quite the contrary: Kerouac actually had an extremely keen ear for rhythm, as is well noted by everyone who liked to hear him perform. This can be heard today in some of the oral performances he recorded with Steve Allen. To illuminate the difference, first consider this extract from the final paragraph of *On the Road*:

So in America when the sun goes down and I sit on the old broken down river pier watching the long skies over New Jersey, and sense all that raw land that rolls in one unbelievable huge bulge over to the West Coast, and all that road going, all the people dreaming in the immensity of it... (*OTR*, p. 281)

Taking the recording of Kerouac’s performance from *The Steve Allen Show*, I have transcribed it using additional punctuation to represent the pauses he takes:

So, in America, when the sun goes down, and I sit on the old broken down river pier watching the long long skies over New Jersey, and sense all that raw land that rolls in one unbelievable huge bulge over to the West Coast, and all that road going, and all the people dreaming in the immensity of it...
(Kerouac & Allen, 1959)

The difference is notable. Kerouac's original begins to charge off with breakneck pace, but the oral performance initially establishes a much steadier, contemplative rhythm through the additional pauses, which then gives way to an expansionist acceleration. Other than this, his performance largely follows the written text – aside from some notable repetitions (such as 'long', and later "I think of Dean Moriarty" as the final cadence). Now, compare this with 'October in the Railroad Earth'. First, the printed text:

There was a little alley in San Francisco back of the Southern Pacific station at Third and Townsend in redbrick of drowsy lazy afternoons with everybody at work in offices in the air you feel the impending rush of their commuter frenzy as soon they'll be charging en mass from Market and Sansome buildings on foot and in buses and all well-dressed thru workingman Frisco of Walkup truck drivers and even the poor grime-bemarked Thirds Street of lost bums even Negroes so hopeless and long left East and meanings of responsibility and *try* that now all they do is stand there spitting in the broken glass sometimes fifty in one afternoon against one wall at Third and Howard... (*LT*, p. 40)

The sentence runs on for another four lines before Kerouac uses a comma, and four more still before it comes to an end: a very striking example of his Spontaneous Prose style. However, his actual delivery style was far from being as breathless and chaotic as this syntax would suggest. In keeping with the previous example from *On the Road*, I have transcribed Kerouac's reading of this passage (again accompanied by Allen) using traditional punctuation to mark the moments where he pauses:

There was a little alley in San Francisco, back of the Southern Pacific station at Third and Townsend, in redbrick of drowsy lazy afternoons with everybody at work in offices - in the air you feel the impending rush of their commuter frenzy, as soon they'll be charging en mass from Market and Sansome buildings on foot and in buses and all well-dressed thru workingman Frisco of Walkup truck drivers; and even the poor grime-bemarked Thirds Street of lost bums even Negroes so hopeless and long left East, and meanings of responsibility and *try*, that now all they do is stand there spitting in the broken glass, sometimes fifty in one afternoon against one wall at Third and Howard... (Kerouac and Allen, 1959)

It is possible that Kerouac's sensitivity to the musician playing behind him led him to deliver a more evenly-paced reading, allowing pauses for musical accentuation – but in recordings of his other works, ranging from *Visions of Cody* to *Desolation Angels*, there is no music and the phrasing style remains similar. What emerges from the recording of *October in the Railroad Earth* are neater units organised by

stresses and elisions; in fact, his rhythm could almost be described as trochaic, and it gives the passage a sense of controlled energy:

 / x - / x / x x / x / x / - x
There was a little alley in San Francisco, back of the
/ - x / - / x - / x / x
Southern Pacific station at Third and Townsend,

In the printed text, these patterns are completely lost on the reader, as having commas acting as new lines is essential to conveying the trochaic feel. Kerouac does not conform to his own standards specified in 'Essentials of Spontaneous Prose' of using a dash for the breath; indeed, he gives no hint of where the pauses should come, in spite of the fact that the recorded version shows a deliberate sense of rhythm, pacing, and exploitation of readerly impulses about the length of different units within the sentence.

My interpretation of the recordings is that Kerouac had a particularly keen gift for oral performance. Nicosia states that: "People were always impressed by Kerouac's special love of sound, which was obvious just from the way Jack talked" (1983, p. 305). But this became a double edged sword: his familiarity with his own rhythm meant that he no longer felt the need to mark it within his prose, and consequently his readers were left with no real clues to follow his sense of rhythm. Kerouac's two most commercially successful novels were unquestionably *On the Road* and *The Dharma Bums*: these are distinct from the writings of his 'Spontaneous Prose' period in that they use punctuation with far greater regularity. One could attribute this success to the theme of travel that is central to both novels, but my argument is that this theme was supplemented by the easily followed rhythmic patterns

within the novel. When Kerouac's 'spontaneous' works like 'October in the Railroad Earth' are accented with punctuation, rhythmic patterns emerge to accentuate the motions and themes of the text.

Kerouac's spontaneous prose compositions do illustrate his technique, but the reader's appreciation of the musical element of his writing is largely obscured by the lack of rhythmic markings. As such, the best texts to examine in this investigation are those with a regular sense of punctuation. *Visions of Cody* is punctuated to a similar degree to *On the Road*; however in *Cody* the paragraphs, themselves an important rhythmic unit in Kerouac's style, tend to be fairly standardised as extremely long segments, with little potential for pattern variation. These may seem like minute differences, but as we shall see they can have significant consequences for the reader.

Music and Language

The entry point into Kerouac's supposed musicality is the question of how naturally close music is to language to begin with. Longfellow once surmised that music is the "universal language of mankind" (1835), and Darwin considered the idea that music and language were both once part of an evolutionary 'protolanguage' (Fitch, 2009). The past three decades of neurological research on the two areas has shown that music is far from universal, with different cultural styles having systems that may transfer no more easily across borders than distinct languages would. Research has, however, thrown up some similarities between the processing of music and language.

At a basic level, music can be defined as a system of sounds organised according to aesthetic principles or for aesthetic purposes. The governing aspects that combine to create music and distinguish individual genres, styles and compositions are: pitch, timbre, volume, melody, harmony and rhythm (the latter includes the sub-aspects meter, tempo and phrasing). These are organised according to varying levels of importance throughout different cultures: the Western classical tradition emphasises pitch and harmony, for instance, while an Indian musical style such as *tabla* emphasises timbre and rhythm (Patel, 2008). It is important to note that ‘timbre’ itself is a fairly arbitrary concept in musical terms, whereas in cognitive psychology it explicitly refers to the number and intensity of overtones produced by a sound wave. In music, timbre tends to refer to any component of tone not governed by pitch or volume. In general, all of these elements are present in different cultural styles, only in varying degrees of prominence.

These elements have some basic correlations with language processing; for instance, pitch, volume and rhythm all play a role in delivering the subtleties of language. In non-tonal languages pitch is used for subtle changes in interpretation, and in tonal languages it often signifies a completely different word. But while phonetics represent the smallest units of sound that can be differentiated from one another (Moore, 2003, p. 301), they show a degree of resistance to modifications and omissions that sets language apart from music. Indeed, it is this very ability that allows for language to combine with music in song, since abstract phonetic categories can withstand the demands of the musical system. By way of example, the word ‘I’ will often sound closer to ‘ah’ when sung at a lower note, since the

frequency of the formants required to produce *i* is relatively high. Despite this, we still understand the word as intended.

So although music and language make use of the same general auditory mechanisms, speech perception is a far more complicated and heavily debated process than music. Patel (2008) and Koelsch (2005) have indicated that the two systems do sometimes share neural resources in cognitive processing: Patel argues, for instance, that melodic contour processing may be shared by musical melody and linguistic prosody, and Koelsch argues that patterns of harmonic tension are handled by the same neurological process that reacts to linguistic syntax violations. Patel's exhaustive study of the similarities and differences between music and language is the best place to explore the subject in greater detail: for our purposes it is important simply to establish that they are distinct categorical systems. Bop jazz, purported to be a huge influence on Kerouac's style, is largely based around categorical perception of pitch intervals organised into harmonic scales. On the other hand, Kerouac's prose and indeed all writings call upon the brain's categorical perception of abstract phonetic representations. As such, Malcolm's dismissal of the structural relationship between the two is heavily validated by cognitive science.

At the same time though, timbre and rhythm are important accentual qualities for bop and indeed for Kerouac. The next question is to examine how close these relationships run, and to establish whether the connection is merely analogous, or if there is any deeper neurological basis.

The Sounds of the Road

In the published version of *On the Road: The Original Scroll*, editor Howard Cunnell preserves one of Kerouac's typographical errors – "I first met met Neal", because "it so beautifully suggests the sound of a car misfiring before a long journey." (2007, ii) Most of the emphatic sound patterns in *On the Road* were no accident, however, contrary to Truman Capote's aspersion that Kerouac's style was "only typing" (Nicosia, 1983, p. 588). In fact, they were a large part of Kerouac's attempt to redefine the way in which he told his stories.

An examination of Kerouac's journals in the years before he composed the scroll draft shows that he had a vision for *On the Road* that was thematically close to the final novel. The first mention notes that the story concerns: "two guys hitch-hiking to California in search of something they don't *really* find, and losing themselves on the road, and coming all the way back hopeful of something *else*." (*WW*, p. 123). This was in 1948. A year later, he had 'started' *On the Road* twice, and in October he noted that with twenty five thousand words written he *still* didn't feel it had "began" (*WW*, p. 236). He began to envision it as more of a narrative poem, with short chapters acting in place of verses (*WW*, p. 241-2). Then in December he scribbled down a maxim of great importance for his future style: "It's not the words that count but the rush of truth which uses words for its purpose" (*WW*, p. 252).

This 'rush of truth' finds its embodiment in Kerouac's prose as the use of sound and rhythmic patterns to recreate the events as vividly as possible for the reader:

appealing directly to their sensory and perceptual faculties rather than relying on semantically precise description. This was an idea Kerouac developed in an essay he wrote for his classes at the New School for Social Research. He compared the choice of words he imagined hypothetical writers would use to describe “a man musing on eternity”. The ‘intellectual’, semantically precise writer would call it “wonderingly thinking”, but the ‘metaphysical’ writer would call it ‘dumbly mulling’. Kerouac writes:

There are beauties in “dumbly mulling”: the rhythm of the “U” vowels as well as the rhythm of the words together; plus the easy loll on the tongue (two “Ls”); plus, finally, that indecipherable mystique of the *seen word*. We know that – great ships are blowing in the harbor at night, – but it requires metaphysical prowess (at its height) to show us, further, that, really – great boats are blowing in the gulfs of night. (*WW*, p. 400-401)

Gerald Nicosia claimed that Kerouac had little gift for intellectualising literature (1983, p. 453): reading this essay adds some credence to that view, as Kerouac cannot aptly extend his comparison to explain why the mellifluous ‘dumbly mulling’ is “more accurate and more useful” (*WW*, p. 400) than ‘wonderingly thinking’. But it does demonstrate that what Kerouac lacked in critical thinking, he made up for in intuition. He was able to sense that particular combinations of words seemed more powerful and poetic, even if he was unable to articulate the reasons why.

In *On the Road*, one can see this conviction about representing the rush of truth, or rather, appealing directly to the senses. One of the most famous passages comes early in the novel, where Sal explains his emphatic interest in Dean and Carlo:

...because the only people for me are the mad ones, the ones who are mad to live, mad to talk, mad to be saved, desirous of everything at the same time, the ones who never yawn or say a commonplace thing, but burn, burn, burn like fabulous yellow roman candles exploding like spiders across the stars...
(*OTR*, p. 7)

There is of course a powerful ambiguity in the use of ‘mad’ that suggests their enthusiasm borders on the crazy. But additionally, the simile of the firework is subtly extended throughout the whole passage by the sounds of the piece. Kerouac’s triple repetitions of ‘mad’ and ‘burn’ prime the harsh plosives of *d* and *b*, and then in “exploding like spiders across the stars” there is a repetition of *sp*. The minute shift in this phonetic unit from the hissing sibilants (recalling Tsur’s analysis, 1992, p. 44) to the pop of the plosives imitates the sounds of a firework trailing upward into the sky before exploding loudly. This added sonorous dimension strengthens the impact of the passage, priming the sounds of a firework through emphatic repetition. Notably, in the original scroll published in 2007, this contrast is not so apparent: as Kerouac had instead written “but burn, burn, burn like roman candles across the night” (*OS*, p. 111). Evidently, Kerouac’s extensive revision period allowed him the opportunity to tighten these phonetic patterns and reinforce those he felt to be intuitively strong.

Instances of phonemic repetition and contrasts such as these are among what forms the “rush of truth” Kerouac was aiming at. The recourse to sound gives a non-conscious sensation (a ‘rush’, in the sense of ‘sudden emotion’) that the image is a particularly strong one (truth). This command of sound is an important part of the musical appeal to *On the Road*, particularly in the sections that actually depict music. Kerouac’s early literary agent, Rae Everitt, thought his jazz scenes were the best in American literature (Nicosia, 1983, p. 352), and the first time anything from *On the Road* appeared in print was a compilation of those scenes called ‘Jazz of the Beat Generation’ for *New World Writing* (Nicosia, 1983, p. 465). Much of this impact can be attributed to Kerouac’s sustained use of onomatopoeia.

The behatted tenorman was blowing at the peak of a wonderfully satisfactory free idea, a rising and falling riff that went from ‘EE-yah!’ to a crazier “EE-de-lee-yah!’ and blasted along by a big brutal Negro with a bullneck who didn’t give a damn about anything but punishing his busted tubs, crash, rattle-ti-boom, crash. (*OTR*, p. 179)²⁰

Once again, the repetition is even more apparent in the published version, as he added ‘busted’ where the original draft had merely read ‘punishing his tubs’ (*OS*, p. 295)²¹. Besides his attempt to transcribe the exact sounds of the saxophone and drums, there is the emphatic repetition of *b* in the description of the drummer, and

²⁰ It is worth noting that a recording of Kerouac reading this passage can be found on the disc ‘Beat Generation Poetry – The Ultimate Collection’: Master Classics Records, 2011. Apparently recorded before *On the Road* was a hit, Kerouac reads with a disappointing lack of enthusiasm and pace, compared to his emphatic performances on other records.

²¹ The original draft also read “blasted along to the rolling crash of butt-scarred drums hammered by a big brutal Negro” (*OS*:295). It is possible that Kerouac omitted this to more quickly establish the repetition of *b*.

vowel *i* in the description of the tenorman. If we recall Tsur's order of phonemes in terms of periodicity, derived from Fry (1970, p. 35-6), the sounds repeated in the description of the tenorman are more periodic and thus closer to a musical note; while the relatively aperiodic plosive is closer to a noise. In effect, Kerouac's use of repetition mimics the roles of the musicians in the traditional bop group: the tenorman is assigned melodic lines of notes, while the drummer plays the percussive sounds (which are generally processed atonally) that dictate beat and tempo. The bilabial plosives *b* and *d* are particularly effective at ornamenting the description of the drums because in acoustic terms they present a quick burst of noise, much like a drum. Similar repetition can be observed in the passage depicting the jazz musician Slim Gaillard:

He'll sing 'Cement Mixer, Put-ti-Put-ti' and then suddenly slow down the beat and brood over his bongos with fingertips barely tapping the skin as everybody leans forward breathlessly to hear; you think he'll do this for a minute or so, but he goes right on, for as long as an hour, making an imperceptible little noise with the tips of his fingernails, smaller and smaller all the time til you can't hear it any more... (*OTR*, p. 159)

Here the repetition of the voiced plosive *b* that begins the passage, as Slim plays the bongos, gives way to a repetition of a voiceless plosive *t*; travelling down the scale of periodicity and becoming yet more like an indistinct noise. Again, Kerouac's repetition subtly mimics the musical scene for the reader.

On their own, these repetitive sound patterns are largely ornamental to the action of the text. Any sense that they might be 'musical' only emerges when they are placed in sections where music becomes the thematic focus. But while those sound patterns outside of passages that directly reference music are unlikely to be perceived as acoustically similar to music, their repetitive quality contributes to the perception of another important cue: the rhythm of Kerouac's prose.

The Rhythms of the Road

It is worth beginning by extrapolating on the nature of rhythm in music and language. In essence, rhythm is a composite of metre and phrasing – an instance of figure and ground, where metre acts as the ground onto which the phrasing projects figure. Now, in traditional Western poetry, the basic unit of metre is the syllable; whereas in traditional Western music the basic unit of metre is the 'beat'. The major difference is that musical beats rely on temporal periodicity where syllables do not (Patel, 2008).

What this means for a comparison of musical and poetic rhythm is that the perceptual categorisation system music calls upon is far more rigidly defined. Indeed, it is the periodicity of musical metre that allows for the perception of strong and weak beats: essentially, strong beats are those that fall on mathematical intervals that support the periodic rhythm, such as the first and third beats of a bar in 4/4 timing; while weak beats (off-beats) fall on other intervals. Temporal periodicity is important for allowing motor commands to synchronise with music: in other words, for people to dance. Syllables are not subject to the same

periodicity as musical beats, particularly in English. In the 1940s, Kenneth Pike proposed that some languages do in fact divide syllables into equal measures in time (Pike, 1945), such as French and Spanish, whereas English divides stresses into equal measures in time. Over time, however, empirical studies failed to validate this theory.

So in terms of comparing traditional poetic rhythm to musical rhythm, it is difficult to establish a direct link between the two. However, a particularly modern take on the scansion system by Derek Attridge offers some more compelling evidence that poetry can be perceived as having a beat. Attridge (1990) offers the example of the A. A. Milne poem 'Disobedience', a nursery-rhyme style of poem with heavy repetition in the first lines:

James James

Morrison Morrison

Weatherby George Dupree

Took great

Care of his mother

Though he was only three. (Milne, 1924)

Attridge acknowledges that it is difficult to do justice to this poem merely in terms of the traditional Western scansion systems of stressed and unstressed syllables:

What is needed, then, is an approach that begins not with the abstractions of metrical feet or grids of strong and weak positions, but with the

psychological and physiological reality of the sequences of rhythmic pulses perceived, and enjoyed, by reader and listener alike. (1990, p. 1016)

His assignment of beats and off-beats elucidates the poem's clear temporal structure that traditional scansion does not account for ('B' represents a beat, 'o' an off-beat and 'o' a 'double off-beat'; that is, an offbeat falling over two syllables):

```
James James Morrison Morrison Weatherby George Dupree
B o B o B o B o B o B o B o B [o B]
Took great Care of his mother Though he was only three.
B o B o B o B o B o B o B [o B]
```

One can immediately see how this notation captures the energy of the poem better than traditional poetic scansion: it indicates how 'Dupree' and 'three' have a particularly strong metrical weight, as the line ends on what is considered in music to be a strong beat – the third beat of the line.

What Attridge's analysis highlights is that the key to this perception of an even beat in the poem is the heavy repetition in the first lines. This effectively sets up a form of temporal periodicity that, once established, dictates the reader into fitting the stress patterns of the rest of the poem into this particular framework. This kind of heavy repetition is most commonly associated with nursery rhyme and other childlike compositions – indeed, repetition is generally understood to be a stylistic error in prose syntax. Kerouac, however, repeats stress patterns, phonetic patterns, even whole words at various emphatic points within his prose. The effect of the temporal periodicity it suggests is highly important in creating a musical sense to his writing. A notable example occurs in Part Two, as they head west from New Orleans:

What is the Mississippi River? – a washed clod in the rainy night, a soft plopping from drooping Missouri banks, a dissolving, a riding of the tide down the eternal waterbed, a contribution to brown foams, a voyaging past endless vales and trees and leaves, down along, down along... (*OtR*, p.141-2)

In her analysis of this passage, Weinreich describes Kerouac’s answer to his rhetorical question as “gushing forth”, noting the repetitions of the “short *o* sound” (1987:46). To be more precise, Kerouac makes use of several forms of emphatic assonance in this section: the *ɒ* in ‘washed clod’ and ‘soft plopping’, the *aɪ* in ‘riding of the tide’, and the *u* and *ʊ* in ‘drooping Missouri’. The assonance dictates the pattern of stresses that follow, accompanied by regular elisions that are a hallmark of Kerouac’s folksy, conversational style:

```

x / - / - x / x / x / x / x / x
a washed clod in the rainy night, a soft plopping from
o B o B  o B o B o Bo B o B  o
      / - x / x /
drooping Missouri banks
B  o B o B [o]

```

The repetition of these vowel sounds creates an effect of adjacent stresses that would be normally marked as a spondee, which in traditional scansion slows the line down. With Attridge’s notation, however, we can see how the off-beats create a sense of continual motion. Although the first unit contains four beats (and begins on an offbeat), the comma evens the rhythm out by creating a pause for another beat before the next unit, so that we are encouraged to read the passage as two five-beat units. Then, however, this pattern is disrupted by ‘a dissolving’.

- x / x x / x x - / x x - /
a dissolving, a riding of the tide down the eternal waterbed
o B o B o B o B o B o B o B o B o

The phonetic repetitions and elisions paint a different picture this time: they suggest a longer foot, a faster paced anapaest. Now, although the underlying pulse is the same, from the comma after ‘dissolving’ every second beat is marked as an unstressed syllable. This is in fitting with musical metre, where in a 4/4 bar of music the second and fourth beats are the ‘weak’ ones. So there is still an isochronous pulse underlying this passage. However, compared to the previous section where every beat is stressed, only every strong beat is stressed in this section. As a result, this section feels comparatively faster as there are more beats to fit into the line. In fact, it would be better still to assume that, in our musical comparison, this would be closer to the faster rhythm of 8/8 time. These rhythmic shifts supplement Kerouac’s image of the river: it begins as a slow trickle fed by the rain and then gradually builds momentum as it runs to the sea and becomes the ‘riding of the tide’.

As this indicates, it is possible for a reader who is sensitive to the emphatic phonetic repetition to sense an underlying ‘beat’ within various points of his prose. Kerouac’s interest lay in finding a niche between poetry and prose, as he recorded of his view for *On the Road* in 1949: “Not a river-like novel; but a novel like poetry, or rather, a narrative poem, an epos in mosaic, a kind of Arabesque preoccupation...” (*WW*, p. 241). The finished work is not bound by the conventions of poetic rhythm; rather, it adopts different rhythmic patterns to suit a particular tone, image or theme. Because the text is written in a prose style, and the reader is not accustomed to phonetic repetition that seems more than accidental, these

patterns become a highly prominent feature when they occur, and often Kerouac's dictum that 'it's not the words that count' becomes apparent as the rhythmic effects take hold. Consider, for instance, his description of the hobo 'Mississippi Gene':

Although Gene was white there was something of the wise and tired old Negro in him, and something very much like Elmer Hassel, the New York dope addict, in him, but a railroad Hassel, a travelling epic Hassel, crossing and recrossing the country every year, south in the winter and north in the summer, and only because he had no place he could stay in without getting tired of it and because there was nowhere to go but everywhere, keep rolling under the stars, generally the Western Stars. (*OtR*, p. 25)

Elmer Hassel is only ever referred to in passing during the novel and the reader knows little about him other than that he is a 'dope addict'; this is because the actual Hassel, Hubert Huncke, was imprisoned during Kerouac's travels.²² As such, what is more prominent in this extract is the way Hassel's name serves to establish a brief repetitive rhythm in his description of Gene:

```

/ x / x / x - / x / x / x / - x
but a railroad Hassel, a travelling epic Hassel, crossing and
B o B o B o B o B o B o B o B o B o
/ x / x / x / x / x x / x x
recrossing the country every year, south in the winter and
B o B o B o B o B o B o B o
/ x x / x
north in the summer...
B o B o

```

²² Beat Generation aficionados would be aware that Huncke is credited with having coined the phrase 'beat'; and Kerouac's apparent reverence for him is part of his broader worldview that society's downcasts, such as hobos and junkies, are more spiritually pure and thus 'beatified'.

The difference between this pattern and that of the description of the Mississippi is that stressed syllables tend to follow commas, creating what would traditionally be called a dactyl. The similarity to the Mississippi passage is reflected in the subtle change that develops after the fairly steady alternation of single syllable beats and off-beats, where from 'south in the winter' the beat is dominated by double off-beats. This again has a slightly quicker feel – musically this would be the equivalent of subdividing the notes with the bar, to turn four notes a bar into eight. The overall effect is that this shift creates a similar sense of acceleration and building momentum. This rhythm conveyed through brief repetitions is often used to great effect where Sal describes the view as he travels:

Soon it got dusk, a grapy dusk, a purple dusk over tangerine groves and long melon fields, the sun the color of pressed grapes, slashed with burgundy red, the fields the color of love and Spanish mysteries. I stuck my head out the window and took deep breaths of the fragrant air. (*OtR*, p. 72)

Here the repetition of 'dusk' establishes a general iambic pattern through the phrasing of 'a grapy dusk, a purple dusk'. This pattern sustains a general sense of momentum which is interrupted slightly by the heavily stressed 'pressed grapes': the subsequent unit has a brief trochaic feel, before the final unit reverts to the iambic pattern. Dobyns (1996, p. 81) notes that establishing a metric pattern and then breaking away from it for poetic purposes has roots in the French style of *vers libre*, and was put to use by Eliot and Larkin. This disruption has the effect of

suggesting a brief moment of looking back at the scene through the car window, whilst the overall sense of momentum continues.

Overall, the perception of an occasional isochronous pulse within Kerouac's prose seems a fairly strong explanation for where a non-conscious sensation that his writing is occasionally 'musical' might come from. It gives Wyse's notion that the novel 'swings' particular validity, since the jazz aficionado might have been particularly sensitive to this pattern. Literary critics versed in traditional prose, however, would have little other than Joyce to compare such a use of metre in prose to, and it took those familiar with the rhythms of poetry to see any value in Kerouac. The chief example would be his editor at Viking, Malcolm Cowley, who edited the Viking editions of Whitman's poetry. It was Cowley's recommendation and editorial assistance that not only got Kerouac his contract, but saw him through to actually having the book published. As we shall soon see, this notion of a perceptual pulse within the rhythm of the prose feeds into another musical element of Kerouac's work.

Tension and Resolution

The enduring commercial and communal popularity of music as an art form owes much to the cognitive ability to synchronise muscular movements with an underlying beat. Yet one of the most striking aspects of the musical style Kerouac admired so much was that it was that it was uncommon for people to dance to it, and was actually far less popular than the previous trend, swing (Gridley 1978, p. 169-170). This is apparent even in *On the Road*: Kerouac uses deceptive verbs like

“everybody was rocking and roaring” (*OtR*, p. 179) to summarise the reaction to the music, but what he actually describes amounts to people jumping or bobbing up and down: “Galatea and Marie with beer in their hands were standing on their chairs, shaking and jumping” (*OtR*, p. 179); or, describing Dean: “his head bowed, his hands socking in together, his whole body jumping on his heels and the sweat, always the sweat” (*OtR*, p. 183). The band’s audience do not so much tend to dance but to move about in ecstasy.

What then is the cognitive basis for this reaction? Stylistically, one significant way in which bop differed from swing was the use of more complex harmonic structures, and that the chord progressions of bop compositions “projected a more unresolved quality” (Gridley 1978, p. 142). Essentially what composers and improvisers like Parker and Gillespie were doing was to introduce more notes that fell outside the categorised scale of the piece, creating dissonant intervals before returning to the regular scale tones. Robert Jourdain offers an eloquent summary of how this affects the listener:

From these principles, it’s easy to see how music generates emotion. Music sets up anticipations and then satisfies them. It can withhold its resolutions, and heighten anticipation by doing so, then satisfy the anticipation in a great gust of resolution. When music goes out of its way to violate the very expectations that it sets up, we call it ‘expressive’. Musicians breathe ‘feeling’ into a piece by introducing minute deviations in timing and loudness. And composers build expression into their compositions by purposefully violating anticipations they have established. (1997, p. 312)

These patterns of tension and resolution can occur at all levels of musical experience: rhythmic syncopation is one example. Harmonic tension however is perhaps the most strongly associated with emotional or ecstatic responses to music, and it is a key feature of instrumental genres such as classical and jazz.²³ The effect of categorical violations such as those produced by harmonic complexity can be highly pronounced for some people, particularly trained musicians. This can sometimes take the form of what Sloboda describes as “a pleasant physical sensation often experienced as a ‘shiver’ or a ‘tingle’ running from the nape of the neck down to the spine” (1991, p. 110). This sensation is often referred to as ‘thrills’ (Goldstein, 1980) or ‘chills’ (Blood and Zatorre, 2001). Goldstein found that music was the most effective at stimulating chills (though they could also be sparked by reactions to visual arts or literature); Blood and Zatorre profiled the cerebral effects of musicians reacting to harmonically complex pieces. Their findings proved particularly interesting:

Subjective reports of chills were accompanied by changes in heart rate, electromyogram, and respiration. As intensity of these chills increased, cerebral blood flow increases and decreases were observed in brain regions thought to be involved in reward, motivation, emotion, and arousal, including ventral striatum, midbrain, amygdala, orbitofrontal cortex, and

²³ So notable was the use of harmonic complexity in jazz and classical that for many years commentators assumed that modern jazz composers had been influenced primarily by contemporary classical composers like Stravinsky (Gridley 1978:139). In recent years, the musical ethnologist Gerhard Kubik provided evidence that this harmonic complexity also characterised the multi-part vocal traditions of Africa, suggesting that the harmonies used by Parker and others were more likely to have emerged from African-American cultural memory. See Kubik (2005): ‘The African Matrix in Jazz Harmonic Practices’, 167-222.

ventral medial prefrontal cortex. These brain structures are known to be active in response to other euphoria inducing stimuli, such as food, sex, and drugs of abuse. This finding links music with biologically relevant, survival-related stimuli via their common recruitment of brain circuitry involved in pleasure and reward. (2001, p. 11818)

Feeling the 'chills' through a piece of music can theoretically trigger the brain's inbuilt system of rewards that it uses to motivate behaviour necessary for survival: key to this is a chemical called dopamine, which today is understood to be released in anticipation of a reward (previously it was believed that dopamine itself was the reward: cf. Huron and Margulis, 2009, p. 581). A study by Salimpoor *et al.* (2011) indicates that while listening to music, dopamine may be released merely in anticipation of a resolution to the harmonic tension. Menon and Levitin (2005) extended the work of Blood and Zatorre by explicitly studying the reactions of non-musicians: their findings showed that even without musical training, the mesolimbic system – which is responsible for the transmission of dopamine – could be activated by classical music.

The importance of dopamine to harmonically complex music goes a long way to explaining why Dean reacts with such ecstasy to jazz. Moreover, if one considers what constitutes Dean's constant pursuit of 'kicks', namely food, sex, music and drugs, they all correspond to increased neurological activity of dopamine. Notably, Huron and Margulis write that dopamine "appears to reward *wanting* or *expectation*, not *consummation*" (2009, p. 581). This is the very basis of Dean's

hedonism; and it helps to understand why disparate elements such as jazz and drugs were such a common interest to the Beat Generation.

Moreover though, one could describe *On the Road* as a novel that favours wanting and expectation rather than consummation. One observable microstructure that repeats throughout the novel is the way Kerouac constantly raises the expectation of something that is never fully delivered. Early on, Sal muses: "Somewhere along the line I knew there'd be girls, visions, everything," (*OTR*, p. 10). Yet most of his encounters with girls end in disappointment, his visions seem to have little impact on his life, and he rarely if ever finds what he set out for. Throughout Part One in particular, Sal is constantly brimming with excitement about every location he approaches; but he usually leaves less than satisfied.

Essentially, *On the Road* is a novel that excels in exciting the reader through a strong ability to generate expectations, rather than in the actual content of the adventures themselves. Indeed, not only does Kerouac generate expectations on a macro level about the adventures awaiting Dean and Sal: as we have seen, he constantly generates the expectation that certain patterns will form in his writing style. The key point is that the rhythmic repetitions scattered throughout the novel are never so constant as to directly enter consciousness. Instead, they are more likely experienced as non-conscious patterns that the brain processes discretely. Additionally, violations of syntactic expectations regarding the length of clauses, sentences and paragraphs in a work of prose occur at key regularities. These two would be likely be experienced as non-conscious, but if the effect they have of creating an expectation of a resolution to the regular syntactic form operates in a

similar way to musical expectation, then what would be consciously felt would be a pleasurable sensation. The nearest correlation that a reader might have for this sudden sense of pleasure from an aesthetic stimulus would likely be music, and this, coupled with a sense of rhythmic pulse within Kerouac's writing, might lend some credence to the notion that his writing can be perceived as 'musical'.

In essence, these non-conscious patterns constitute a literary version of musical tension. Goldstein's (1980) research indicated that 'thrills' could be experienced as a response to literature: the minute nature of the patterns in *On the Road* suggests that it is unlikely they would ever be experienced as profoundly as those in expressive music, but a similar sensation is theoretically possible. This may be the most intriguing explanation yet for the intuition that *On the Road* is musical in some way: not in the sense that it resembles music on a purely symbolic level, as Kerouac critics have been arguing for some time; but rather that it has the potential to imitate a pleasurable sensation that is most commonly associated with music.

As a perceptual device, the manipulation of tension for aesthetic effect is not confined to music. Dobyns writes on the importance of tension to free verse:

A basic form of tension is the anxiety created in the reader when the writer apparently frustrates what the reader has anticipated to be the direction of the poem both in form and content: the higher the anxiety, the greater the tension. Tension can be created in many ways. One way is to establish a pattern and then seem to depart from it. Another is to delay or avoid

natural points of rest – that is, places of punctuation or syntactical pauses – by enjambment or by frustrating the development of the sentence by holding back a particular part of speech: for instance, by delaying the subject, verb or direct object. Tension can also work to direct the reader's attention to particular parts of them poem by threatening to frustrate what he has begun to anticipate. (1996, p. 55)

Dobyns notes that the three primary features for controlling tension in a poem are the line breaks, stress patterns and repetition (1996, p. 108-130). He also raises an important point: that the shape of the words on the page brings expectations:

The reader's approach to the poem is greatly influenced by the poem's visual shape on the page. If the poem is long or short, symmetrical or asymmetrical, has long or short lines, this affects the reader's expectation. As readers, we not only bring our attention to the poem, we also bring a sense of how much effort will be required to read the poem, as well as some sense of possible reward. If the poem is large, long and blocky, it is even more necessary to make the poem interesting to the reader as soon as possible. If the poem is thin, short and looks easy to read, then the writer has more time to work with the reader's expectations. (1996, p. 135-6)

Perceptual tension is an important aesthetic device across multiple forms of art. Yet the distinction between the typical application of tension in music and literature is the distinction between conscious and non-conscious processing. In a plot-driven novel, for instance, an author may create tension by purposefully

creating expectations about events and holding off on delivering those events. This represents a conscious form of tension: musical tension, however, is generally processed non-consciously. Harmonic syntax violation is based on an acquired categorical perception of pitch intervals that is generally processed discretely; trained musicians may identify the relations, but for general listeners the source of the tension remains non-conscious. By contrast, in a novel we are generally perfectly capable of identifying the source of tension.

Dobyns' observations on poetry reveal how, like music, it can create tension through elements that are usually processed discretely. Poetry can also utilise conscious forms of tension, such as ambiguity (here we might recall our discussion of Barry in Chapter 2), giving the potential for a synthesis between conscious and non-conscious experience. To a certain extent, this is what Kerouac achieves in *On the Road*. There are elements of tension that are experienced consciously as part of the narrative: many of these arc throughout the text, such as the continually unresolved sense of longing Sal has for an America he never finds, and the supposed genius of Dean that he repeatedly fails to demonstrate. Many elements, however, are experienced non-consciously: and these are what give to the novel a perceptual effect that opens up comparisons with music.

Visions of Sal

Having established the sensory and perceptual basis for this effect of tension, what remains now is to explore the specific means by which Kerouac was creating it. Dobyns provides us with a basis for this, having identified the main sources of non-

conscious tension in poetry. We can immediately identify similar features in Kerouac's prose. A key component is the delaying or avoidance of "natural points of rest": Kerouac's style is replete with examples of sentences that run beyond expected cadences, most notably those that continue for several lines before a full stop. Of course, long sentences are a common device in modernist prose: but what characterises Kerouac's in particular is the 'run-on' feel, owing to a general lack of coordinating conjunctions and a preference for parataxis in his style. By way of example, consider another jazz scene: the concert by bop pianist George Shearing at the famous club Birdland in New York:

The drummer, Denzil Best, sat motionless except for his wrists snapping the brushes. And Shearing began to rock; a smile broke over his ecstatic face; he began to rock in the piano seat, back and forth, slowly at first, then the beat went up, and he began rocking fast, his left foot jumped up with every beat, his neck began to rock crookedly, he brought his face down to the keys, he pushed his hair back, his combed hair dissolved, he began to sweat. (*OtR*, p. 116)

There are some notable repetitions here. First is that of 'began to rock', which is repeated twice in full and echoed by 'began rocking' and 'began to sweat'. The other is the manner in which the independent clauses towards the end of the sentence all begin with 'he' or 'his', creating a further source of repetition. Moreover, the last four of these are followed by a word that begins with a plosive (/b/, /p/ and /k/), giving the passage its percussive element. Consider too what

happens when the sentence is analysed using Attridge’s scansion, this time focusing purely on the underlying beats and off-beats in the passage:

his left foot jumped up with every beat, his neck began to rock
 o B o B o B o B o B o B o B o B o B o

crookedly, he brought his face down to the keys, he pushed his
 B o B o B o B o B o B o B o B o B o

hair back, his combed hair dissolved, he began to sweat
 B o B o B o B o B o B o B o B o

This pattern of beats and off beats begins just after Kerouac writes “then the beat went up”. What is notable is that before this moment in the passage, the beats and offbeats fall on longer, multisyllabic words; but after the beat ‘goes up’ the words are generally shorter and simpler, imitating this effect of a faster rhythmic tempo by allowing the reader to ‘speed up’ by moving quicker from word to word. Again, through a combination of rhythmic and phonetic variation, Kerouac manages to create a mimetic sensation of jazz for the reader.

As mentioned above, many of the expressions regarding Shearing are independent clauses, yet only once does Kerouac uses the conjunction ‘and’. Moreover, he only uses two semi-colons, preferring to comma-splice. While the latter is generally considered a stylistic error, Strunk and White (1959) note that clauses that are short and alike in form are considered an acceptable use of the comma splice. As a result of all this, Kerouac’s sentence strikes a rather compelling balance. It is written in such a way that the reader anticipates certain cadences (either more full stops or semi-colons) to regulate the style in line with traditional formal prose. Importantly, however, the sentence does not deviate too far from stylistic convention to the point of appearing unstructured.

The importance of this becomes noticeable if we return to the comparison of cadences in the written and oral versions of *October in the Railroad Earth*. When the written version goes on as long as it does, it appears merely unstructured and chaotic. But the more controlled cadence in the oral version allows minute deviations to exist without plunging the reading into chaos; for instance, the run-on of 'in redbrick of drowsy lazy afternoons with everybody at work in offices' becomes apparent, and contrasts with the controlled beginning. This establishes rhythmic tension, which aesthetically supplements the gradual progression of the scene towards a chaotic picture of the city in motion.

This kind of tension is effective because it strikes the fine balance between being salient enough to enter consciousness as a perceptual effect, yet staying relatively discrete by conforming just close enough to acceptable sentence structure and style, to avoid bringing the source of the tension into consciousness as well. This is a key difference between novels written in Kerouac's 'Spontaneous Prose' style and *On the Road*. In the former, the reader becomes overwhelmed with structural tension that promises no resolution and can be quickly identified as a stylistic fault; in the latter, the anticipation is never too far from being resolved, and the source of the tension remains non-conscious. As in music, a brief deviation to a dissonant note that quickly resolves to the original scale can be used as an expressive device, but too many dissonant intervals becomes unpleasant.

The extent of jazz's influence on Kerouac's style of writing, however, perhaps runs even deeper than previously speculated, as minute patterns of tension and

anticipation characterise his style in *On the Road*. At first glance, the book resembles a traditional novel in that it carries many of the syntactic conventions that we expect from prose; unlike the styles he adopted in *Visions of Cody* or *The Subterraneans*. Yet as we have seen from the rhythmic analysis, there are moments embedded throughout the regular structure where the syntax becomes more what we expect of verse, and at times conveys an underlying beat – which one rarely if ever expects to pick up in traditional prose.

My argument as to why *On the Road* is the most commercially successful and enduringly popular of Kerouac's fiction is that it represents his most accomplished blend of prose and poetry. This was the unwitting product of the nine year composition and revision period he endured before it made it onto the shelves: it gave him the best chance to focus his intuitions about projecting the 'rush of truth' to the reader and refine those passages with exceptionally poetic overtones. These microstructures of poetry within what is generally categorised as a work of prose create moments of tension, and anticipation of a resolution to the regular form. The fact that his poetic rhythms are never sustained for very long, and even within those patterns have moments where they temporarily fall out of rhythm, effectively 'losing the beat', is itself a feature that helps to ensure this musical sensation is heightened for the reader. As Robert Jourdain explains, a completely consistent beat might eventually become dampened in our consciousness, and the effect would be lost:

Habituation occurs in all parts of our experience, and at all levels. A flashing display on a VCR soon ceases to draw our attention. So does a perfectly

even beat in music. We still hear every feature of the sound, of course, because habituation is never total. But the beat is less forceful than it would be if it were varied slightly. One cause of this phenomenon may be temporary neural exhaustion when the same brain circuits are activated again and again. Slight variation overcomes this failing. (1997, p. 314)

So although this aspect of Kerouac's style in *On the Road* might not have been the product of intentional design, through his continual revision over such a long period it may have emerged gradually, and contributed to the novel's sensation of being 'like jazz'.

Of course, to perceive *On the Road* as jazz-like is most likely for a specific type of reader with experiences that would allow them to relate to this sensation of music. This would require they have some sensitivity to poetic structures, perhaps also a familiarity with the styles of music Kerouac describes, so as to have a comparable sense of a stimulus that produces feelings of pleasant tension. As such, when the novel debuted in 1957, it is likely that it would have resonated more directly with Kerouac's contemporaries and the youth who enjoyed the same underground jazz scene that he did, and less so with literary critics expecting a traditional novel conforming to certain stylistic standards.

"Everything was like jazz"

On the Road is not the only novel of Kerouac's where these kinds of patterns are fairly prevalent. One example was already given in the introduction to this thesis:

from Kerouac's *Desolation Angels*, where he describes the scene in a San Francisco jazz bar after his character Jack Dulouz has just returned from his time as a watchman on Desolation peak:

The bartenders are the regular band of Jack, and the heavenly drummer who looks up in the sky with blue eyes, with a beard, is wailing beer-caps of bottles and jamming on the cash register and everything is going to the beat – It's the beat generation, it's *béat*, it's the beat to keep, it's the beat of the heart, it's being beat and down in the world and like old time lowdown and like in ancient civilisations the slave boatmen rowing galleys to a beat and servants spinning pottery to a beat. (1965, p. 137)

Once again, the plosive /b/ is prevalent throughout this passage, not just in the repetition of 'beat' but in the alliteration of 'bartenders', 'band', 'blue', 'beard', giving it a percussive accent. Then there is a rhythmic pattern established after the first occurrence of the word beat, which we can again examine in terms of the beats and off beats:

It's the beat generation, it's *béat*, it's the beat to keep, it's
B o B o B OB B o B o B o B o B o B o B
the beat of the heart, it's being beat and down in the world and
o B o B o B o B o B o B o B o
like old time lowdown
B o B o B

Here again, the rhythmic patterning is fairly consistent. So this passage has the phonetic and rhythmic elements consistent with Kerouac's style of imitating jazz in *On the Road*. A recording also exists of Kerouac reading this passage, without any musical accompaniment: his phrasing takes on the gentle rhythm outlined above.

Earlier in the chapter we considered Malcolm's largely symbolic analysis of the relationship between jazz and Kerouac's writing, with his argument that Kerouac's obsession with jazz was a manifestation of his primitivism and its accompanying predilection for all aspects of African-American culture. Whaley (2004) also touches on the concept of primitivism as explaining Kerouac's appropriation of jazz, but he adds some extra layers of interpretation, using a passage from Kerouac's *The Dharma Bums* as a pivot.

Then suddenly everything was like jazz: it happened in one insane second or so: I looked up and saw Japhy *running down the mountain* in huge twenty foot leaps, running, leaping, landing with a great drive of his booted heels, bouncing five feet or so, running, then taking another long crazy yelling yodelaying sail down the sides of the world and in that flash I realised it's *impossible to fall off mountains* you fool and with a yodel of my own began running down the mountain... (1959, p. 74)

Whaley suggests that the jazz-like style of the passage is principally symbolic in nature:

On one level, Ryder's descent may be said to resemble jazz (especially bop) in the way a solo may take unusual "leaps" from one note to the next and give no account to the available, more conventionally used, notes in between. At another moment the solo may seem to be "running" in orderly fashion through diatonic arpeggios or scales, or chromatic runs. Jazz solos

seem to “bounce” as they syncopate or swing the beat in a particular way. Finally, the “yodelaying” voice resembles the jazz solo insofar as the latter is heard as an extension of the voice. (2004, p. 32-3)

This is fairly astute symbolic analysis of the connections between jazz and Japhy Ryder’s wild descent down the side of the mountain. If we apply the style of rhythmic and structural analysis from the reading of *On the Road* to this passage from *Dharma Bums*, what becomes clear is that Kerouac creates a mimetic description of the jazz-like descent, as it sails down the mountainside. ‘Running’ is used as the repetitive hook throughout the passage, as with ‘beat’ in *Desolation Angels*. It establishes a brief pattern of ‘running, leaping, landing’ with Kerouac’s typical style of staccato commas, and then breaks into a run-on sentence that creates a mild sense of tension, which is resolved just as Kerouac’s character resolves his own sense of fright and goes after Japhy. The ‘yodelaying’ moment comes, as Whaley notes, within a moment where it can be taken to resemble a jazz solo that takes place during a break – which Whaley compares to a famous break by Charlie Parker on the track ‘A Night in Tunisia’ (2004, p. 32). In this case though the break takes place just after Kerouac has built a sense of rhythm.

There are other examples to be found across Kerouac’s prose, but they seem strongest and most consistent in the works that were created or revised after his experiments with ‘Spontaneous Prose’ had subsided. Chiefly these are *On the Road*, *The Dharma Bums* and *Desolation Angels*: by the time it came to writing *Big Sur*, Kerouac had again moved closer to the style of ‘Spontaneous Prose’. This musical element of his writing style occurs every now and then within these works, and

although it is never sustained for too long (whether by accident or design), it establishes a trace, non-conscious sensation that something 'like jazz' is happening within the passage. Kerouac criticism has been grappling with symbolic explanations for it over several decades; to those they can now add the more direct understanding that it really is analogous to jazz in terms of its principle aesthetic effect.

Chapter Four: Impressionism in *Mrs Dalloway*

First Impressions

Virginia Woolf herself noted upon finishing *Mrs Dalloway* that it would challenge the literary world. “The reviewers will say that it is disjointed because of the mad scenes not connecting with the Dalloway scenes” (1978, p. 75). This intuition turned out to be correct. After publication, she noted that she had received ‘two unfavourable reviews’ (1978, p. 81), but also an encouraging letter of praise from ‘a young man in Earl’s Court.’ He wrote: “This time you have done it – you have caught life and put it in a book...” (1978, p. 81).

Contrary to her anxieties about the novel and some poor early reviews, Woolf’s experimental fiction in *Mrs Dalloway* has since been accepted as part of literary canon. As well as being understood as one of the original modernist authors, the works of Woolf are often considered to carry examples of literary Impressionism. It is this literary technique that this chapter will focus upon, aiming to expand our understanding of it through cognitive science. It attempts to show that the ‘disjointed’ nature highlighted above is essential to the process of being able to recreate life-like sensations for the reader, such as the man who wrote to Woolf. As the previous chapter focused on connections with music, this chapter will in turn delve deeper into the connections between Woolf’s style and the visual school of Impressionism.

It will offer a brief survey of the current scholarship on literary Impressionism, principally so as to establish links with the methodology and theories outlined in Chapters One and Two. Following this, it will discuss how the concept of 'delayed decoding' often considered a core part of literary Impressionism fits in with our cognitive framework. The chapter will then move into a perceptual analysis of some of the distinctive effects associated with visual Impressionism, and look for points of comparison with Woolf's style in *Mrs Dalloway*. This will extend across three broad categories of comparison: equiluminance (a key aspect of Monet's work), sound (following on from our discussion of sound in Kerouac), and finally how the novel represents time, and the way this can be related to our own mechanisms of time perception.

To begin, let us examine this excellent description of literary Impressionism provided by Van Gunsteren:

The Literary Impressionists, like the Impressionists in painting, focused on perception. They attempted to formulate reality by breaking it into momentary fragments, selected intuitively and subjectively. They relied on sensory (ap)perceptions, used clusters of images and rendered their emotions in a 'slice of life' picture of some everyday, ordinary experience. (1990, p.7).

What distinguishes Impressionism's treatment of sensation and emotion from the realist literature of the nineteenth century is this focus on representing the act of perception with the greatest authenticity. This meant embracing a subjective and

therefore potentially imperfect representation rather than relying on omniscient narration to interpret and summarise what their characters felt. Sensory perceptions are presented as though they are immediate reactions rather than slower interpretations.

Jesse Matz, who has written extensively on literary Impressionism, has this to say about the relationship between the visual and literary schools of Impressionism:

The Impressionisms of painting and literature share an interest in subjective perception. This shift from object to subject, with its emphasis on point of view, seems to have entailed in both arts attention to evanescent events, radical fidelity to perceptual experience, and a consequent inattention to what had been art's framing concerns. Out were plot, schema and other forms of rationalising conceptual knowledge: freedom, informality and emphasis on the experience of the senses enabled the artist to make art more perfectly reflect lived experience. And freedom from all other goals allowed the artist to get at the moment of perception, from which all other forms of experience follow. (2001, p. 45)

Using this as a framework, we can see how the observations about the fate of Mrs Dalloway pulled from Woolf's diary fit this general mould of Impressionism. The 'disjointed' plot structure was written precisely so that Woolf could "more perfectly reflect lived experience", as Matz puts it. But Matz goes on to sound a note of caution regarding the idea of drawing a close analogy between the world of art and literature:

Analogies between the arts are always suspect. Beyond the pleasure and usefulness of basic interdisciplinarity, important warnings begin to sound, and these gain special authority when it comes to Impressionism, primarily because such analogies have often supported claims that Impressionism is not literary. Superficial sensation may work well in painting, but it trivialises literature: this has been, as we have seen, the argument behind misunderstandings of the literary impression – the argument that led Max Nordau, for example, to conclude that “Impressionism in literature is an example of the atavism which we have noticed as the most distinguished feature in the mental life of degenerates.” (2001, p. 45-6)

Matz’s example of Nordau’s attitude towards Impressionism is indeed a rather strong warning to tread carefully where attempting not only to create analogies between the arts, but also to attempt to rationalise it in terms of science. Nonetheless, this is one of the ambitions of this chapter. Matz and Van Gunsteren’s language used to define Impressionism takes us back to the familiar terms of perception and sensation. These are indeed at the heart of Impressionism, whether literary or visual.

Having arrived at this familiar point, we might now recall Shlovsky’s observations about the ‘deautomatisation’ effect of poetic language:

We find material obviously created to remove the automatism of perception; the author’s purpose is to create the vision which results from

that deautomatized perception. A work is created 'artistically' so that its perception is impeded and the greatest possible effect is produced through the slowness of the perception. (1965, p. 33).

This deautomatised perception is one particularly crucial facet of *Mrs Dalloway's* artistic impact. It works against our expectations of a linear narrative, a clear chronology and an omniscient narrator. Sudden shifts in tense, ambiguities about point of view and the exact chronology of the moment disrupt the experience of conventional reading, of being able to move quickly from one event to the next by simply following the plot. By complicating the narrative in this way, Woolf impedes the automatic perception of textual information and in a manner of speaking imitates the confusion and the emotional state of her key characters, particularly Septimus as he suffers from the effects of shell-shock. For some readers, this mimetic effect will be off-putting; but this deautomatised perception has the potential to imitate aspects of the human experience that are more effective than if they are simply told directly.

As an example of how this deautomatisation functions in the novel, let us consider a passage where Peter Walsh undertakes his visit to Clarissa:

'Do you remember the lake?' she said, in an abrupt voice, under the pressure of an emotion which caught her heart, made the muscles of her throat stiff, and contracted her lips in a spasm as she said 'lake'. For she was a child, throwing bread to the ducks, between her parents, and at the same time a grown woman coming to her parents who stood by the lake, holding

her life in her arms which, as she neared them, grew larger and larger in her arms, until it became a whole life, a complete life, which she put down by them and said 'This is what I have made of it! This!' And what had she made of it? What indeed? sitting there sewing this morning with Peter. (*MD*, p. 46)

The passage opens with an innocuous question from Clarissa, all of five words long, before it moves into describing in vivid sensory and emotional detail the toll it takes her to ask this question: her stiff throat, abrupt voice, her lips in a spasm. Then Woolf writes 'For she was a child', implying at first that she is remembering her experience as a child by the lake when she asks the question, but also shifting the narrative away from the present to the past. Then, the line "at the same time a grown woman" further impedes the steady perception of this passage, as the reader is confronted by the ambiguity of this image of Clarissa as both a child and a grown woman. It forces them to question whether she is perhaps having two distinct but related memories of the lake, first as a girl and second as a woman; or if the co-existence of these two ages signifies that this is not simply the province of memory and this is instead Clarissa's poetic description of her feeling unsettled by Peter Walsh's presence. The continued imagery of showing her parents 'her life' and then turning the question to herself: 'and what had she made of it?' makes it seem as if she is evaluating her life having been confronted by Peter, as the passage returns to a mundane image of her sewing.

It takes a careful reading of this passage to notice and fully appreciate these shifts and points of ambiguity, and in part it owes this to having done away with omniscient narration. Yet this is an essential component in this aesthetic

experience of Clarissa's emotional turmoil at this moment. The passage is long and the narrative style makes it seem longer still; but by contrast the actual dialogue takes barely any time. It becomes more noticeable if one aligns the dialogue from these pages but omits all of the descriptive paragraphs that accompany them:

Clarissa: 'Herbert has it now. I never go there now.'

Clarissa: 'Do you remember the lake?'

Peter: 'Yes. Yes, yes yes.'

Clarissa: 'Well, and what's happened to you?'

Peter: 'Millions of things!' 'I am in love. In love, in love with a girl in India.'

Clarissa: 'In love!' 'And who is she?' (*MD*, p. 46-8)

While this actual conversation between Clarissa and Peter takes up only a few lines, the text runs for several pages. In between each phrase of their conversation, Woolf impedes the flow of the conversation by taking time to dwell on their thoughts and by constructing temporal shifts in each individual paragraph. As such, the reader is allowed to feel for himself or herself how difficult it is for Clarissa and Peter to talk directly to one another, because of all that has come between them in the past.

Delayed Decoding

Joseph Conrad and Ford Madox Ford are the most common names that recur in discussions of literary Impressionism, although Woolf, Stephen Crane and Katherine Mansfield are also frequently connected with the movement. Examples

of the devices that characterise literary Impressionism can also be found in Proust and Joyce. Ford is perhaps most responsible for creating the idea of a 'literary' Impressionism, through his essay 'On Impressionism'. Saunders writes that Ford envisaged Impressionism as a movement occupying its own time period between realism and modernism. Ford's novel *The Good Soldier* is noted both for having a fragmented narrative and a grammar of colour that can be compared to a painting – with certain colours taking on symbolic values (Liu, 2014, p. 107).

However, the locus classicus of how the literary form of Impressionism actually functions in terms of the reader's approach to the text is Ian Watt's discussion of Joseph Conrad, in *Conrad in the Nineteenth Century*. Watt coined the term 'delayed decoding' to describe how the reader undergoes a perceptual experience derived from the same experience as the character. As Watt describes it, the technique "combines the forward temporal progression of the mind, as it receives messages from the outside world, with the much slower reflexive process of making out their meaning" (1979, p. 175). Watt's classic example is taken from *Heart of Darkness*, when Marlowe's boat is attacked:

Something big appeared in the air before the shutter, the rifle went overboard, and the man stepped back swiftly, looked at me over his shoulder in an extraordinary, profound, familiar manner, and fell upon my feet. The side of his head hit the wheel twice, and the end of what appeared a long cane clattered around and knocked over a little camp-stool. (Conrad, 1995, p.77)

At first glance, despite the note of his head hitting the wheel, the language surrounding the man does not seem to be overly violent. But as Marlowe continues, the reality of what has occurred starts to dawn on him:

The thin smoke had blown away, we were clear of the snag, and looking ahead I could see that in another hundred yards or so I would be free to sheer off, away from the bank, but my feet felt so very warm and wet that I had to look down. The man had rolled on his back and stared straight up at me; both of his hands clutched that cane. It was the haft of a spear that, either thrown or lunged through the opening, had caught him in the side just below the ribs... (1995, p.77)

At this point the reader completes the picture and realises that the cane is actually a spear and the wetness encroaching on Marlowe's feet is the man's blood. Because Conrad reports Marlowe's initial perceptions, stripped of their violent referential properties, he allows the reader to undergo a sense of shock when they actually comprehend what is occurring. In doing so, they are undergoing the same perceptual experience as Marlowe, as Watt puts it.

Watt's concept of delayed decoding relates well with Shlovsky's idea of deautomised perception, although in this case the automatic process that is impeded is the rational centres of the brain putting together a clear account of what happened to the man on the boat. By not simply telling the reader that the spear hits the man, Conrad forces the reader to undergo his or her own rationalisation of the scene and in doing so he draws attention to a mental process

we might take for granted. A similar event occurs in *Mrs Dalloway* when Clarissa visits the florist, Miss Pym, and while letting her train of thought run away she is interrupted by a sudden noise:

As if this beauty, this scent, this colour, and Miss Pym liking her, trusting her, were a wave which she let flow over her and surmount that hatred, that monster, surmount it all; and it lifted her up and up when – oh! a pistol shot in the street outside! (*MD*, p. 14)

Miss Pym immediately explains that we have heard a motor car backfiring, providing a rational explanation at once. Yet the power of this style lies in the sudden leap to first person narration and the abrupt use of the dash to interrupt the previous train of thought. The emphasis then is not on what has actually happened or even what Clarissa hears, but on the nature of her reaction. Compared to the mundane reality that follows, this sudden perception and its violent nature suggest Clarissa is in a hypersensitive state. The reader is not told this explicitly by any narrative voice but they may interpret it themselves. Hence there is an illusion of authenticity, of being able to judge based on first-hand evidence, bringing the reader to undergo their own moment of decoding as they arrive at a rational explanation for the initial perception reported by Clarissa. Indeed these two examples are somewhat antonymic in their outcomes: Conrad's language during the delivery of the initial impression is purposefully non-violent to make the shift to a violent interpretation more shocking and show Marlowe's disorientation; while Woolf's initial impression is violently written so as to make the de-escalation

offered by Miss Pym more potent, and to make the reader aware of Clarissa's state of nervousness.

In terms of critical debate around the idea of literary Impressionism, Watt and Matz are extremely important theorists. Matz extensively investigates how the term 'impression' has been used from philosophical origins through to the writings of Proust, Conrad and Woolf, not to mention Joyce and Henry James. His argument is that Impressionism as an artistic movement in literature can be seen as a distinct tradition, despite the overlaps with modernism and realism (2001, p. 30-50). This chapter aims to expand the ideas of Watt, Matz and other impressionist theorists with material from the cognitive sciences.

Ann Banfield has also written in detail on the influence of Impressionism on Woolf's work. "Her oft-noted Impressionism of style deliberately imitates the Monet-like analysis of appearances" (2000, p. 270). Banfield primarily interprets Woolf's Impressionist influence as being manifested in the temporal structure of key novels such as *To the Lighthouse*. Banfield essentially views Woolf's early fiction and short stories as being similar in design to the original Impressionists (Monet and Renoir), but her later stories being more influenced by the Post-Impressionists, such as Cézanne and Pissaro.

Woolf knew too well Fry's criticism of Impressionism to be content with a form that stopped with impressions. Impressionist "vision" required Post-Impressionist "design," Paul Cézanne's geometry. Story must be turned into novel. (2003, p. 472-3)

This is not to suggest that the earlier Impressionists do not bear any relation to Woolf's concept of Impressionism. What is most relevant about the Post-Impressionists is their 'design', which in Cézanne's case refers to his interest in the elemental forms of geometry and colour. Banfield argues Woolf transforms "Impressionist colour and light" into "the colourless physical time series" for *To the Lighthouse* (2003, p. 511). In her view, while the novel's time provides the equivalent of Cézanne's canvas as a design for Impressionism, Woolf was less influenced by Bergson's concept of time than has been traditionally claimed, and was more influenced by Russell's concept of relativity. In drawing on these influences, Woolf resembles Zeki's concept of the artist being a neurologist who studies the brain through their search for artistic technique. Banfield notes that there was a scientific framework behind Woolf's appropriation of the visual arts.

Woolf's aesthetic was dualist. The model came from the visual arts, though it also has a source in British science. One version of science's dualism is what Alexandre Koyré has in mind when he observes of the Galilean revolution that it changed the idea of the real world as given to the senses; after Galileo, there is a rupture between the sensible world and the real world, that is, the world of science. (2003, p. 476).

One of the ambitions of this chapter is to expand on Banfield's arguments and show that they are equally relevant for *Mrs Dalloway*. Her idea that literary time is the equivalent of Impressionist colour will be expanded upon by drawing links

with what cognitive science can tell us of the perception of time. It will also be shown that behind the works of Monet there was an equivalent to Cezanne's geometry – Monet's use of equiluminance – that finds itself expressed in *Mrs Dalloway* on an analogous level.

This is far from the first work approach Virginia Woolf's fiction following the surge of interdisciplinary studies applying cognitive science to the arts. Susan Nalbantian (2008) discusses how *To the Lighthouse* can inform our understanding of a neuronal interpretation of creativity, connecting it with a form of neuroaesthetics informed more by Jean-Pierre Changeux than by Zeki. Lisa Zunshine's *Why We Read Fiction* (2006), which discusses the literary significance of the 'Theory of Mind': the ability to ascribe a mental state to someone based upon our external observations of that person or character. Essentially, Theory of Mind is a broad term for how humans empathise with one another. It represents a more theoretical model for the importance of empathy; although it seems to brush awkwardly up against Literary Darwinism in terms of striking out towards neurological territory with an interest in cold evolutionary logic, only to resort to generalisations about the nature of humanity that ignore that evolutionary logic. Zunshine is directly engaged with the notion that *Mrs Dalloway* is a difficult novel to read; indeed, one chapter is titled: 'Can cognitive science tell us why we are afraid of *Mrs Dalloway*?' Her close reading of the passage where Hugh Whitbread produces a fountain pen shows how many layers of interpretation can be built into a single paragraph; and it identifies how this taxes our cognitive capacities, as we try to make sense of different relationships between different subjects. Yet

Zunshine herself notes that this approach alone does not constitute '*the cognitive approach*', effectively inviting further study on the novel.

'Theory of Mind' suggests that we gain enjoyment through testing our ability to read the emotional states of others in social situations; similar to the rationale for Tsur's view of how we derive pleasure from wit (Tsur, 2008, p. 10-11 and Zunshine, 2006). Gallese and Wojciehowski offer a corresponding view to 'Theory of Mind': the 'Feeling of Body'. The basis for this theory draws on a neurological observation concerning 'mirror neurons', where if a person observes another person performing an action or expressing an emotion, the same neuron will fire in the brains of both the observer and the observant. Mirror neurons are detailed in Ramachandran (2011) as a phenomenon that provides evidence for how humans made great advances in technology, social skills and language in a relatively short period of time in evolutionary terms. However, in the Gallese and Wojciehowski paper the investigation of how mirror neurons actually impact upon our reading of *Mrs Dalloway* is simple to the point of being redundant. The authors merely make the point that the reader may actually feel the sensations Clarissa does when she imagines the death of Septimus, because the same neurons might fire for them as would for Clarissa.

The larger question which neither of these two works answers is specifically how these abilities of the mind to empathise or feel bodily sensations are generated by the text itself. If the answer called simply on the power of imagination, then *Mrs Dalloway* would surely be no more distinctive a novel than any other. This investigation, then, seeks to uncover what devices within the text can have an

emotional or sensory impact upon the reader, and how best to account for them using cognitive science.

In terms of using science in an unpalatable attempt to justify one's personal antipathy towards an artistic movement, it is hard to go past the opinion of Nordau as quoted by Matz earlier as one of the most appalling examples. The opinions of the neurologist Steven Pinker certainly come close though. In his highly controversial work *The Blank Slate*, which deals with the idea of human nature, he launches a scathing attack on modernism in general (and it should be mentioned that what he calls 'modernism' appears to encapsulate just about everything from Cubism to postmodernism). He begins by misquoting Woolf's anecdote from 'Mr Bennett and Mrs Brown' that "in or about December, 1910, human character changed." Pinker substitutes or otherwise mistakes "human nature"²⁴ for "human character" and uses it to critique modernism for failing to appeal to what he claims is an innate standard of aesthetic taste:

Modernism certainly proceeded *as if* human nature had changed. All the tricks that artists had used for millennia to please the human palate were cast aside. In painting, realistic depiction gave way to freakish distortions of shape and color and then to abstract grids, shapes, dribbles, splashes, and, in the \$200,000 painting featured in the recent comedy *Art*, a blank white canvas. In literature, omniscient narration, structured plots, the orderly introduction of characters, and general readability were replaced by a stream of consciousness, events presented out of order, baffling characters

²⁴ Pinker's source for this quote, which he rather generously 'attributes' to Virginia Woolf, is not the essay 'Mr and Mrs Brown' but "countless English course outlines".

and causal sequences, subjective and disjointed narration, and difficult prose. (2002, p. 410)

Suffice to say that Pinker has drawn a lot of criticism,²⁵ and deservedly so when he illustrates that charge from Chapter Two that was levelled against certain neuroscientists: that of discussing the arts in such reductionist terms as having universal standards of good taste. Pinker's discussion of modernism notes correctly that certain political and social attitudes played a part in shaping these new styles, but he treats this as though it were an excuse for what he considers a violation of his own aesthetic standards.

If there is to be a meaningful engagement between cognitive science and literature on the topic of Impressionism, it is important to avoid both Pinker's pitfall of reductionism and the overly simplified ideas of 'Theory of Mind' or 'Feeling of Body'. Instead, what this chapter will offer is a closer study of the mechanisms of perception that relate to the mental effects Impressionism appropriated with the ambition of better representing the experience of 'life itself'.

'De-automatised' Perception

As we have seen from Chapter Two, Barry's 'Perceptual Aesthetics' offers a number of insights into some of the fundamentals of how our minds respond to artistic forms. Much of Barry's work hinges upon structures in the brain's organisation that have significance for aesthetics: left and right brain, emotional

²⁵ For some notable rebuttals to Pinker, see Dancygier (2012) and Zunshine (2006).

versus rational processing, and top-down versus bottom-up processing. Some of these structures have already made their way into Woolf scholarship, with Priest (2009) exploring the distinction between right-brain and left-brain perception in Woolf's fiction. In this chapter we examine how the distinction between top-down and bottom-up processing is significant for understanding *Mrs Dalloway*. Here is what Barry has to say of bottom-up processing:

At the most basic level of perception, automatic perceptual ("bottom-up") processing responds emotionally below the level of conscious awareness to the affective meaning of color, line, shape and movement. So called abstract art exemplifies this well... Neurologically speaking the paint color achieves an impact on the most basic level of bottom-up processing. Picked up by the retina, the color frequency is sent to the thalamus, where it is then split and travels simultaneously to the amygdala, where its inherent emotion is realized, and to the visual cortex, where it is identified as blue. (2006, p. 145)

The evolutionary value of bottom-up processing is that emotional reactions to stimuli occur more immediately than the cognitive response of the cortex: which, by contrast, responds in what Barry describes as a "more refined, detailed fashion, imposing maps of pre-knowledge and implicit experiential logic on new emotional response" (2006, p. 144). Much of what is processed directly through the senses does not enter direct consciousness: only the relevant emotion or sensation appears. In this extract Barry's examples come from visual art: but in a literary

context we could point to the phonetic information as a correlate of bottom-up processing.

Top-down processing is not strictly the opposite of this approach, but one where the responses of the cortex wield more influence than those of the emotional centres of the brain. Zeki has this to say of top-down processing:

What is meant by "top-down" is vague in neurological terms, but what is implied is that a "higher" thought process influences the way in which we interpret things or that a "higher" area influences neural activity in a "lower" area. Implicit in such thinking is the supposition that processing and perception are always entirely different. (2011, location 1399)

Broadly speaking, a novel like *Mrs Dalloway* challenges our ability to process the novel in a top-down manner. This is not to say that we cannot achieve a top-down reading of the novel, but that Woolf inhibits the ability to come up with these detailed responses through the novel's complex shifts of perspective and time. Although it becomes possible to make full sense of these over time or with re-reading, in the initial reading of *Mrs Dalloway* bottom-up processing is more likely to be dominant. Impressions based on sound patterns and perceived emotional states of the characters come to the fore, both representing forms of processing that occur below the level of consciousness.

It is well noted that Woolf was writing at a time when various revolutions in the fields of psychology were transforming the way people understood the mind. Chief

among these of course the works of Freud and his theories of the unconscious. However, during the composition of *Mrs Dalloway* (then titled 'The Hours'), Woolf became familiar with a literary meditation on the nature of consciousness: that of Proust's *In Search of Lost Time*. Dalgarno notes that Moncrieff's translation of Proust, to which Woolf had access, made some translation decisions that masked some of the detail in Proust's treatment of consciousness:

[Moncrieff] simplified Proust's extensive vocabulary of words for mental functions, reducing it to conscious and unconscious... his mistranslations resulted in Woolf's preference for the Proustian image of the unconscious as the source, not of error and struggle as in Freud's work, but of the artist's unique access to the underwater world of the mind. (2011, p. 97)

Scenes from *In Search of Lost Time*, such as the moment where the narrator of *Swann's Way* takes a bite of a madeleine soaked in tea, prompting him to vividly recall his childhood at Combray, offered Woolf a thematic model for the mediating impact of the 'unconscious' on the character. Woolf's own moments of non-conscious triggering of her character's memories are more subtly developed in *Mrs Dalloway*, beginning from the first page where the very act of stepping into the morning air leads Clarissa to recall her days at Bourton. Did this model of mental processes influence not only her character construction, but also her attempts to draw in her readers?

Cuddy-Keane (2003) offers a reading of Woolf's essay 'How Should One Read a Book?', comparing it also with Woolf's analysis of Dostoyevsky's *The Eternal*

Husband. She suggests that Woolf developed an opinion of the role of non-consciousness similar to that modelled by Barry:

Here unconscious assimilation is not prior to conscious apprehension; it is an ever-present, formative participant enabling the apparent seamlessness of conscious thought. The “vivid streak of achieved thought” is, under microscopic examination, made of a chain of conscious and unconscious links. The unconscious is thus not, in Woolf’s construction, a passive container or a deterministic mechanism; it is an active and creative participant in thought. (2003, p. 125)

The unconscious associations that Cuddy-Keane refers to can be seen to function in this manner during *Mrs Dalloway*, as a mediating tool that blends individual thoughts and perceptions into a continual ‘stream of consciousness’. For example, the opening passage of the novel depicts Clarissa stepping into the London air and recalling her time at Bourton.

And then, thought Clarissa Dalloway, what a morning – fresh as if issued to children on a beach.

What a lark! What a plunge! For so it had always seemed to her, when, with a little squeak of the hinges, which she could hear now, she had burst open the French windows and plunged at Bourton into the open air. How fresh, how calm, stiller than this of course, the air was in the early morning; like the flap of a wave; the kiss of a wave; chill and sharp and yet (for a girl of eighteen as she then was) solemn, feeling as she did, standing

there at the open window, that something awful was about to happen; looking at the flowers, at the trees with the smoke winding off them and the rooks rising, falling; standing and looking until Peter Walsh said, "Musing among the vegetables?" – was that it? – "I prefer men to cauliflowers" – was that it? (*MD*, p. 3)

In a manner reminiscent of how the young Marcel of *Swann's Way* suddenly recalls his past through the madeleine, the sensation of the morning air is enough to trigger Clarissa's memories of Bourton. A series of unconscious associations bridge her conscious thoughts into a seamless connection: the 'fresh' feel of the London morning is associated with the 'fresh' feel of the Bourton morning, and she recalls automatically the 'squeak of the hinges' on the French windows at Bourton. She automatically corrects her thoughts with unconscious speed: "the flap of the wave" becomes "the kiss of the wave", and "Musing among the vegetables?" is queried against the possibility of Peter having actually said "I prefer men to cauliflowers." In this way, the process of unconscious association builds upon active thought, allowing temporal gaps such as that between the present time and Bourton to appear absolutely seamless, and to allow the reader to experience the perceptual effect of Clarissa being transported within her own memory.

Sensations and brief impressions of the kind that Clarissa experiences above are essential to creating the elaborate transitions between different characters in *Mrs Dalloway*. A powerful indication that Woolf's ideas were headed in this direction before she discovered Proust or began writing *Mrs Dalloway* can be found in her essay *Modern Fiction*, originally penned in 1919:

Examine for a moment an ordinary mind on an ordinary day. The mind receives a myriad of impressions – trivial, fantastic, evanescent, or engraved with the sharpness of steel. From all sides they come, an incessant shower of innumerable atoms... Is it not the task of the novelist to convey this varying, this unknown and uncircumscribed spirit, whatever aberration or complexity it may display, with as little mixture of the alien and external as possible? (2006, p. 2089)

That Woolf sought to avoid discarding the seemingly trivial impressions of everyday existence and instead build them into her fiction is well established. Having established that this style of gathering impressions fits in with Barry and Zeki's concept of 'bottom-up' processing, we now have a window into how we might compare literary Impressionism more directly against visual Impressionism. For this task, we turn to one of Zeki's neuroscience contemporaries who was flagged earlier in Chapter Two.

Equiluminance

On one very simple level, the relationship between impressionist literature and impressionist painting is identified by Zeki (2011) as deliberately creating a work that is in a certain sense "unfinished". Zeki writes that Cézanne and Pissaro: "left it to the viewer's brain to construct the image."

Moreover, by leaving so much of it apparently unfinished, he leaves open the possibility that the paintings themselves could have been developed in a number of ways, both for the painter and the viewer. How it is integrated and developed depends on the viewer, or rather on the brain of the viewer, and may change from one viewing to the other. (2011, location 2027)

The early Impressionist artists were indeed heavily criticised for the ‘unfinished’ look of their work. On the other hand, Cézanne and Pissaro belonged to a later movement that Woolf’s contemporary Roger Fry described as “Post-Impressionism”. Banfield (2003) argues that Woolf was in fact more influenced by Post-Impressionism, aware that Fry had criticised the early Impressionism for lacking design. As the artists moved from impressionist blurring of details and colours to the post-impressionist precision of pointillism, so too, Banfield argues, did Woolf move from ‘impressionist’ short stories to post-impressionist novels, where the longer form allowed for a more creative use of the passage of time. Stewart (1982) corroborates this view that the early Impressionists influenced Woolf’s early fiction and short stories in his detailed discussion of Woolf’s fictional works up to but not including *Mrs Dalloway*. He notes the short story ‘Kew Gardens’ as being an important moment in Woolf’s development:

Woolf crystallized her Impressionist style in “Kew Gardens” (1919). The people are etherealized or dehumanized by the play of light through a shifting lens, alternately microscopic or blurred, that synthesizes human and natural objects. A disembodied eye dramatises sensuous life of plants and reduces moving figures to splashes of colour. (1982, p. 241-2)

Stewart's interpretation of Woolf's use of Impressionism hinges upon her choice of imagery and the way those images and the characters blend together in the story. This constitutes a fairly basic analogy between literature and painting, where Woolf's images are blended in a similar manner to Monet's colours. Although Stewart and Banfield consider *Mrs Dalloway* to be in a separate category of influence, there are elements of their own work that I believe can be fleshed out into a more detailed link between the early Impressionists and *Mrs Dalloway*. Further into his essay, Stewart writes:

Light is life, and objects, liberated from the cramp of mind, vibrate on the retina. In language equivalent to Monet's use of paint, Woolf seeks to render 'the instantaneous envelopment, the same light spread over everywhere.'
(1982, p. 242)

Although he is once again focused on an analogous relationship between paint and language, Stewart hints that the effect of Monet's painting is bound up in the light he is capturing. Being able to articulate some more of the science behind this light may help us to understand the effects Woolf imitates in her own work.

As we recall from Chapter Two, Livingstone was one of the first neurobiologists to delve into the specifics of how the visual sense functions in the production of our aesthetic experience of visual art. On the topic of Impressionism, Livingstone's work demonstrates some of the scientific details of light and vision that the Impressionist painters were exploiting for aesthetic effect, whether knowingly or

intuitively. For instance, her analysis of Monet shows that in his *Grainstack in the Morning, Snow Effect* (1891) he successfully depicted the way shadows appear to contain different colour casts to the overall ambient light:

Let's consider the shadow of a haystack on a sunny winter day (so that the shadow will be cast on white snow, not coloured ground). The snow will be illuminated both by the yellowish direct light from the sun and by the indirect bluish light from the sky. In the shadow of the haystack, the snow will be lit only by the scattered light, from the sky, which is more bluish than direct sunlight, so the shadow will look bluish, compared with the mixed light surrounding it. Claude Monet captured the phenomenon of coloured shadows in several of his haystack paintings. (2002, p. 95)

This focused composition and the lack of fine detail places significance on the interplay of light and shadow. Normally the blended colours of light create a diffuse illuminant to which we are generally insensitive (2002, p. 95). What Monet's painting achieves is to draw attention to a feature of light that is not normally observed, to make a feature of the visual experience that is normally unavailable to consciousness become all too apparent. This is a process that has an important analogy with the idea of 'de-automatised' perception discussed earlier: in a similar fashion, Monet disrupts the normative processing of the shadow by introducing colours not ordinarily picked up by the mind, but recorded by the retina and processed below the normal level of consciousness.

Woolf too finds a way in *Mrs Dalloway* to bring various experiences into consciousness where they might otherwise be unavailable directly. When an airplane appears in the sky over the park where Septimus and Reiza are sitting, the text records the difficulty experienced by everyone around them in trying to understand what is being written in the sky.

But what letters? A C was it? An E, then an L? Only for a moment did they lie still; then they moved and melted and were rubbed out again in the sky, and the aeroplane shot farther away and again, in a fresh space of sky, began writing a K, an E, a Y perhaps? (*MD*, p. 22)

Although the consensus amongst those watching it seems to be that the airplane is writing “Kreemo toffee”, that does not stop the passage from continuing on and further delaying the automatic processing of the letters as they appear. Further on, Woolf refers to the letters “E, G or L” as having attached themselves to clouds (*MD*, p. 23). Then, just as Septimus and Reiza start to spell ‘toffee’ together, getting as far as “T...o...f....” the nursemaid beside them says “K...r...”. Through this perpetual inability of the onlookers to process the alphabetic characters into complete words, Woolf pushes the phonetic elements of the language into a pictorial representation for the reader. The plane’s writing is so diffuse that the novel alternates between reading it as “C, E, L”, to “K, E, Y” then “E, G, L”, making the letters seem almost interchangeable. A moment intended to be a symbol of advertising is stripped of any referential quality and instead becomes a moment of collective disharmony among the characters. The effect for the reader is to become hyper-conscious of the process of converting a pictorial representation into

language, once this process has been made difficult and 'de-automatised'. In doing so, Woolf exposes a part of our everyday perceptual experience that we take for granted.

Livingstone goes on to consider another prominent effect in Monet's painting: the illusion of motion in what are essentially fixed images:

One of the most novel accomplishments of the Impressionist artists is the shimmering, alive quality they achieved in many of their paintings. I suggest that some of the colour combinations these artists used have such a low luminance contrast – and are in effect equiluminant – that they create an illusion of motion... The Where system is responsible for our ability to see motion and position, as well as depth. Therefore if an image is made of bright equiluminant colours, the What system can see those objects clearly, but their position and stability are not registered by the Where system, so they can seem to jitter or move around. (2002, p. 153)

To unpack this terminology, the What and Where systems are theoretical models proposed for understanding how the components of the visual system function together. As mentioned, the Where system is responsible for the perception of motion, but what creates the illusion of motion is the fact that the Where system cannot actually register these objects, as it is colour blind and relies on sensing luminance contrast. Because the Where system is also responsible for fixing objects in stationary positions, if it cannot function properly, the objects may appear to be changing position ever so slightly as the eye moves over the piece

(Livingstone, 2002, p. 157). Monet's painting exploits this quirk of the visual system to create this illusory motion, as Livingstone explains:

In *The Poppy Field outside of Argenteuil* (1873), Monet paints the flowers with a red that is approximately equiluminant with the green of the grass and the skirt of the woman in the foreground. The visual system can distinguish the poppies and the skirt from the grass because it is colour selective and the colours are easily distinguishable. But the colours, although bright, do not have so much luminance contrast, so the visual system cannot see them clearly. Therefore their position is uncertain. They seem to move or change position, as if stirred by a breeze. (2002, p. 153)

This illusory element behind the painting highlights how Monet is capable of evoking sensory impressions beyond what is immediately expected of a two dimensional canvas. His paintings with key areas of low luminance contrast have the capacity to recall a sense of motion for the viewer, of the scene moving as though it is in some way coming to life for the viewer.

Colour luminance is important in Livingstone's analysis of the Impressionist painters not only because of how it creates this effect of imitating motion, but also because of the effects that arise where multiple colours are of similar luminance.

Livingstone writes of this:

The Color system operates at a surprisingly low resolution. That is, cells in the Color system have much larger receptive fields and there are fewer of

them than in the Where system or in the Form part of the What system. This means that our perception of colour is coarse. Painters who use watercolours or pastels often exploit the low resolution of our colour system by applying their colour in a looser or blurrier way than the higher-contrast outlines of the object to which the colour applies. That is, if they use a colour that has a low-luminance contrast with the background (as is often seen with watercolours or pastels) they can draw high-contrast outlines, and the color will seem to conform to the outlines, even if it does not. (2002, p. 165)

Livingstone demonstrates how this technique was used by Monet in *The Palazzo Ducale as seen from San Giorgio Maggiore*, where although the brushstrokes used in the water, the sky and the buildings are all composed of different hues, notably blues, reds and yellows, within these individual regions on the canvas the hues are all of similar luminance. Where they vary is in the outlines that form the high-contrast boundary between the buildings and the sky, or the buildings and the water (2002, p. 178-9). She also notes how this same principle was utilised by the Post-Impressionist painters, such as Seurat and Signac with their Pointillist technique; and she goes on to talk about the aesthetic impact of blending colours at similar luminance:

What makes variegated surfaces so interesting is the fact that the size of the dots is such that you can see simultaneously both the separateness of the dots and a blending together to form a single larger surface. The aesthetic interest in these paintings – or the appeal of tweed clothing or marble

countertops – lies in the interplay between blending and opposing that happens at a scale that is near the resolution of your color system. That is, because your colour system is low resolution, the colours of the individual elements can merge, even at the same time that you can still resolve them. (2002, p. 176)

This idea of an aesthetic effect arising from similar luminance can perhaps also been seen to operate in *Mrs Dalloway*. For Clarissa, her perception of the world around her takes on a kind of equiluminance in that both major and trivial perceptions have a noticeable impact on her. As already mentioned, Woolf's style is to impede the automatic processing of the text and slow down perception: much of this being achieved through the complex verbal textures within her writing. Yet although it can be difficult to follow the writing within a particular paragraph, the borders between paragraphs usually remain extremely distinct. Where Monet uses changes in luminance to properly delineate the borders of objects within his scene, Woolf sets her borders using paragraph breaks. Consider this passage from *Mrs Dalloway* as an example:

Strange, she thought, pausing on the landing, and assembling that diamond shape, that single person, strange how a mistress knows the very moment, the very temper of her house! Faint sounds rose in spirals up the well of the stairs; the swish of a mop; tapping; knocking; a loudness when the front door opened; a voice repeating a message in the basement; the chink of silver on a tray; clean silver for the party. All was for the party. (MD, p. 41)

Within this paragraph, the densely packed information and excess of nouns and verbs somewhat imitates this effect of an area being at similar visual luminance. Compared to a more diffuse sentence like the one that precedes this paragraph, “for she must also write, and see that things generally were more or less in order” (*MD*, p. 41), it requires more perceptual effort to read the paragraph and make sense of all the information contained within. Although individual terms stand out, in moving our eyes over the paragraph there is a temptation to blend some of these together, to run ‘tapping’ and ‘knocking’ onto one another, or to quickly perceive the bulk of the paragraph as simply a catalogue of blended sounds. But the end and beginning of this paragraph remain distinct enough to allow the reader to categorise it as a separate unit of sorts.

Being able to simultaneously perceive the essential outlines of a section of *Mrs Dalloway*, but also being aware that there is enough textual richness within that section that can prove captivating if focused upon, is much like the effect of similar luminance in the paintings of Monet or Seurat. Woolf uses this technique quite frequently throughout the text: another notable example occurs when Peter Walsh returns to his hotel and finds a letter waiting for him from Clarissa:

These hotels are not consoling places, far from it. Any number of people had hung their hats upon those pegs. Even the flies, if you thought of it, had settled on other people’s noses. As for the cleanliness which hit him in the face, it wasn’t cleanliness, so much as bareness, frigidity, a thing that had to be. Some arid matron made her rounds at dawn, sniffing, peering, causing blue nosed maids to scour, for all the world as if the next visitor were a joint

of meat to be served on a perfectly clean platter. For sleep, one's bed; for sitting in, one's arm-chair; for cleaning one's teeth and shaving one's chin, one tumbler, one looking glass. Books, letters, dressing gown, slipped about on the impersonality of the horse-hair like incongruous impertinences. And it was Clarissa's letter that made him see all this! (*MD*: 169-70)

Again, because of how densely packed this passage is with concrete terms, it has this same quality of being at 'similar luminance'. Peter Walsh's rapid assessment of the items in his hotel room and their utilitarian purposes "for sleep," "for sitting in," "for cleaning one's teeth and shaving one's skin" all have distinct meanings when examined separately, but up close they tend to blend into a contiguous description of the room and any features contained within. What's more, this passage is bookended by thoughts of Clarissa – the first right before the passage begins, where he wonders, "Why couldn't she let him be?" and then towards the end where he blames her letter for sending him into this state of increased sensitivity to the hotel's cleanliness.

Overall, what we have seen from this analysis of the theories behind the aesthetic and perceptual features of Impressionist painting is that Woolf was imitating the effect of this technique on more than just overall symbolic levels. By making her readers aware of aspects of perception that do not ordinarily enter consciousness; and by breaking passages into distinct units contained of dense writing that can be individually resolved but is tempting to blend together, Woolf appropriated some of the perceptual effects of Impressionism and put them to use as aesthetic devices in literature.

Aural Impressionism

While the novel is, like an impressionist canvas, experienced primarily as a visual text as its readers read the letters on the page, the spoken sound that those letters recall allows Woolf to embellish the experience of her characters in *Mrs Dalloway*. McKluskey's *Reverberations: Sound and Structure in the Novels of Virginia Woolf* (1986) extensively catalogues the different sound patterns that characterise Woolf's style, but some of the perceptual effects attributed to it are almost bizarre and rather strangely rationalised. McKluskey draws on a sound pattern that Masson (1961) calls the 'knot', where the phonetic components of a key word recur in isolation:

Knotting and unknotting are important patterns in *Mrs Dalloway*. A significant knot exists in that novel in the word spectre. Even when the word itself does not appear, its sounds echo:

one feels... Clarissa was positive, a particular hush or solemnity, an indescribable pause: a suspense...

She's looking at me, he thought, a sudden embarrassment coming over him, though he had kissed her hands. Putting his hand into his pocket, he took out a large pocket knife and half opened the blade...

(1986, p. 18)

The underlined sound repetition seems reasonably relevant, but the idea of the word 'spectre' echoing is difficult to fathom. McKluskey offers the following analysis of the significance of these patterns:

By the time Peter Walsh experiences the grey nurse as "one of those spectral presences" (p85), we are already perceiving as spectres of the past all the memories Clarissa and Peter draw out. The first draft of *Mrs Dalloway* shows extended passages on the benevolent spectre which suggest perhaps that that was initially to be a kind of central image in a novel where the characters are haunted by spectral presences, benevolent or otherwise. The remaining echoes of the word are the spectre of the image, all that is left to us perhaps, but revealing enough. (1986, p. 18)

In reality, the word 'spectre' appears exactly twice in the published edition *Mrs Dalloway*. If we are being generous, 'spectral' also appears twice. Now, when the elements are underlined as they are here and presented in conjunction with this word, it will be natural to pick up the association, but to suggest that the word 'echoes' seems to be reading far too much into the composition (especially when the word 'spectre' does not even appear anywhere before the first quotation!). Attributing the source of this effect (which is an effect that the *reader* is supposed to experience, according to McKluskey) to a symbolic association with a synonym for ghost seems to be clutching at straws for a link between a non-conscious sensation and conscious idea. It is without doubt one of the stranger examples of analysis performed in the Woolf scholarship.

However, if we backtrack at this point we may salvage the idea that the sound patterns of Woolf are indeed significant. How though can we articulate their potential effect on the reader, particularly without resorting to strange symbolic associations? Let us begin by taking McKluskey's first quote in full, with view to the context in which it appears:

For having lived in Westminster – how many years now? over twenty, – one feels even in the midst of the traffic, or waking at night, Clarissa was positive, a particular hush, or solemnity; an indescribable pause; a suspense (but that might be her heart, affected, they said, by influenza) before Big Ben strikes. There! Out it boomed. First a warning, musical; then the hour, irrevocable. The leaden circles dissolved in the air. (*MD*, p. 4)

The context of the paragraph links this intangible sensation not with Clarissa's memories or 'spectres' of the past, but with a sense of apprehension relating to the rigor of modern life, particularly a metropolitan life enforced by the metallic tones of Big Ben. In Tsur's analysis of the 'double-edged' quality of sibilants, he notes that they can often convey a 'tender' or 'hushing' quality (1992, p. 43-7). Indeed, 'hush' is one such word used by Woolf. Contrasted with this is the onomatopoeic 'boom', where the rapid onset of the soundwave of *b* is particularly symbolic of a sudden, explosive sound.

So we are told that Clarissa 'feels' a particular quality which is characterised by a string of descriptive terms: 'particular hush', 'solemnity', 'indescribable pause', 'suspense'. These all guide the reader towards the semantic features common

between each phrase, but in doing so they are also establishing a repetition of key sounds. This section, where the repetition primes the voiceless consonants *s* and *p*, contrasts with the repetition of the voiced consonant *b*. In fact, because *b* and *p* represent the same articulatory gesture, the transition from voiceless to voiced consonants is extremely acute. The reader might become conscious then of the effect of transitioning between significance sounds in this manner, even if he or she does not consciously register the nature of the phonetic differences at the core of this effect – that is what remains in the realm of the non-conscious. This effect of transitioning supplements Woolf's writing in a manner that might fully display how closely related it is in style to Impressionism. The reader is not merely presented with synonyms related to a silence in the hope that they might reach a conscious understanding of the semantic concept Woolf is alluding to: instead, they are encouraged via use of phonemic repetition to experience that same transition from silence to sudden noise. In doing so, Woolf prompts them to undergo the same sensation as Clarissa – which perhaps has the effect of showing exactly what is otherwise 'indescribable' about the nature of this pause.

A contrasting example of the use of sound occurs further into the novel, where Septimus and Reiza watch a skywriter from a park bench. Note in particular the consonants *k* and *r* in the passage:

'K... R...' said the nursemaid, and Septimus heard her say 'Kay Arr' close to his ear, deeply, softly, like a mellow organ, but with a roughness in her voice like a grasshopper's, which rasped his spine deliciously and sent running up into his brain waves of sound which, concussing, broke. (*MD*, p. 23-24)

As mentioned above, the disputed word being written in the sky is most likely 'Kreemo'. Septimus focuses intently on the first two consonants, and they are significant choices. According to Tsur, *k* and *r* both have considerable 'aggressive potential' owing to their aperiodic nature (1992, p. 29-35). The most repeated sound throughout this passage is, once again, *s*. But here we are looking at its other 'double-edged' quality, that is, the manner in which it can suggest or imitate noise. Tsur suggests that this too has to do with their aperiodic quality (1992, p. 44-45).

By repeating the sounds *k* and *r* through reporting not only the nurse's speech, but also the sound as it reaches Septimus' ear, their aggressive, aperiodic quality becomes primed. This then guides the repetition of *s* throughout the paragraph to seem less like the 'hushing' of the previously quoted extract, and more like the suggestion of constant noise. *k* and *r* continue to recur to reinforce this general sensation. Moreover, they are contrasted with repetitions of more 'tender' sounds at key moments: the repeated *d* and *i* in 'deeply' and 'deliciously'. But as the passage draws to an end, the *k* returns abruptly with 'concussed' and 'broke', abruptly disrupting the proliferation of more pleasant sounds, implying that the pleasant sensation has ended for Septimus. Essentially, Woolf's choice of words not only conjure up direct images of how Septimus is affected by the sound, but they mimic the ambiguity he seems to feel whereby the sound affects him in a way that is both rough but pleasing, again leaving the reader with a conscious impression formed through a non-conscious sensation.

As with Kerouac, sound patterns and rhythmic detail can be used to create effects of motion, and here we might also recall that Monet's *The Poppy Field outside of Argenteuil* creates an illusion of motion. McNichol (1990) draws out some of the poetic devices used in Woolf's prose; her chapter on *Mrs Dalloway* concentrates on the 'rhythmic order' of the novel. In general, McNichol is discussing rhythm not as a technique but as a symbolic device used to represent the flow of life and wider reality around the characters of the novel, but there references to the actual sensation of rhythm in key passages, such as the depiction of London on page 4; and these hint upon the aesthetic impact of the challenging text.

In this passage different kinds of movement, of noise, of vehicles, objects, and people are all tumbled out in no kind of logical order, though the listing does fall on the ear with an easy and jolly rhythm... It is as if, therefore, Virginia Woolf has herself 'tumbled' it out, creating it afresh, and built it round Clarissa. The prose exactly represents Clarissa's excited way of seeing it at this particular moment and in a particular frame of mind. (1990, p. 66)

Essentially the rhythm, which seems to run contrary to the regular constraints of prose syntax, allows the text to transfer to the reader a sense of the rhythm felt by Clarissa in London at that moment. First, here is Woolf's passage:

Heaven only knows why one loves it so, how one sees it so, making it up, building it round one, tumbling it, creating every moment afresh... for that very reason: they love life. In people's eyes, in the swing, tramp, and trudge;

in the bellow and uproar; the carriages, motor cars, omnibuses, vans, sandwich men shuffling and swinging; brass bands; barrel organs; in the triumph and the jingle and the strange high singing of some aeroplane overhead was what she loved; life, London; this moment of June. (*MD*, p.4)

McNichol refers to this passage as 'tumbling out', echoing Woolf, and also noting that it falls on the ear with 'an easy and jolly rhythm'. This rhythm is essential to creating a sense of motion through kinaesthesia. The sentences are drawn out, with the regular commas acting as an off-beat in sections such as 'swing, tramp and trudge', the latter two being heavily onomatopoeic of the act of a foot falling. The alliteration of *s* in 'sandwich men shuffling and swinging' encourages the reader to find another beat/off-beat pattern aided by eliding syllables before the off-beat. There are several instances of alliteration in this passage, giving more credence to this overall sense of rhythm. As the passage unfolds, the imagery comes back inward from the sights of the street to Clarissa herself, and it becomes implicit that these are her observations as she walks the streets of London. The reader thus has a kind of connection to her footsteps in the rhythm Woolf imparts through this passage. Using this technique, Woolf creates a sense of the motion Clarissa undergoes as she walks through downtown London, surrounded as she is by images of motion.

One of the key impressionist lines of the novel is "the leaden circles dissolved in the air". This is consistently repeated after Big Ben strikes, enough to suggest it forms a description of the chimes fading away. What is most striking though is the synaesthetic nature of the image: a sound being described in terms of a physical

shape, which is itself suggested to be heavy, metallic and/or dull. Confronted with a description that is challenging to rationalise, our swift perception of the novel is impeded as we attempt to figure out what it means or implies. Therein lies the most important effect: creating a sensation of confusion and possible anxiety surrounding Big Ben's omnipresent chimes. This effect associated with the novel's key symbol of timekeeping becomes relevant as we consider the final aspect of Impressionism in *Mrs Dalloway*: the irregular flux of time.

Temporal Impressionism

Here is where we return to Banfield's essay on Woolf and its argument that Woolf is better thought of as a post-Impressionist than associated with the likes of Monet. Her central link between the novel and the visual arts is through Woolf's representation of time:

Literature's counterpart to the geometry of spatial relations were the temporal relations of Cambridge time philosophy. Contrary to a common assumption, Woolf adopted not Henri Bergson's philosophy but G. E. Moore and Bertrand Russell's realism. Time passes not as *duree* but as a series of still moments. Temporal relations connect moments as spatial ones unify Impressionism's atomized color, with the mathematical theory of continuity playing a crucial role. (2003, p. 471)

In her essay, Banfield's theorem is tested against the 'Time Passes' segment of *To The Lighthouse*. This next section analyses the equally important thematization of

time in *Mrs Dalloway*, with the aim being to explore how apt this dimension is as an analogue to visual Impressionism.

To understand this, we must ask how our brains perceive time. According to Merchant, Harrington and Meck there is “no specific biological system that senses time as there are for sight, hearing, and taste” (2013, p. 314). As such, the models of time perception involve input from different areas of the brain working in tandem, such as Buhusi and Meck’s Striatal Beat Frequency model (2005). This model hypothesises that various organs within the body oscillate to a certain frequency, and the ability to discern intervals of time accurately is derived from areas within the basal ganglia counting the number of beats within an interval.²⁶ While research has demonstrated how accurate the timing mechanism can be, it has also reinforced the notion that subjective perception of time can be altered by various emotional states, such as fear and depression (Droit-Volet *et al.*, 2013). This is not to say that the ability to correctly delineate time intervals diminishes, but that overall perception of time can change. For instance, Droit-Volet *et al.* describe the effect of fearful situations on the perception of time: “without disrupting time discrimination, the internal clock automatically runs faster in a threatening situation, thus producing a lengthening effect associated with a constant state of alertness, mobility and readiness to act” (2013, p. 4). This notion that subjective perception of time can differ greatly from the accurate measurement of time is crucial to *Mrs Dalloway*.

²⁶ An alternate model is the Scalar Expectancy Theory, where an internal pacemaker system creates a series of pulses against which interval timing can be judged. See Rakitin *et al.*, 1998.

In addition to these modelled systems of interval timing, the brain also contains the suprachiasmatic nucleus, which is responsible for the circadian rhythm. Bernard *et al.* (2007) describe its importance:

Circadian rhythms, characterized by a period close to 24 hours, are observed in nearly all living organisms, from cyanobacteria to plants, insects, and mammals. In mammals, the central circadian clock is located in the suprachiasmatic nucleus (SCN) of the hypothalamus, where it receives light signals from the retina. (2007, p. 668)

The circadian clock is not responsible for precise judgements of time, but regulating behaviour through timed intervals gleaned from natural conditions. As such, the twenty-four hour period it delineates represents an instinctive time period rather than a calculated one. Woolf's decision to restrict *Mrs Dalloway* to a single day, like Joyce's *Ulysses*, becomes even more significant when observed that within the novel, objective accounts of the actual time each scene takes place in are difficult to come by. There are direct references to precise hours in certain scenes, but at key points even the precise timing of Big Ben is blurred:

The clock began striking. The young man had killed himself, but she did not pity him; with the clock striking the hour, one, two, three, she did not pity him, with all this going on. There! The old lady had put out her light! The whole house was dark now with this going on, she repeated, and the words came to her, Fear no more the heat of the sun. She must go back to them. But what an extraordinary night! She felt somehow very like him – the

young man who had killed himself. She felt glad that he had done it; thrown it away while they went on living. The clock was striking. The leaden circles dissolved in the air. (MD, p. 204)

The immediate assumption here is that the time is three o'clock, but the passage remains highly ambiguous. It can also be read as Clarissa counting the time, then interrupting herself as her stream of consciousness shifts to thoughts of Septimus and the old lady. Because of the length of the text between this interruption and the point when Clarissa again observes 'The clock was striking', it might be inferred that the clock has continued striking this whole time, and thus the hour could be closer to eleven or twelve o'clock. This indeed is the interpretation favoured by Benjamin (1965, p. 217)²⁷, while Wright (1944) claims that the ending takes place at three a.m.

The principal difference between these two neurological timing mechanisms becomes apparent not only in the themes of *Mrs Dalloway*, but in the reader's involvement in the text. To return to Banfield, her premise is that Woolf creates a series of temporal relations that are essentially analogous to the use of geometry and colour in an impressionist canvas, creating continuity out of discontinuity. In *Mrs Dalloway*, not only do the characters demonstrate that their experience of time can go faster or slower in key moments, but the reader's own perception of time passing is frustrated by the lack of clear chronology. Importantly, this is exacerbated by the fact that the novel takes place in a single day, making the individual hours of the day more significant than in a novel that takes place over a

²⁷ Benjamin's paper includes an excellent summary of the implied timeline of *Mrs Dalloway*, including notes on all major moments within the narrative that have an ambiguous time.

longer period. On page 170, Peter Walsh notes he has received Clarissa's letter by six o'clock. Scarcely thirty pages later on page 204, Clarissa stands outside on her balcony at an hour that can be interpreted as between eleven and three o'clock, as discussed above. Contrast this time period with another that begins on page 77, as Septimus says "I will tell you the time". Here it is revealed to be quarter to twelve, but by page 103 we are being told, "it was precisely twelve o'clock". Over what is almost the same number of pages, the elapsed time period differs significantly.

It is precisely because these fluctuations of time are so difficult to follow that the novel becomes so effective in its aesthetic representation of time. The reader struggles to impose some kind of order on the disorderly narrative form, by attempting to make sense of where chronological time falls. In some instances there are precise hours cited, but at other times the clock is mentioned to strike but no time is cited, only images such as 'the leaden circles dissolved in the air'. The reader is then forced to look for clues as to what time it actually is in other details: particularly in the imagery Woolf uses to describe the atmosphere around her characters. It is unspecified at what time the novel begins, but we are drawn instead to her description of the morning:

How fresh, how calm, stiller than this of course, the air was in the early morning; like the flap of a wave, or the kiss of a wave, chill and sharp... (*MD*, p. 3)

The words 'fresh', 'chill' and 'sharp' suggest coolness in the air, implying the sun is still at a lower angle and the time is around or earlier than ten o'clock. The last

precise delineation of time is six o'clock on page 170, but seven pages later the imagery is of the evening light beginning to fade:

I resign, the evening seemed to say, as it paled and faded above the battlements and prominences, moulded, pointed, of hotel, flat, and block of shops, I fade, she was beginning, I disappear, but London would have none of it, and rushed her bayonets into the sky, pinioned her, and constrained her to partnership in her revelry. (*MD*, p. 177)

What is significant here is that the novel takes place in June (*MD*, p. 4). At this time of year in London, the longer days mean the sun would likely be setting closer to nine o'clock. Chronological time has most likely sped up relative to the pace of the novel, as it takes Peter Walsh a couple of hours to ruminate on Clarissa's letter and eat his dinner. Importantly however, the confusion this places the reader in mirrors Peter's own sense of confusion at London being so alive at this hour, as we are told on page 177: 'The prolonged evening was new to him.' Having spent so much time in India, Peter has grown accustomed to a cycle of activity based around a different period of light associated with the different latitude. Woolf mimics this sense of confusion arising from the heightened activity in contravention of the circadian rhythm by speeding up the pace of time in the text.

The overall effect of these fluxes of time becomes highly impressionistic. Woolf frustrates the reader's ability to keep track of time intervals, making the passage of time a more significant object than in a simpler chronology. A key effect of this is that by searching for simpler clues to the time of day in the imagery of the text, the

reader is unwittingly imitating the actions of keeping time purely through clues the suprachiasmatic nucleus receives in the form of light signals from the retina. The reader can be encouraged in this way to not rely on the clocks in the novel for accurate timing, but to instead revert to a more natural way of keeping time, even when this seems to be at odds with the hive of activity during the night.

This depiction of time underscores Woolf's modernist ethos and her 'attempt to come closer to life' (Woolf, 2006, p. 2089). "Life is not a series of gig-lamps symmetrically arranged," she wrote, "life is a luminous halo, a semi transparent envelope surrounding us from the beginning of consciousness to the end." (2006, p. 2089). Woolf depicts the human perception of time not as clear and chronological as the clocks mark it out to be: she demonstrates how it fluctuates under the impact of emotions. Moreover, in *Mrs Dalloway* she represents the anxiety of modernity for her characters by manipulating the reader's sense of time, speeding it up or slowing it down at will, confronting them with the sense that modern time for London society violates the body's natural clock, instilling in them an attitude of uncertainty towards the society they are presented with – a feeling that is echoed by the characters in the novel. Time is one crucial aspect of her impressionistic canvas, as it is left to the reader to piece together the timeframe of the novel, both for the action in the present but also in the past.

As we have seen, the impressionist nature of *Mrs Dalloway* is manifested in different textual elements: the analogous effects of 'equiluminance' borrowed from the Impressionist painters, the sound patterns, the uneven flux of chronological time, and the effect of de-automatised perception. When *Mrs Dalloway* was first

written it coincided with increasing interest in perception from science, psychology, philosophy and the arts. Almost a century later, our increased understanding of the neural mechanisms surrounding these various elements makes the perceptual effects Woolf exploited for *Mrs Dalloway* take on a new lucidity, justifying her vision and that of the young man who wrote that she had 'caught life and put it in a book'.

Chapter Five: Nabokov, Cross-Modality and Sensory Aesthetics

Lolita. Light of my life, fire of my loins. My sin, my soul. Lo-lee-ta: the tip of the tongue taking a trip of three steps down the palate to tap, at three, on the teeth. Lo. Lee. Ta. (*AL*, p. 9)

Vladimir Nabokov's controversial novel opens with these evocative lines in which the narrator, Humbert Humbert, sets out for the reader his infatuation with the titular character. In this short extract the emphasis on the senses is apparent in the way Humbert repeats her name, slowing it down each time from 'Lolita' to 'Lo-lee-ta' to 'Lo. Lee. Ta.' The effect is to make the phonetics of her name stand out to the reader, to impede their automatic absorption and parsing as simply the signifier of a character. The sensory properties of this name are to be understood as holding significant power over the narrator.

By impeding this kind of higher level processing, Nabokov also draws attention to the curious way in which he maps these and other sensory impressions within the text. 'The tip of the tongue taking a trip' contains so much alliteration it resembles a tongue-twister; but it also represents a sense-transference from the auditory, in this case the syllables, to the somatosensory; which in this case is the proprioception of the tongue's location inside the mouth and the touch of it against the teeth. Nabokov makes us aware of the physical movements that produce these sounds, but he also transposes the sound of 'Lolita' into a visual and tactile representation.

In literary criticism, cross-sensory mappings that are used either as a metaphorical device or as a more general stylistic impression conveyed by the text are traditionally bundled under the term 'literary synaesthesia'. This term is derived from a neurological phenomenon in which stimulation of one sensory system invokes automatic and involuntary perceptions that stem from a different system, hence the name being derived from Greek terms for 'together' and 'sensation'. One of the most common examples is being able to simultaneously and consistently perceive letters as having distinctive colours; a condition that, by no small coincidence, is one that Nabokov himself claims to have experienced.

The neurological phenomenon of synaesthesia is of great interest to cognitive scientists such as Ramachandran who aim to understand the brain by studying its eccentricities. Literary criticism however has been altogether more cautious in approaching synaesthesia, skirting around the broader prospect of engaging with a phenomenon that could potentially cast new light on the aesthetic experience of a literary text. Consider how Tsur (2008) defines his terms of reference in a chapter on literary synaesthesia:

The term *synaesthesia* suggests the joining of sensations derived from different sensory domains. One must distinguish between the joining of sense *impressions* derived from the various sensory domains, and the joining of *terms* derived from the *vocabularies* of the various sensory domains. The former concerns synaesthesia as a psychological phenomenon; the latter is *Verbal Synaesthesia*. *Literary Synaesthesia*, then,

is the exploitation of verbal synaesthesia for specific literary effects. (2008, p. 283)

Tsur's definition is consistent with the terms of reference employed by Ullmann (1945, 1957) and Ruddick (1984), who between them study the incidents of literary synaesthesia in Byron, Keats and Dickinson. Although Tsur's definition constitutes a reasonable attempt to ground the subject matter of his inquiry within an objective realm, he has also avoided the question of whether or not neurological synaesthesia is related to or can tell us anything about verbal synaesthesia. He states further down the page: "Literary synaesthesia is concerned with verbal constructs and not with 'dual perceptions'" (2008, p. 283) Yet as Lakoff and Johnson (1980) argue, the supposedly abstract language of metaphors is frequently grounded in our physical experience. The *Dictionary of Literary Terms and Literary Theory* also notes that this 'verbal synaesthesia' is not purely a literary phenomenon:

Homer, Aeschylus, Horace, Donne, Crashaw, Shelley and dozens of other poets had used synaesthetic effects. We use them in everyday speech when we talk of 'a cold eye', 'a soft wind', 'a heavy silence', 'a hard voice', 'a black look' and so forth. (Cuddon (ed.), 1998, p. 889)

When terms such as these are engrained in our lexicon, it is only by isolating their components that we realise the curiously cross-sensory property they exhibit. It does not make immediate sense why the sight of an eye should evoke a sensation of temperature, but the phrase 'a cold eye' is accepted readily, as is 'a warm glance'.

In literature, these phrases stand out when the writer is more imaginative with their joining of sensory domains, as with Charles Baudelaire's 'Correspondances' where he claims "Il est des parfums frais comme des chairs d'enfants", which can be translated as "There are perfumes that are as cool as the flesh of children." A 'cool perfume' does not immediately seem unnatural, but by his use of the simile it becomes unfamiliar.

Given that we use a form of synaesthetic language in our everyday expressions, how significant is this for our perception of a text? Tsur goes as far as to suggest that literary synaesthesia has some consistent properties associated with it:

In Romantic poetry and in 19th Century Symbolism, Literary Synaesthesia typically contributes to some undifferentiated emotional quality, some "vague, dreamy, or uncanny hallucinatory moods", or some strange, magical experience or heightened mystery. (2008, p. 283)

Tsur's suggestion of an undifferentiated emotional quality, tells us that cross-sensory processing – or cross-modal processing, as it is more frequently referred to – is worth investigating in literature on the basis that it may prove to be the source of distinctive aesthetic experience for the reader.

Consider for a moment what we have already investigated in these case study chapters: Woolf's use of 'Impressionism' has been studied for its links to the visual form of Impressionism, while Kerouac's prose has been examined in terms of its resemblance to music. The language of both visual and aural aesthetic experiences

is appropriated by critics and readers, in a way that further shows how cross-modal mappings underpin the way we think about and communicate our experiences of literature. Ezra Pound's terms of phanopoeia and melopoeia are also instructive in their appeal to the visual and aural properties of language (1934, p. 37). According to Pound, language can be 'charged' with meaning by appealing to the visual imagination (phanopoeia) or by the sound and rhythm of speech (melopoeia).

This chapter examines in detail what the new science of cross-modality can contribute to our understanding of the mind as it interacts with literature. It raises questions as to exactly how much of our experience of a text is grounded in cross-modal relationships rather than just semantics. It examines the contribution of these textual cross-modal mappings to our aesthetic appreciation of the novel. *Lolita* is the key vehicle for this investigation, as we will examine how the blending of sensory domains creates pleasurable readings that exist in tension with the transgressive subject matter of the novel. Lionel Trilling wrote of *Lolita*: "we find ourselves the more shocked when we realise that, in the course of reading the novel, we have come virtually to condone the violation it represents." (1958, p. 14) This chapter will demonstrate one aspect of how Nabokov achieves this: not so much having the reader 'condone' the violation, but in producing a tension between the pleasures of the text's verbal effects experienced at a non-conscious, intuitive level, and the 'higher-level' processing that tends to recoil from the text's morally transgressive content at a semantic level.

Furthermore, since synaesthesia has provided cognitive scientists with valuable evidence for how the mind works, based on the principle that studying minds that represent outliers in neurobiology can tell us more about the normal functions of the brain, this chapter will use these insights to demonstrate how these principles are reflected in some of Nabokov's fiction, including *Lolita*. This chapter is not purporting to offer a complete reading of *Lolita*, but to show how elements of it become more significant in light of what synaesthesia and cross-modality can tell us of the reader's mind and the author's mind.

Synaesthesia

One of Nabokov's many eccentricities was that he exhibited colour-grapheme synaesthesia. In *Speak, Memory* he presents, with his characteristic flair and attention to detail, what he calls: "a fine case of coloured hearing".

Perhaps 'hearing' is not quite accurate, since the colour sensation seems to be produced by the very act of my orally forming a given letter while I imagine its outline. The long *a* of the English alphabet (and it is this alphabet I have in mind farther on unless otherwise stated) has for me the tint of weathered wood, but a French *a* evokes polished ebony. This black group also includes hard *g* (vulcanized rubber) and *r* (a sooty rag being ripped). Oatmeal *n*, noodle-limp *l*, and the ivory backed hand-mirror of *o* take care of the whites... Passing onto the blue group, there is steely *x*, thundercloud *z*, and huckleberry *k*. Since a subtle interaction exists between sound and shape, I see *q* as browner than *k*, while *s* is not the light blue of *c*,

but a curious mixture of azure and mother-of-pearl. Adjacent tints do not merge, and diphthongs do not have special colours of their own, unless represented by a single character in some other language...(*S,M*, p. 17).

Here we must first establish that Nabokov is not simply being overly fanciful or imaginative in his writing, and that synaesthesia is a verified neurological phenomenon - not simply the product of an overactive imagination or poetic license.

For most of the twentieth century, accounts of synaesthesia were greeted with scepticism. As noted by Cytowic and Eagleman (2009, p. 16), behaviourism was the dominant psychological paradigm during a massive decline in publications on synaesthesia between the 1920s and 1940s; and alongside explanations of over-imagination or metaphoric expression, it was often postulated that synaesthetes were merely recalling childhood associations between colours and letters or numbers:

Many in the scientific establishment rolled their eyes at the notion of synaesthesia and tried to explain away a very common type – namely, sensing letters and numbers as coloured even though they are printed in black ink – by arguing that synaesthetes were just ‘remembering’ childhood associations from colouring books or refrigerator magnets, and that was why the letter A was red or D was green, for example. (2009, p. 5)

These critics would likely have been frustrated by Nabokov, who testifies that the first time he became aware of his synaesthesia was when he played with a set of coloured alphabet blocks aged seven years old, and remarked to his mother that the colours were “all wrong” (*S,M*, p. 18).

Furthermore, Nabokov demonstrates a vague familiarity with the scientific literature about his condition that would have been available at the time, noting only that the earliest source he can find for it comes from “an albino physician in 1812, in Erlangen” (*S,M*, p. 18). His intuition that ‘hearing’ is not the most accurate term to describe his condition touches upon the fact that the majority of his account focuses on matching a colour with the grapheme representing that letter, although he does distinguish between the French and English pronunciations of *a*. This grapheme-colour form is, according to Simner *et al.* (2005), the second most common form of synaesthesia, occurring at a rate of one in ninety people. Synaesthesia takes on many forms: sound-colour, smell-colour, taste-colour, sound-smell, sound-taste, vision-taste: they are too numerous to list here in their entirety. In the study by Simner *et al.*, the most common form of synaesthesia is identified as experiencing coloured days of the week, and the likelihood that an individual displays any form of synaesthesia is around 4.3%.

Beyond this demonstration of the diffuse nature of synaesthesia as a condition²⁸, there is more objective evidence verifying its authenticity. To quote Cytowic and Eagleman:

²⁸ It is important to note here that the Simner *et al* study contrasts from previous estimates by using a sampling that does not rely on self-reporting, making it less prone to confirmation bias.

Objective evidence that synaesthesia is not imagination comes from brain scanning, which shows that brain activation patterns during synaesthetic experience are not similar to those seen when subjects visualise in their mind's eye. Rather, the activations more closely match the patterns observed during actual perception. (2009, p. 14)

Evidence comes not only from brain scans but from the observations of Ramachandran and Hubbard (2001) that people who identified as synaesthetes were able to perform a complex grouping task much faster than non-synaesthetes – drawing on their ability to involuntarily have a sensory experience of colour when perceiving particular grapheme.

Nabokov's synaesthesia has received some attention for how it manifests in his writing. Characters from *Ada* and *The Gift* either display or recall synaesthesia, and as Cytowic and Eagleman point out the very name *Ada* is a private joke in Nabokov's synaesthetic alphabet, forming a black-yellow-black pattern that imitates a yellow swallowtail butterfly (2009, p. 1975-6). Czyżewska (2011) examines the frequency of Nabokov's synaesthetic metaphors in *Pale Fire* and *Lolita*, collating 68 examples of such metaphors and noting that the majority mapped touch onto either sight or sound. Johnson (1985) and Foster (1993) touch on the relationship between synaesthesia and memory, with the view that Nabokov's apparently virtuosic memory (as displayed in particular during *Speak, Memory*) was either aided by or a product of his synaesthesia. This point is taken up by Dann (1998) who gives an overview of the instances of synaesthesia in Nabokov's writing and connects these to the notion that Nabokov was capable of

eidetic memory, a term which denotes the ability to perfectly recall images or sounds. What Dann has to say about the literary fascination with synaesthesia is particularly interesting:

This liberation has been the continual theme in the Romantic fascination with synaesthesia. Synaesthesia has always been a magnet for Romantic ideas, because it seems to validate the belief in the primacy of imagination in human cognition, as well as to ratify the original wholeness, continuity, and interfusion of immediate experience before its divination into atomistic sensations. Many who have seized on synaesthesia for support have also maintained that the ultimate function of literature and the arts is to manifest the fusion of these senses. (1998, p. ix)

This fascination with the idea of an experience that could be more authentic than reality was one of the defining features of the Symbolist movement, with Baudelaire's 'Correspondances' and Rimbaud's 'Les Voyelles' being two prominent examples of how synaesthesia influenced Symbolist poetry.²⁹ In light of our continued investigation of how literature is influenced by processes of sensation and cognition, it is important to look at whether the influence of synaesthesia in literature is simply thematic – as a rallying point for these ideas of experience and imagination put forward by the Symbolists – or if it offers a new route into understanding our perception of a text.

²⁹ This same obsession with unfiltered experience can be said to have characterised Kerouac's stylistic experiments, and indeed the Symbolist poets were a major influence on the Beat writers.

Coming back to Nabokov, he made use of synaesthesia as a thematic device in several novels. Dann shows us how this synaesthetic 'gift' recurs throughout different characters Nabokov created across his many stories:

Nabokov endowed many of his fictional heroes – Cincinnatus in *Invitation to a Beheading*, Fyodor in *The Gift*, Van in *Ada or Ardor: A Family Chronicle*, and Adam Krug in *Bend Sinister* – with some form of synaesthesia. In *Bend Sinister*, Nabokov's first American novel, the philosopher Adam Krug tells an uncompromising listener that "the word 'loyalty' phonetically and visually reminds me of a golden fork lying in the sun on a smooth spread of yellow silk." (1998, p. 121).

He does not include Humbert Humbert, the narrator of *Lolita* in this analysis. Nabokov's son Dmitri, on the other hand, writes "Synesthetic phenomena recur throughout Nabokov's work and are assigned to characters in two of his major English-language works, *Lolita* and *Ada*" (Cytowic and Eagleman, 2009, p. 253). A closer examination of Humbert's expressions in the novel reveals that occasionally he describes his experience in terms that approach a sensory blending similar to synaesthesia. "With a swishing sound a sunburst swept the highway" (*AL*, p. 218), he writes, creating a sight-sound mapping between a purely visual phenomenon (the sun) and a separate sensory domain. Another example occurs later in the novel.

She was only the faint violet whiff and dead leaf echo of the nymphet I had rolled myself upon with such cries in the past; an echo on the brink of a russet ravine, with a far wood under a white sky... (*AL*, p. 277)

There is a sight-sound mapping used in 'dead leaf echo', which gives way to a more conventional description of the echo by its proximity to a vividly articulated landscape. The 'faint violet whiff' is most logically read as a reference to violet-scented perfume, but violet also has colour connotations. This device is used by Nabokov at other moments: "I remember reaching the parking area and pumping a handful of rust-tasting water" (*AL*, p. 84), where the visual property of 'rust' comes to the fore, even in the semantic context in which it is used to describe a taste. The taste of rust, after all, is not as significant to human experience as its distinctive colour. One can see how Nabokov's cross-modal mappings usually involve colour or sight, consistent with his own synaesthesia.

It is important to be cautious in investigating Humbert's descriptive style that we do not assume that it can be read as a character displaying true neurological synaesthesia. Nabokov's references to cross-sensory transders are carefully grounded within conventional experience, and there is no real suggestion that Humbert has synaesthesia. Some of these associations will however become relevant further into this chapter.

Synaesthetic Perceptions

Next we shall explore how neuroscience accounts for the phenomenon of synaesthesia. At its simplest is understood to be 'cross talk' between areas of the brain that are normally distinct and part of separate neuronal networks. Cytowic and Eagleman note that there are three plausible explanations why this cross talk is prevalent in people with neurological synaesthesia. First, there may be more neuronal pathways between the distinct areas of a synaesthete's brain, giving rise to more cross-talk. Second, that synaesthetes and non-synaesthetes actually share the same neuronal pathway that leads to cross talk, but that they are inhibited for non-synaesthetes. Finally, there is the suggestion that brain plasticity, the process by which neural pathways are modified, is reduced for synaesthetes; meaning that cross-modal links formed between two concepts at an early age remain constant throughout life (2009, p. 214-216).

Given this evidence that synaesthesia is frequent enough to be statistically significant, and also plausibly related to behaviours we all exhibit, it is pertinent to speculate as to whether or not this phenomenon could have a major effect on the experience of literature. Could it be the source of some aesthetic experience, such as a colour symbolism that affects our perception of a text?

Indeed, one of the most fundamental elements of synaesthesia makes it very difficult to develop predictive responses for individuals, in that the actual experiences and associations of different synaesthetes vary wildly from person to person. While the letter D might be associated with blue for one synaesthete, for

another it could associated be green. While one person with lexical-gustatory synaesthesia might associate a phoneme with the taste of rare beef, another might associate it with the taste of banana. Some trends have been observed, particularly in the well-studied area of grapheme-colour synaesthesia. Baron-Cohen *et al.* (1993) report that 73% of synaesthetes consider the letter O to be white, an observation also reported by Day (2005), who adds that A is most commonly red and I and E most commonly yellow. But variations are all too common. Nabokov, his wife Vera and son Dmitri all exhibited synaesthesia, but their associations were different. For Nabokov 'A' could be either brown or ebony depending upon the phonetic context; for Dmitri it was "red – a rich, luminous carmine" (Cytowic and Eagleman, 2009:249). Rimbaud's 'Les Voyelles' provides another case study:

A noir, E blanc, I rouge, U vert, O bleu: voyelles,

Je dirai quelque jour vos naissances latentes. (1871, 1-2)

For Rimbaud, A is black, E is white, I is red, O is blue and U is green. His vowels are completely distinct from the reported statistical norms of Baron-Cohen and Day. Of course, Rimbaud's poem is most commonly read as a symbolist conceit, and so one should not expect that it would correlate directly with the experience of a true synaesthete.

What this means is that as far as grapheme-colour and phoneme-colour synaesthesia are concerned, it is seemingly impossible to take a raw text and predict whether the choice of word would elicit a particular colour response, with a view to interpreting the role of that particular colour in crafting a symbolic or

emotional response to the text. Of course, knowing a particular synaesthete's colour associations can act as a starting point, but even this would be difficult. As Cytowic and Eagleman point out, for certain synaesthetes the individual colours of letters can change depending upon the context they appear in. They note:

For many individuals, a word's first letter dominates the rest of the sequence, whereas others discern a blending in which all the letters influence one another. Some report that vowels tend to fade into the background under the dominating influence of neighbouring consonants; in other cases, vowels inherit the shade of nearby colours. (2009, p. 67)

They also note that the semantic properties of the word can exert an influence on the colour associated with it, and that this can change with experience:

For example, it is common for the word APPLE to be reddish, BANANA yellow, and ORANGE orange. Sometimes synaesthetes find that colours change subsequent to their learning a new word definition. When Cassidy C encountered the new word "phthalocyanine," his synaesthetic colour experience was determined by the colours of the word's individual letters. However, upon learning that phthalocyanine is the name of a vivid-green pigment, he now experiences the word as shown in the bottom half of figure 3.5 [a mix of blue and green letters]. (2009, p. 68-70).

Even leaving aside these variations, the idiosyncratic nature of synaesthesia makes it impossible to predict responses. Even emotional responses can be experienced

as synaesthetic percepts: Ramachandran *et al.* (2012) highlight the case of a subject who perceives colours around individuals that correlate with their personality and his emotional connotations to them. Schweizer *et al.* (2013) report a subject who experienced disgust at words written in blue and a milder disgust at bright yellow. Just as much variation in associations would occur in these cases, making it nearly impossible to account for a text in this way from a purely objective standpoint.

It would also be a mistake to assume that Nabokov's own synaesthetic colour correspondences are of particular significance to his own writing, beyond perhaps a kind of private joke. Nabokov made this extremely clear to Alfred Appel, the annotator of *Lolita*:

There exist novelists and poets, and ecclesiastic writers, who deliberately use colour terms, or numbers, in a strictly symbolic sense. The type of writer I am, half painter, half naturalist, finds the use of symbols hateful because it substitutes a dead general idea for a live specific impression. I am therefore puzzled and distressed by the significance you lend to the general idea of 'red' in my book. When the intellect limits itself to the general notion, or primitive notion, of a certain colour it deprives the senses of its shades [...] I think your students, your readers, should be taught to *see* things, to discriminate between visual shades as the author does, and not to lump them under such arbitrary labels as "red". (*AL*, p. 364)

For Nabokov, sensory material such as colour was to be used to recreate the authenticity of experience, rather than to act as a symbolic map running throughout the narrative. So the direct relationship specified between colour and graphemes that people with this type of synaesthesia experience is unlikely to be of material value to our interpretation of a text.

Having said this, it must be recorded that synaesthesia does seem to be responsible for some aesthetic experience. Cytowic and Eagleman note that synaesthetes often find that their gift facilitates aesthetic responses to the most trivial information:

Synesthetes often gush over trivial tasks such as remembering a name or phone number, calling it 'gorgeous' or 'delightful', whereas mismatched perceptions – such as seeing a letter printed in the wrong colour ink – can be like fingernails on a blackboard. (2009, p. 54)

Although we have discounted the direct possibility of Humbert being a synaesthete, one can see echoes of how this otherwise trivial task of recalling the name of Lolita evokes so much pleasure for him in the novel's opening lines. Here Nabokov is likely imbuing his protagonist with traces of his own aesthetic response. Cytowic and Eagleman also cite the account of professor of neuropathology who experiences coloured phonemes and number forms (numbers that appear in physical space relative to one another):

Let me say that this is a *delightful* trait to have. I tend to use it consciously and unconsciously to help me remember correct sequences... neuropathological classifications, names and locations of anatomical structures (especially neuroanatomical structures – you should see the *beautiful array of colours* in the brain!) (2009, p. 55)

Essentially it is possible for synaesthesia to provoke responses to simple stimuli that span both delight and disgust, and to which non-synaesthetes would experience little aesthetic response. This element of synaesthesia manifests its influence on a text such as *Lolita* in the way that Nabokov emphasises the importance of its simplest elements, such the names of characters. From the introduction of this chapter it is obvious that ‘Lolita’ is a name that is intended to elicit pleasure; let us now consider what Nabokov had to say about the name ‘Humbert Humbert’:

The double rumble is, I think, very nasty, very suggestive. It is a hateful name for a hateful person. It is also a kingly name, but I did need a royal vibration for Humbert the Fierce and Humbert the Humble. (*AL*: 319-320)

Humbert is not the only character in the novel whose name displays elements of alliteration or repetition: there is Gaston Grodin, who has a similar name as Humbert, one of two syllables rhyming on the first and last consonants – and like Humbert displays an interest in children, only towards boys. Likewise, Clare Quilty, who is identified by Appel as Humbert’s ‘double’ and makes pornographic films which he tries to make Lolita star in after he kidnaps her, has an element of

alliteration in that both parts of his name start with *k*. Regardless of whether or not these examples of phonetic repetition can be connected directly with Nabokov's coloured graphemes, his elaborate names for his characters seems to be linked with the general trend of synesthetes assigning pleasant or unpleasant emotional qualities to otherwise ordinary symbols such as names.

'The Rich Semantic Whirlpool'

As we have seen, the direct sensory relationships of synaesthesia are better approximated than recreated. For our investigation, the next step is to examine more closely what synaesthesia suggests about the operations of the mind and our mechanisms of perception, and how these inform our understanding of a text such as *Lolita*.

One question posed by both Ramachandran and Cytowic in their observations is whether synaesthesia is linked with creativity in the brain. The belief that creativity was localised in the right hemisphere of the brain and any other such correlations (such as left-handed people being inherently more creative) has been thoroughly debunked (Deitrich, 2007; Lindell and Kidd, 2011). According to Arden *et al.* (2010), existing studies of 'creative cognition' show very little evidence of overlap of results; so essentially the processes and neurological structures behind what we consider 'creativity' have not yet been fully explained by neuroscience. Nevertheless, the notion that creativity and synaesthesia have some kind of link commands some interest, both statistically and theoretically. Domino (1989)

contends that in a non-random survey of fine arts students, twenty three percent report that they have some form of synaesthesia.

Ramachandran puts forward a theoretical case for synaesthesia being linked with exceptional creativity in neurological terms:

If ideas and concepts exist in the form of brain maps, perhaps we have the answer to our question about metaphor and creativity. If a mutation were to cause excess connections (or alternatively, to permit excessive cross-leakage) between different brain areas, then depending upon where and how widely in the brain the trait was expressed, it could lead to both synaesthesia and a heightened facility for linking seemingly unrelated concepts, words, images or ideas. Gifted writers and poets may have excess connections between word and language areas. Gifted painters and graphic artists may have excess connections between high level visual areas. Even a single word like 'Juliet' or 'the sun' can be thought of as the centre of a semantic whirlpool, or of a rich swirl of associations. In the brain of a gifted wordsmith, excess connections would mean larger whirlpools and therefore larger regions of overlap and a concomitantly higher propensity toward metaphor. This could explain the higher incidence of synaesthesia in creative people in general. (2011, p. 104-5)

Nabokov offers a particularly convincing example of a synaesthete with the ability to draw on these 'large regions of overlap' to imbue ordinary language with layers

of meaning. His account of the choice of the name 'Lolita', taken from the interview with *Playboy*, demonstrates how much thought went into this one artistic decision:

Playboy: What one critic has termed your "almost obsessive attention to the phrasing, rhythm, cadence and connotation of words" is evident even in the selection of names for your own celebrated bee and bumblebee—Lolita and Humbert Humbert. How did they occur to you?

Nabokov: For my nymphet I needed a diminutive with a lyrical lilt to it. One of the most limpid and luminous letters is 'L'. The suffix '-ita' has a lot of Latin tenderness, and this I required too. Hence: Lolita. However it should not be pronounced as... most Americans pronounce it: Low-lee-ta, with a heavy, clammy 'L' and a long 'O'. No, the first syllable should be as in 'lollipop', the 'L' liquid and delicate, the 'lee' not too sharp. Spaniards and Italians pronounce it, of course, with the necessary note of archness and caress. (1964)

For Nabokov, a suitable name for the character had to draw upon the expressive properties associated with a particular sound, and he distinguishes between the American and European pronunciation as a source of important meaning. He continues in this vein:

Another consideration was the welcome murmur of its source name, the fountain name: those roses and tears in 'Dolores'. My little girl's heart-

rending fate had to be taken into account together with the cuteness and limpidity. Dolores also provided her with another, plainer, more familiar and infantile diminutive: Dolly, which went nicer with the surname 'Haze,' where Irish mists blend with a German bunny – I mean a small German hare.

Playboy: You're making a word-playful reference, of course, to the German term for rabbit—*Hase*. (1964)³⁰

From the name 'Lolita' and its formal nomenclature 'Dolores Haze', Nabokov derives several metaphorical connections: 'Dolly' echoes 'doll' and brings up the connotations of childhood and of an idolised replica of a young girl; and 'Haze' has the connotations of a fog or mist that clouds vision, as well as the reference to a rabbit. In the annotations to *Lolita*, Appel (*AL*: 328) notes further that breaking her name into the syllables 'Lo-lee-ta' creates a further literary reference to Poe's 'Annabel Lee' (1849), a poem about a man's devotion to a woman he fell in love with at a young age. In *Lolita*, Annabel is also the name of the young girl whom Humbert claims to have initiated his taste for 'nymphets'. For Nabokov, 'Lolita' and 'Dolores Haze' were the centre of one of these 'rich semantic whirlpools' that Ramachandran writes about.

If the simplest explanation for creative thought in the brain is indeed increased talk between different areas or more direct neural pathways between different

³⁰ If this exchange seems particularly flattering to the polygot knowledge of the interviewer, it is worth remembering that Nabokov was known to draft his questions and answers in advance of an interview, and then turn up for what was essentially a reading of the script. As such, the reference to the German word for rabbit is most likely Nabokov's own flourish.

areas, then it makes sense that a synaesthete would be more skilled at creative tasks. Does this also mean that a synaesthete would have a heightened response to a creative work? Consider the case of a synaesthete who experiences colour in response to sound:

I see shapes and colors in response to sounds. I enjoy electronic music because it evokes such wonderful shapes and colors... as if I were looking through a plastic transparency which is in front of my eyes. If I shut my eyes, or if it is at night in the dark, then the shapes are the only thing in the field and are therefore more intense. (Cytowic and Eagleman, 2009, p. 88)

Still, the increased creativity associated with synaesthesia has some bearing on how the web of semantic and phonetic traits can influence a writer's work, as demonstrated by the sheer detail Nabokov put into the choice and description of the name 'Lolita'. It is worth taking another look at the novel's opening to unpack how much semantic and phonetic detail is at work.

Lolita, light of my life, fire of my loins. My sin, my soul. Lo-lee-ta: the tip of the tongue taking a trip of three steps down the palate to tap, at three, on the teeth. Lo. Lee. Ta. (*AL*, p. 5)

Nabokov's use of alliteration disrupts the normal cognitive process of moving from the *sound* of the name to the *meaning* implied by those sounds, and directs our attention *back onto* those sounds, where we may distinguish these perceptual qualities. The alliteration of light, life and loins primes the *l* sound in our minds,

and in the subsequent repetitions of the name, the punctuation stresses each syllable and draws out a contrast between what Tsur refers to as the tender *l* and the harsher *t* (1992, p. 3). In between these two stressed iterations of “Lolita”, we find a section where *t* instead of *l* provides both alliterative and rhyming patterns, almost like a tongue-twister in places.

Here we might also recall Tsur’s concept of the mental preference for functional metaphors over sensuous ones. This concept, particularly including the notion of poetic recourse to favour the sensuous, has implications for Nabokov and his widely noted penchant for playing word-games, because in this instance his metaphors can be both functional *and* sensuous. Consider the use of ‘fire of my loins’, which can be reasonably interpreted both as functional – in the sense that fire is destructive and consuming – but also sensuous, suggesting the heat of sexual desire.

Even more interestingly, an interpretation of ‘Lolita: the tip of the tongue taking a trip of three steps down the palate’ as a functional metaphor for the production of the sound cannot be sustained because of one slight problem: Nabokov’s description of the muscular movements is not strictly correct. Both *t* and *l* are alveolar consonants, formed with the tip of the tongue, but they are articulated *between* the teeth and the palate on the alveolar ridge. It seems unlikely that Nabokov would be completely ignorant of phonetic articulations (the aforementioned ‘Sounds’ includes a reference to the “labial consonants”, for instance), especially since he has at least one part of the articulatory pattern correct. This leads us to a more plausible alternative: ‘palate’ deceptively leads us

to interpret it functionally as part of the mouth, but it sensuously implies one's 'taste' for something. Because the sensuous interpretations are not the more natural interpretation, Nabokov uses them to hide what amounts to very suggestive information in plain sight. In this short extract, Nabokov has included sensory information that is both directly evocative of several senses – sight (light), temperature (fire), touch (tap) and sound (Lo-lee-ta) – while also hinting discretely at other sensations: taste (palate) and sexual pleasure (fire of my loins).

Picking up on Tsur's idea of poetry exploiting cognitive processes, both processes exploit another cognitive process: the perception of tension, as discussed in Chapters Two and Three. An adaptive explanation for the importance of tension to art, both musical and literary, is that a feeling of tension or suspense is a survival mechanism that focuses our attention until the feeling is resolved, and an element that resolves this tension becomes marked as important for future survival.³¹

Consider the prosodic boundaries generated by the different phrases in this short extract. The first few are compact units separated by punctuation: "Lolita: light of my life, fire of my loins. My sin, my soul. Lo-lee-ta." Moreover, with the exception of 'my sin, my soul', these units are dominated by the alliteration of *l*. But then the following prosodic unit breaks this pattern in two ways: it proceeds far longer without any rests until the word 'tap', and the dominant alliterative pattern is *t*. Because of the marked difference between *t* and *l* in terms of musical quality, this pattern violation is felt even more strongly, and the combined effect creates a feeling, however slight, of tension.. The final unit returns us to this pattern that has

³¹ C.f. Bruner and Postman (1947): 'Tension and Tension Release as Organising Factors in Perception' in *Journal of Personality*, Vol. 15, p300-308.

otherwise been dominant throughout the passage, quickly resolving this sense of tension. The effect of this careful manipulation of tension reinforces the word 'Lolita' as the dominant tone within the passage, and, considering the innuendo of the unit that contains the word 'palate', emphasises that 'Lolita' brings release from tension.

As we can see, the name 'Lolita' and the brief passage that introduces it to the reader are both rich with sensory and semantic detail. If there is indeed a link between synaesthesia and enhanced creativity in individuals, it seems entirely likely that one of the effects of Nabokov's synaesthesia made itself felt in the way he chose to name his characters.

Synaesthesia and Memory

As noted earlier in the discussion of what practical use synaesthesia can offer, some of the subjects studied by synaesthesia researchers report that it also functions as an aid to memory. This extends from the ability to make speedy recall of signifiers such as names by drawing on the additional sensory perceptions (Cytowic and Eagleman, 2009, p. 52), to even more specific and almost astonishing powers of recall.

In our experience about 10% of synaesthetes experience eidetic images, or what is popularly called 'photographic memory'... An eidetic image recreates previously seen objects or events with great clarity, either immediately after they have been viewed or after a considerable period of

time. Like some synaesthetic percepts, eidetic images are spatially extended in that eidetikers behave as if they are scanning an externally projected image. (2009, p. 53)

Nabokov is another case Cytowic and Eagleman put forward as evidence of eidetic recall. Dann (1998) has covered in very precise detail how Nabokov demonstrates the qualities associated with eidetic memory: giving examples of how the trait manifests in his literary writing as well as in *Speak, Memory*. This is one especially notable passage from Nabokov's autobiography:

I witness with pleasure the supreme achievement of memory, which is the masterly use it makes of innate harmonies when gathering to its fold the suspended and wandering tonalities of the past. I like to imagine, in consummation and resolution of those jangling chords, something as enduring, in retrospect, as the long table that on summer birthdays and namedays used to be laid for afternoon chocolate out of doors, in an alley of birches, limes and maples at its debouchment on the smooth sanded space of the garden proper that separated the park and the house. I see the tablecloth and the faces of seated people sharing in the animation of light and shade beneath a moving, a fabulous foliage, exaggerated, no doubt, by the same faculty of impassioned commemoration, of ceaseless return, that makes me always approach that banquet table from the outside, from the depth of the park —as if the mind, in order to go back thither, had to do so with the silent steps of a prodigal, faint with excitement. Through a tremulous prism, I distinguish the features of relatives and familiars, mute

lips serenely moving in forgotten speech. I see the steam of the chocolate and the plates of blueberry tarts. I note the small helicopter of a revolving samara that gently descends upon the tablecloth, and, lying across the table, an adolescent girl's bare arm indolently extended as far as it will go, with its turquoise-veined underside turned up to the flaky sunlight, the palm open in lazy expectancy of something —perhaps the nutcracker. (*S,M*, p. 128-9)

Nabokov celebrates the act of memory itself through his vivid and detailed reconstruction of this scene from his youth for the reader, demonstrating the art of eidetic recall. What gives it this evocative quality is the way sensory information seems so precisely articulated in his account of this birthday party. He notes the lips moving on the partygoers, the steam of the chocolate, the veins on the arm of a girl – all these are seemingly minute details that would normally be forgotten, leaving only the outlines of the scene accessible to memory. By contrast, Nabokov's account is strong on details but almost devoid of a sense of *why* this memory is so important. And it is not only the visual details but also the traces of other senses that contribute to this holistic rendering of the scene. As Dann puts it in his analysis of this same passage:

When Nabokov says “I see,” “I note” and “I distinguish”, and when he notes the direction from which he approaches the scene, he does so because he literally sees (and to a lesser degree hears, feels, tastes and smells) this past event as if it were once more present before him in all its indolent and sumptuous glory. (1998, p. 135)

Details like the 'steam of the chocolate' and the 'plates of blueberry tarts' prime the reader's sense of taste. Nabokov also creates a kind of synaesthetic metaphor in the way he describes memory in terms of musical imagery: the 'innate harmonies', 'jangled chords' and 'tonalities', which evokes the aural sensations of music. This is subtly reinforced by moments of alliteration in his description: 'smooth sanded space', 'fabulous foliage', and 'silent steps'. Of course, Dann cannot actually know that Nabokov's description of the memory is completely accurate rather than a literary reconstruction. It is not the accuracy that matters so much as the attention to detail.

Sensory detail is also recalled with such evocative precision in *Lolita*. Compare the passage from *Speak, Memory* with this extract from *Lolita*, where Humbert recounts his unsuccessful tryst with Annabel as a child:

In a nervous and slender-leaved mimosa grove at the back of their villa, we found a perch on the ruins of a low stone wall. Through the darkness and tender trees we could see the arabesques of lighted windows which, touched up by coloured inks of sensitive memory, appear to me now like playing cards – presumably because a bridge game was keeping the enemy busy. She trembled and twitched as I kissed the corner of her lips and hot lobe of her ear. A cluster of stars glowed above us, between the silhouettes of long thin leaves; that vibrant sky seemed as naked as she was under her light frock. I saw her face in the sky, strangely distinct, as if it emitted a faint radiance of its own... and her bare knees caught and compressed my wrist, and slacked again; and her quivering mouth, distorted by the acidity of

some mysterious potion, with a sibilant intake of breath came near to my face. She would try to relieve the pain of love by first rubbing her dry lips against mine... (*AL*, p. 14-5)

Nabokov renders this scene primarily through visual references – the villa, the wall, the windows, the sky – and supplements them with other sensory perceptions. The ‘hot lobe’ of her ear evokes temperature, the ‘sibilant intake of breath’ evokes sound, ‘compressed my wrist’ and ‘her dry lips’ evoke touch, and further into the passage he refers to her letting him “feed on her open mouth” (*AL*, p. 15), evoking taste (also through the reference to the ‘acridity’ of the ‘mysterious potion’), and “I recall the scent of some kind of toilet powder”, completing the spectrum of sensory perceptions with smell.

Humbert’s memory of this tryst with Annabel seems eerily precise, hinting that perhaps he has traces of this same eidetic gift as Nabokov. Furthermore, he seems to display an almost scientific intuition about the nature of different kinds of memory. When he introduces the reader to Annabel, here is what he has to say:

There are two kinds of visual memory: one when you skilfully recreate an image in the laboratory of your mind, with your eyes open (and then I see Annabel in such general terms as: “honey-colored skin,” “thin arms,” “brown bobbed hair,” “long lashes,” “big bright mouth”); and the other when you instantly evoke, with shut eyes, on the dark innerside of your eyelids, the objective, absolutely optical replica of a beloved face, a little ghost in natural colors (and this is how I see Lolita). (*AL*, p. 11)

Humbert contrasts a 'recreation' of the memory with one that is an evocation. Despite his qualification of it as 'skilful' the former seems somewhat incomplete, as the general terms he uses are arranged in a staccato rhythm formed by quotation marks and commas, making them seem to be separate from one another. The description of the evoked memory is more contiguous, it runs together in a smoother rhythm. Humbert does not so much distinguish between two kinds of memory as one that is more complete and one that is difficult to recall perfectly – as one gets older, visual memory declines (Soininen *et al.*, 1994). This is consistent with Humbert's age.

Dann's study of synaesthesia focuses on the way in which it has been interpreted or imagined as the entry point to some kind of transcendental state. He makes the following claim about how Nabokov's synaesthesia has been received:

Like Symbolist poetry, Kandinsky's abstract canvases, or Scriabin's phantasmagoria, Nabokov's verbal art employs synaesthesia to challenge materialism and privilege individual perception; but instead of pointing to the spiritual world, his art points only to itself, and to Nabokov's subjective inner world. (1998, p. 121)

Overall, Dann rejects the idea that synaesthesia leads to some kind of transcendental knowledge, though he details how artists and poets (such as Rimbaud and Kandinsky, as noted above) have thought otherwise and attempted to represent or approach transcendental knowledge in their creative work. His

chapter on Nabokov deals largely with this link between synaesthesia and eidetic memory, and how Nabokov uses it in his fiction. He draws this conclusion on the value of Nabokov's eideticism:

With his superlative observational powers and his extraordinary literary gifts, Nabokov made magnificent prose from his eidetically recalled past, but its images brought him and his readers no closer to any transcendental truth than did the synaesthete's photisms. (1998, p. 160)

For Dann, Nabokov's 'gift' is one that manifests itself artistically, as he uses his eidetic attention to detail to imbue his prose with evocative sensory detail. Recall Ramachandran's theory of synaesthesia and creativity: if Ramachandran is correct about the increased connections in the brain of a synaesthete, it seems to follow logically that this also leads to increased capacity for memory. Cytowic and Eagleman offer a similar viewpoint in their discussion of colour-grapheme synaesthesia:

When asked what good synaesthesia is, a common response is "It helps you remember." Perhaps because they lack semantic meaning, synaesthetic percepts are easily and vividly remembered, often better than the triggering stimulus. While memorising matrices is a special case, many find that grapheme-colour synaesthesia helps them retrieve names. [P]eople often remember that someone possessed a name of a particular colour. For example, when Linda DiRaimondo encounters an acquaintance she hasn't seen in a while, she says to herself "That's a yellow name. Yellows are Ts

and Ys” She does not know anyone whose name starts with Y, so by process of elimination she goes through her mental list of names beginning with T until she remembers who her acquaintance is. (2009, p. 81)

On the subject of memory and recall, it was mentioned earlier that Ramachandran and Hubbard (2004) developed a test to prove synaesthesia existed. Here are the specifics of their experiment, as detailed by Ramachandran in *The Tell-Tale Brain*:

To answer this question I devised patterns similar to the one shown in Figure 3.4: a forest of blocky 5s with a few blocky 2s scattered among them. Since the 5s are just mirror images of the 2s, they are composed of identical features: two vertical lines and three horizontal ones. When you look at this image, you manifestly do not get popout; you can only spot the 2s through item-by-item inspection. And you can't easily discern the global shape – the big triangle – by mentally grouping the 2s; they simply don't segregate from the background... Now, what if you were to show Figure 3.4 to a synaesthete who claims to experience 2s as red and 5s as green? If she were merely thinking of red (and green) then, just like you and me, she wouldn't instantly see the triangle. On the other hand if synaesthesia were a genuinely low-level sensory effect, she might literally see the triangle...

The surprise came when we showed the black and white displays to Mirabelle. Unlike the nonsynesthetes, she was able to identify the shape correctly on 80 to 90 percent of trials – just as if the numbers were actually coloured differently! The synaesthetically induced colours were just as

effective as real colours in allowing her to discover and report the global shape. (Ramachandran, 2011, p. 91-93)

Fig. 1: Ramachandran and Hubbard's Experiment [omitted in digital version]. Source:

<<https://neuroanthropology.files.wordpress.com/2008/06/synesthesia.gif>>

Because synaesthesia is an involuntary association, one would expect that a synaesthete with grapheme-colour would experience colour just as readily in scanning a page of text as they would scanning the field of numbers in Ramachandran and Hubbard's experiment. Here is what Cytowic and Eagleman say on the matter:

An open question is whether a grapheme needs to be *attended to* in order to evoke synaesthetic colour. The question is harder to answer than it appears. Saying that synaesthesia is automatic and involuntary suggests it just passively 'happens' without the need to pay any attention at all to stimuli. When reading, for example, synesthetes attend to word meaning and phrases just like the rest of us do rather than seeing individual characters. (2009, p. 73-4)

This makes sense, as if the immediate reaction upon seeing any page of writing was to attend to every individual colour in each letter, it would be difficult to perform a task as simple as reading a newspaper. This does not mean, however, that synaesthesia cannot perform a useful role:

Yet Carol Steen and Megan Timberlake speak of seeing “Technicolour on the page” even though they see the printing in black ink, whereas Jean Milogav likens her colour experience to a ticker-tape speeding through her head. “When I read or listen to conversation,” she says, “colour just flows through me. If she wants she can “stop at a certain word and look at it,” examining the colors in detail. (2009, p. 74)

Thus, it becomes possible for a synaesthete to selectively focus their attention on colour if needed. If we also recall the earlier observation where for some synaesthetes the first letter of the word influences the colour of the rest, or the colour of the whole word is influenced by colours around it. Now we can begin to imagine a situation where a reader with grapheme-colour or phoneme-colour synaesthesia might attend to colour in a literary text: where there is a particular amount of wordplay on display – as frequently there is in Nabokov’s writing.

As an example, here is how the opening lines of *Lolita* may have appeared to Nabokov. It must be stressed that this is a speculative reproduction based on Nabokov’s own description of his synaesthesia, but one that will hopefully demonstrate the point. First, here it is with his colour associations colouring the letters:

Lolita, light of my life, fire of my loins. My sin,
my soul. Lo – lee - ta.

In this instance, the page appears to be a mess of colour, with some patterning observed but a largely forgettable colour relationship. Now observe the difference when we allow the first grapheme to colour the rest of the letters, except where there is an instance of phonetic repetition:

Lolita, light of my life, fire of my loins. My sin,
my soul. Lo - lee – ta.

Suddenly we have a pattern that is much easier to follow. Instead of multiple colours that make the writing almost unintelligible, we find that just a few colours emerge as dominant, those for *l*, *o*, *t*, *f*, *m* and *s*.

Of course, for a non-synaesthete, or even someone with a form of synaesthesia that is insensitive to graphemes and phonemes, it is unlikely that these reactions will take place at all. This suggests one compelling explanation as to why a writing style replete with wordplay may delight some readers but repel others. It could be more than just a question of literary taste: it could be that for some the mere repetitions of language provoke additional perceptive responses that reinforce the sense of

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enjoyment in the work, while for others no such feedback exists, and they may find the effect of the 'purple patch' off-putting.

Hyper-Aesthesia

From this idea that synaesthesia has the potential to allow heightened memory, as evidenced by Nabokov's astute attention to detail in *Speak, Memory*, we can also question whether this accompanies a tendency to revel in this sensory detail, and to find it as some source of aesthetic pleasure.

As an interesting example, recall that Dmitri Nabokov also exhibited his father's synaesthesia, even though their associations were different. Dmitri translated one of his father's earliest short stories, called 'Sounds'. Originally written in Russian in 1923, Dmitri's English translation certainly appears to have done justice to his father's attention to detail: note all the underlined instances of phonetic repetition.

It was necessary to shut the window: rain was striking the sill and splashing the parquet and armchairs. With a fresh, slippery sound, enormous silver specters sped through the garden, through the foliage, along the orange sand. The drainpipe rattled and choked. You were playing Bach. The piano had raised its lacquered wing, under the wing lay a lyre, and little hammers were rippling across the strings. The brocade rug, crumpling into coarse folds, had slid partway off the piano's tail, dropping an opened opus onto the floor. Every now and then, through the frenzy of the fugue, your ring would clink on the keys as, incessantly, magnificently, the June shower

slashed the windowpanes. And you, without interrupting your playing, and slightly tilting your head, were exclaiming, in time to the beat, "The rain, the rain. . . I am go-ing to drown it out. . . ." (1995, p. 74)

Perhaps inheriting his father's synaesthesia made Dmitri more sensitive and aware of phonemic repetition, and this kind of attention to rhyme was an almost involuntary part of the composition. What's more, the actual substance of the short story seems to reflect this obsession with sensory perceptions, as the title itself implies. The protagonist tells us the colour of the sand; the sound, colour and physical impact of the rain; the details of the piano and the brocade rug over it. It continues like this in the next paragraph:

I had a feeling of enraptured equilibrium as I sensed the musical relationship between the silvery specters of rain and your inclined shoulders, which would give a shudder when you pressed your fingers into the rippling luster. And when I withdrew deep into myself the whole world seemed like that—homogeneous, congruent, bound by the laws of harmony. I myself, you, the carnations, at that instant all became vertical chords on musical staves. I realized that everything in the world was an interplay of identical particles comprising different kinds of consonance: the trees, the water, you... All was unified, equivalent, divine. You got up. Rain was still mowing down the sunlight. The puddles looked like holes in the dark sand, apertures onto some other heavens that were gliding past underground. (1995, p. 74)

This passage continues in the same vein as the first, with multiple instances of phonetic repetition: 'enraptured equilibrium', 'silvery specters', 'shudder/luster', 'interplay of identical particles', providing phonetic texture to the short story that gives the reader a sensory experience of 'Sounds'. The observations of the protagonist take on synaesthetic imagery as he details the 'musical relationship' between the rain and his lover's shoulders, using multiple terms from music theory: 'harmony', 'chords' and 'staves'. He becomes increasingly caught up in this multi-sensory experience where individual stimuli start to form together in a kind of 'consonance'. He takes more joy in the act of being simultaneously stimulated by sight of the rain falling and the sound of the piano than in being present with his lover, which gives rise to an ominous sign for their relationship almost at once.

On that happy day when the rain was lashing and you played so unexpectedly well came the resolution of the nebulous something that had imperceptibly arisen between us after our first weeks of love. I realized that you had no power over me, that it was not you alone who were my lover but the entire earth. It was as if my soul had extended countless sensitive feelers, and I lived within everything, perceiving simultaneously Niagara Falls thundering far beyond the ocean and the long golden drops rustling and pattering in the lane. I glanced at a birch tree's shiny bark and suddenly felt that, in place of arms, I possessed inclined branches covered with little wet leaves and, instead of legs, a thousand slender roots, twining into the earth, imbibing it. I wanted to transfuse myself thus into all of nature, to experience what it was like to be an old boletus mushroom with its spongy yellow underside, or a dragonfly, or the solar sphere. (1995, p. 74)

We see first hand how the protagonist realises that his attraction to his lover is nothing but an extension of his obsession with sensory experience: in his imagery of possessing a soul that “extended countless sensitive feelers” and “a thousand slender roots, twining into the earth” he exalts the ability to feel and sense everything at once, being able to see Niagara falls at the same time as the drops of rain falling in front of them. He displays a kind of ‘hyper-aesthesia’ in his attention to sensory detail that renders him paradoxically unable to properly communicate with those around him. In this way he is somewhat reminiscent of Nabokov himself in the description of the birthday party in *Invitation of a Beheading*: he can remember all the minute details of the scene but gives barely any information about the people at the party, and seems not to have cared at all for their presence.

Indeed, the protagonist is so caught up in the minute details of his sensory experience that when his married lover tells him she cannot live without him, he seems to be un-attuned to their conversation:

I interrupted you with my silence. A spot of sunlight slid from your skirt onto the sand as you moved slightly away.

What could I say to you? Could I invoke freedom, captivity, say I did not love you enough? No, that was all wrong.

An instant passed. During that instant, much happened in the world: somewhere a giant steamship went to the bottom, a war was declared, a genius was born. The instant was gone.

“Here’s your cigarette holder,” I said. (1995, p. 78)

Again, although he is being spoken to, he notices the movement of sunlight on her skirt more than he does her presence and feelings. He perceives the events of history around the world in the very instant he cannot tell her anything truthful, so he casually remarks 'Here's your cigarette holder' and their relationship comes to an end. The downside of displaying this kind of hyper-aesthesia is an inability to act in moments of personal crisis, paralysed in perceiving the minute details available to sensory experience.

A similar moment occurs at the end of another of Nabokov's short stories, 'Spring in Fialta', at a moment where the narrator questions his relationship with his lover Nina:

'Look here – what if I love you?' Nina glanced at me, I repeated those words... 'Never mind, I was only joking,' I hastened to say, lightly encircling her waist. From somewhere a firm bouquet of small, dark, unselfishly smelling violets appeared in her hands, and before she returned to her husband and car, we stood for a little while longer by the stone parapet, and our romance was even more hopeless than it had ever been. But the stone was as warm as flesh, and suddenly I understood something I had been seeing without understanding – why a piece of tinfoil had sparkled so on the pavement, why the gleam of a glass had trembled on a tablecloth, why the sea was ashimmer: somehow, by imperceptible degrees, the white sky above Fialta had got saturated with sunshine, and now it was sun-pervaded

throughout, and this brimming white radiance grew broader and broader, all dissolved in it, all vanished, all passed... (2011, p. 48)

Again, there is an attention to visual and tactile details that are absolutely trivial to the actual direction of the story – which ends shortly afterwards with the narrator discovering the news of Nina’s death. Yet the narrator is completely engrossed in the seeming importance of these details, and there is an echo of the ‘consonance’ that engulfs the narrator of ‘Sounds’ when at the end of this passage the sun ‘dissolves’ all within it.

This motif of obsession with sensory aesthetics to the point of overload can be observed in *Lolita* as well, with Humbert’s final moments in the narrative being a strange, almost out of body experience. Having murdered Quilty and been intercepted by the police, Humbert brings his car to a stop in a field and waits to be taken away, in acceptance of his fate. At this moment he displays a similar obsession with the consonance of the senses as the protagonist of ‘Sounds’:

Small grasshoppers spurted out of the withered roadside weeds. A very light cloud was opening its arms and moving toward a slightly more substantial one belonging to another, more sluggish, heavenlogged system. As I approached the friendly abyss, I grew aware of a melodious unity of sounds rising like vapor from a small mining town that lay at my feet, in a fold of the valley. One could make out the geometry of the streets between blocks of red and gray roofs, and green puffs of trees, and a serpentine stream, and the rich, ore-like glitter of the city dump, and beyond the town,

roads crisscrossing the crazy quilt of dark and pale fields, and behind it all, great timbered mountains. But even brighter than those quietly rejoicing colors – for there are colors and shades that seem to enjoy themselves in good company — both brighter and dreamier to the ear than they were to the eye, was that vapory vibration of accumulated sounds that never ceased for a moment, as it rose to the lip of granite where I stood wiping my foul mouth. And soon I realized that all these sounds were of one nature, that no other sounds but these came from the streets of the transparent town, with the women at home and the men away. (*AL*, p. 307-8)

The resemblance between Humbert's display of hyper-aesthesia and that of 'Sounds' is almost uncanny. In both texts, the protagonist notices the movement of natural forms such as rain or grasshoppers. Both protagonists invoke musical terminology to describe their experience of this sensory unity; in Humbert's case it is a 'melodious unity of sounds'. Humbert makes note of all the details in the town before him; both those visual stimuli such as the geometric design of the streets or the colour of roofs, and aural stimuli such as the 'vapory vibration of accumulated sounds' coming from the town below him. Notably, this is not so much Humbert's direct perception at this moment, but his recollection of a moment from the past, not long after Lolita has disappeared.

These recurrent moments of eidetic recall and hyper-aesthetic attention to detail occur frequently enough in Nabokov's fiction to be significant. In each case Nabokov creates a sense accompanying this hyper-aesthesia of being so struck by

the connections between the different sense-impressions that the character is unable to function in some vital social way.

Cross-modal Perception

One of the research agendas driving Ramachandran is the question of whether or not the general population experiences synaesthesia in some meaningful way. His evidence for traces of synaesthetic behaviour in the ordinary brain comes from an experiment where participants were shown two shapes and asked to assign two made-up words to these shapes. There was an overwhelming tendency to associate the word 'bouba' with the shape with smooth, rounded edges and curved lines, and the word 'kiki' with the shape made of straight edges intersecting at acute angles. This is congruent across languages where the writing systems are not based on the Latin alphabet, so a mere association between the shapes of the letters and the sample shapes is not the sole explanation. Ramachandran contends that this is an everyday example of cross-modality (2011, p.108-9)

Figure 2: 'Kiki' and 'Bouba' [omitted in digital version]. Source: <<http://www.synesthesiatest.org/blog/bouba-kiki-effect>>

We noted at the start of the chapter that terms such as 'sharp cheese' or 'loud shirt' or 'warm colour' are part of our everyday lexicon. While we consider these

completely normal and parse their meaning without hesitation, as noted by Lakoff and Johnson (1980); in rare cases of neurological damage the metaphorical relation is not picked up at all, and the patient with this condition instead interprets this comment literally. Ramachandran gives an example:

For instance, in addition to experiencing difficulty using words and numbers, there are hints that people with damage to the left inferior parietal lobule (IPL) often lose the ability to interpret metaphors and become extremely literal minded... If asked "What does 'a stitch in time saves nine' mean?" a patient with an IPL stroke might say, "It's good to stitch up a hole in your shirt before it gets too large." (2011, p. 105)

Having examined the phenomenon of multisensory perception primarily using the term 'synaesthesia', it is important now to acknowledge a fairly recent argument that synaesthesia has to be considered a distinct phenomenon from more common examples of matching perceptions across different sensory modalities. In this system of delineation, a commonplace term such as 'sharp cheese' would merely be considered a cross-modal correspondence; the term 'synaesthesia' is reserved for cases like those exhibited by Nabokov. Deroy and Spence (2013) make the case that what has previously been termed 'weak synaesthesia' (Martino and Marks, 2001, p. 61) is not synaesthesia at all:

Since what is observed in these cases is a tendency for a sensory feature, or attribute, in one modality – either physically present or merely imagined – to be matched with a sensory media in another modality, it can, at first,

seem odd to assimilate them into synaesthesia. These cases are not only typically devoid of any conscious perceptual concurrent, but also frequent (and perhaps universal) in the population, whereas synaesthesia has been defined as “a conscious experience of systematically induced sensory attributes that are not experienced by most people under comparable conditions.” (2013, p. 644)

This seems to be a fairly important distinction to make. Given how this thesis has been keen to stress the difference between aesthetic experiences of literature that are conscious and those that are generally not available to consciousness, this view that ‘cross-modal’ perceptions are distinct from synaesthesia by virtue of not being conscious perceptions seems relevant and valid. It would also go some way to explaining why those examples of everyday expressions with cross-sensory mappings, like sharp cheese or loud shirt, are parsed so frequently without this counter-intuitive aspect of their construction becoming immediately apparent to consciousness.

The non-conscious nature of these cross-modal perceptions is not the only significant feature that Deroy and Spence argue gives them reason to be considered separately from synaesthesia: they also contend that that synaesthesia is comparatively rare (considering that a 4.3% chance still lies outside the statistical norm of experience), while cross-modal perceptions are far more frequent:

Accepting crossmodal correspondences as constituting (or residing at) the

weak end of a synesthetic continuum forces one to abandon the idea that synesthesia is, overall, constitutively rare. Again, this progressive abandonment highlights, as some have recently started to argue, that certain forms of synesthesia (i.e., the induction of tastes or flavor attributes by smell) may be universal. (2013, p. 652)

This distinction too is extremely important. As this examination of the links between synaesthesia and literature has made clear, while synaesthesia is compelling as a means of understanding the general mechanisms of the mind, as well as how a neurological condition likely influenced Nabokov's style of writing; its rate of occurrence and the inconsistency of perceptual mappings from one person to another make it difficult to apply these principles in the objective fashion typically expected of literary study. On the other hand, if cross-modal perceptions are more frequent and consistent across different readers, it makes them more suited to an objective analysis of a novel.

Where a synaesthete's reading of a novel may well be highly subjective, influenced by their unique sensory mappings, those perceptions that are characterized as cross-modal by Deroy and Spence suggest at some more general principles that govern our aesthetic appreciation of a text. Consider the following analogy: as a general principle, emphasising different colours when presenting a meal increases the aesthetic impact of the dish on the diner, but for a synaesthete with taste-colour mappings, if these food colours do not match the specific colours they associate with the taste of that food, the result can be 'most disagreeable' (Downey, 1911, p. 528-539). The former is a general aesthetic principle that, while still

inherently subjective, is relatively consistent across the population; the latter is a particular aesthetic preference that is dependent upon the individual with synaesthesia.

The field of cross-modal research is relatively young, but some recent discoveries are immediately relevant to literature and the investigation of aesthetics. Recall in earlier chapters how Tsur developed a theoretical explanation for the tendency to map certain qualities to certain phonetic sounds. Intuitive support for the notion that these kind of mappings are stable and frequently occurring perceptions comes from a summary by Deroy and Spence (2013, p. 655) of the mappings that are attributed to high-pitched sounds. These are consistently correlated with higher elevation, higher brightness, higher spatial frequency, upward movement and angular shape. This last association is very instructive if one recalls the bouba – kiki effect. If more research can be done on these general tendencies, it could open up new avenues for literary study to confidently articulate the non-conscious effects associated with literature’s aural properties.

One area of research that highlights the wide-reaching effects of multisensory perception is in the perception of ‘flavour’. Here is what Spence has to say on the topic:

People often confuse tastes with flavours. Strictly speaking, taste perception refers to those sensations that are elicited by the stimulation of the gustatory receptors on the tongue — sweet, sour, salty, bitter and umami.

Quite how many basic tastes we are sensitive to, and whether they are

really 'basic', are hotly-debated questions in the field... It is important to note, however, that we virtually never experience pure tastants in isolation. Rather, we mostly experience flavours, resulting from the combination of taste, retronasal olfaction (sometimes referred to as 'mouth smell', in contrast to orthonasal olfaction or 'sniffing') and trigeminal inputs. 'Fruity', 'meaty', 'floral' and 'burnt' are all flavour descriptors. Although it is difficult to arrive at a precise estimate of the relative contributions of taste and retronasal smell to flavour perception, a figure that one often sees quoted in the literature is that ~80% of what we commonly think of as flavour comes from the information transduced by the olfactory receptors in the nose. (2013, p. 365)

The fact that taste and smell are actually joint components of what we call 'flavour' is also noted by Cytowic and Eagleman (2009, p. 127-8). For Spence it is considered an ordinary instance of cross-modality, one that fits the categorical requirements mentioned earlier, being common amongst the population and being relatively non-conscious (insofar as the sensory dimensions of eating besides taste are not consciously apparent when taking a bite of food, as opposed to simply smelling it).

Nabokov's biographer Brian Boyd, in a recent essay 'Psychology and Literature', makes the following point which goes some way to illustrating why all this research could be extremely important for literary study:

Research in grounded cognition in recent neuroscience shows that thought is not primarily linguistic, as many had supposed, but multimodal, partially reactivating relevant multimodal experiences in our past, involving multiple senses, emotions and associations. Just as seeing someone grasp something activates mirror neurons, even hearing the word “*grasp*” activates the appropriate area of the motor cortex. Our brains encode multimodal memories of objects and actions, and these are partially reactivated as percepts or concepts come into consciousness. (2014, p. 21)

From this, we can see that literary texts have the potential to activate these different modalities by suggesting, imitating or directly conveying sensory perception to the reader. Think back to the previous chapters and how Kerouac uses rhythmic patterns in the text to convey a sense of motion, or how Woolf imitates the qualities of visual Impressionism with her stream of consciousness prose. And as we have seen in this chapter, sensory information is replete in *Lolita* thanks in part to Nabokov’s synaesthetic sensitivity and eidetic recall.

What can be gleaned from the studies on flavour as a multi-sensory percept is that the more sensory information of different modalities becomes available, the overall perception is enhanced. We can use this principle to propose a hypothetical analogous process that influences our opinion of literature’s aesthetic quality: the more sensory modes a text incorporates into the descriptive information or style of writing, the more it stimulates percepts across different modalities and fully involves the brain in reading, creating a sense of pleasure.

Let us return to Nabokov's story 'Sounds' at this point. To help us understand how cross-modal perceptions may function in the text, it is helpful to recall the distinction between conscious and non-conscious perceptions. This may easily be extended to the semantic expressions governing different sensory domains. The everyday metaphor 'sharp cheese', which we have regularly used as an example, would normally have its semantic effect processed without entering consciousness. But if we change the metaphor to 'loud cheese', we become acutely aware of the modalities we are being expected to map onto one another – sound and taste – and their apparently incongruent nature. Essentially there is a threshold at which the cross-modal referent can remain a non-conscious percept, and that can be drawn out for aesthetic effect. Consider this passage from 'Sounds' again:

It was necessary to shut the window: rain was striking the sill and splashing the parquet and armchairs. With a fresh, slippery sound, enormous silver specters sped through the garden, through the foliage, along the orange sand. (1995, p. 47)

First, note the use of the term 'slippery sound'. This term occupies a relatively low-key cross-modal map in that 'slippery' is most commonly a tactile property, but it is being used to describe a sound instead. Because of the minor mismatch between sensory domains, this line slows down the automatic perception of the text, allowing Nabokov to draw the reader's attention to the phonetic repetition. A similar example occurs further down, with the line: "A feeling of freshness welled in me like the fragrance of wet carnations..." (1995, p. 47). Here again, although the term is entirely semantically correct, there is just enough of a sensory overlap

between the smell and tactile domains with 'fragrance of wet carnations' to make it stand out for the reader. Never enough to enter direct consciousness as being an absurd or grotesque metaphor, these gentle cross-modal mappings are enough to grab the reader's attention. They have a conscious stage of awareness of something being significant, but the sensory mappings remain non-conscious, and the reader is instead drawn to the other features of the text, paying attention to important details that they might otherwise have skimmed over.

To make a distinction then between 'literary synaesthesia' and 'cross-modality', we might recall that Tsur suggested that there was an air of 'heightened mystery' (2008, p. 283) associated with literary synaesthesia, while Cuddon (1998, p. 283) argued that we use a form of synaesthesia in everyday language, with expressions such as 'soft wind' or 'black look'. These latter forms are better described as cross-modal perceptions, in that they belong to everyday language and widely shared perceptions, while the kind of effect Tsur alludes to belongs to the more restricted domain of literary synaesthesia. The same distinction made in cognitive science applies here: cross-modal perceptions are common and consistent across readers, whereas literary synaesthesia is an idiosyncratic example of a relationship between two terms from different sensory domains. Having said this, there is something of a continuum between them depending upon the level of ambiguity that is conferred either by their context or by the choice of terms, as a phrase that has a normal cross-modal understanding may be used so as to suggest a different and attention-grabbing modal mapping that approaches literary synaesthesia. As we shall see in this next section, this is something Nabokov exploits for artistic purposes.

Sensory Manipulation

For *Lolita*, the ideas of cross modality and hyper-aesthesia can inform an interesting reading of how Nabokov creates tension around Humbert's actions. By stimulating different sensory impressions that draw upon the reader's own associations, Nabokov creates the opportunity for the reader to experience a tension between the cognitive pleasures elicited by these low-level aestheticized reactions and the transgressive subject matter that he is dealing with.

In our discussion of *Lolita*, we have already seen how Nabokov uses the opening lines to convey a sense of the referential power the name and its sensory components have over Humbert. This manipulation of sensory information is also employed by Nabokov in the pursuit of other literary effects. Earlier we discussed the novel's ending and how the sensory detail comes to overwhelm Humbert as he is waiting to be taken away for his crimes. Brand (1987) discusses how Humbert breaks down the objects representing the culture of American advertising into sensory components, so as to nullify their potential influence:

In *Lolita*, Humbert strips advertising, mass culture, and psychoanalysis of any power they might have had over him by denying them the referential nature they claim for themselves. He turns them, in other words, from advertisements into art. He accomplishes this by separating images from their referents. Once they have been abstracted, Humbert can either impose

a personal form on the images (creating his own “pure classics in style”) or he can appropriate them poetically. (1987, p. 16)

‘Separating images from their referents’, as Brand puts it, is important to appreciating *Lolita*. In the example she gives, Humbert ignores the capitalist properties of the town he and Lolita stop in, which Brand argues gives Humbert the power to influence Lolita, to make her in the image of the liberated European nymph who is no longer bound to behave in the manner demanded by American culture.

A notable moment that demonstrates this process occurs when Humbert decides to marry Charlotte in order to retain his access to Lolita. In his description of her in that moment, he lists her physical attributes as thus:

She was well groomed and shapely, this I could say for her, and she was my Lolita’s big sister- this notion, perhaps, I could only keep up if I did not visualise too realistically her heavy hips, round knees, ripe bust, the coarse pink skin of her neck (“coarse” by comparison with silk and honey), and all the rest of that sorry and dull thing: a handsome woman. (*AL*, p. 72)

The way this line begins is complimentary of Charlotte, but the way Humbert tells the reader that he can ‘only keep the notion up’ if he ignores her physical features quickly subverts this idea. The terms that Humbert uses to describe Charlotte deserves some unpacking. He uses ‘heavy hips’ and ‘coarse pink skin’ to suggest negative visual referents, but then in the brackets he notes that her skin is only

'coarse' when compared with silk and honey. At this point, a cross-modal reference has been established with the introduction of 'honey', which has both a tactile and a taste referent readily associated with it. The latter is more likely to be primed because the line above refers to Charlotte's 'ripe bust', with the term 'ripe' having connotations with taste. As the reader reaches the end of the passage, the term 'handsome woman' once again subverts the direction Humbert has been taking. Nabokov constructs an ambiguity surrounding the physical appearance of Charlotte in that while Humbert clearly detests her, the reader is inclined to see her as attractive – particularly when the cross-modal language suggests that 'ripe' be interpreted as a taste rather than as an expression of her having aged. Humbert 'strips' the referential qualities associated with these terms and, using a cross-modal mapping, he repurposes them to indulge in his own perverted sense of aesthetics where he can only be attracted to a 'handsome woman' if he imagines her to be like her prepubescent daughter.

By contrast, when Humbert describes his first vision of Lolita and the feelings that accompanied that moment, Nabokov uses language with more recourse to sound patterns, with some similarity to the way it is used in 'Sounds'. Note once again the underlined phonetic repetition:

I find it most difficult to express with adequate force that flash, that shiver, that impact of passionate recognition. In the course of the sun-shot moment that my glance slithered over the kneeling child (her eyes blinking over those stern dark spectacles – the little Herr Doktor who was about to cure me of all my aches) while I passed her by in my adult disguise (a great big

handsome hunk of movieland manhood), the vacuum of my soul managed to suck in every detail of her bright beauty, and these I checked against the features of my dead bride. (*AL*, p. 39)

Alongside some of the more obvious instances of immediate alliteration – ‘bright beauty’, ‘movieland manhood’ and ‘handsome hunk’ – the first line in this extract repeats the post-alveolar fricative in ‘flash’ and ‘shiver’. In the subsequent lines Nabokov uses *s* as an alliterative device: Tsur’s analysis notes that these sibilants can have a ‘double-edged’ quality (1992, p. 43-7), being either indicative of a tender emotion or imitating a natural noise. Nabokov develops a different kind of ambiguity: one where the aestheticized reaction created by the pleasurable non-conscious sensation of the words rhyming initially masks the more sinister overtones they carry with them. Reexamining the passage, the words ‘slithered’, ‘disguise’ and ‘suck’ all conjure up more disturbing imagery in line with the transgressive nature of Humbert’s actions here, as he becomes aroused by Lolita. Yet each of these words is placed after another word with an *s* sound that creates alliteration: ‘glance slithered’, ‘passed... disguise’ and ‘soul... suck’, aestheticizing the very terms that hint at his depravity. When the reader becomes aware of their darker connotation, it creates a sense of tension between this low-level aestheticized response to Humbert and the higher-level consciousness of his sordid nature in this instant.

This kind of tension also occurs when Humbert invokes multiple sensory domains in a short extract, and in doing so approaches the boundaries of cross-modality. An example occurs in Humbert’s diary he compiles shortly after meeting Lolita:

Wednesday. “Look, make Mother take me and you to Our Glass Lake tomorrow.” These were the textual words said to me by my twelve-year-old flame in a voluptuous whisper, as we happened to bump into one another on the front porch, I out, she in. The reflection of the afternoon sun, a dazzling white diamond with innumerable iridescent spikes quivered on the round back of a parked car. The leafage of a voluminous elm played its mellow shadows on the clapboard wall of the house. Two poplars shivered and shook. (*AL*, p. 45)

Consider here how there are some links to the novel’s opening description of the name ‘Lolita’ and its sensory transferences. He refers to her as his ‘twelve-year-old flame’, again invoking the twin domains of temperature and vision. The phrase ‘voluptuous whisper’ describes a sound in terms of what is most commonly understood as a physical quality of being curvaceous, creating a sense-sight mapping. The personification of the landscape around him that follows – the ‘shivering’ poplars and the ‘quivering’ sun – approaches another moment of sensory blending with “the leafage of a voluminous elm played its mellow shadows on the clapboard wall”. Here the sight of the leaf shadows moving around is described as having ‘played’, which could also be read as personification, but more interestingly as another sight-sound mapping. The term ‘mellow’ can often be used to describe a sound, and in conjunction with ‘played’ it suggests some musical connotations. Because of the ambiguity as to which sensory domain he is referring to, this passage does not qualify directly as an example of literary synaesthesia, but the hinted potential of the cross-modal mapping creates some tension for the

reader. This tension then again draws attention to the transgressive material, where Humbert has just described a twelve year old girl as having a 'voluptuous whisper'.

This ambiguity between the sensory domains that Nabokov builds into *Lolita* acts as an additional source of tension that keeps the reader re-examining and questioning their initial interpretations, being unsure whether to take Humbert at face value yet still being intrigued by his aestheticized descriptions. It is worth noting that in his *Lectures on Literature*, Nabokov extolled the value of re-reading, suggesting that this kind of process of re-examining the text in an effort to resolve this tension was something he purposefully cultivated:

Curiously enough, one cannot *read* a book: one can only *reread* it. A good reader, a major reader, an active and creative reader is a rereader. And I shall tell you why. When we read a book for the first time the very process of moving our eyes from left to right, line after line, page after page, this complicated physical work upon the book, the very process of learning in time and space what this book is about, this stands between us and artistic appreciation. (*LL*, p. 3)

This kind of re-reading, along with sensory manipulation and stripping images of their referents are also used by Humbert to mask the horror of his other crimes, to imbue them too with something of an aesthetic pleasure. In the opening of the novel, he says 'You can always count on a murderer for a fancy prose style' (*AL*, p.

9). His 'fancy prose style', as he puts it, helps take the edge off his killing of Quilty in the final pages of the novel:

...all the while dreadfully twitching, shivering, smirking, but withal talking in a curiously detached and even amiable manner: "Ah, that hurts, sir, enough! Ah, that hurts atrociously, my dear fellow. I pray you, desist. Ah--very painful, very painful, indeed . . . God! Hah! This is abominable, you should really not-" His voice trailed off as he reached the landing, but he steadily walked on despite all the lead I had lodged in his bloated body--and in distress, in dismay, I understood that far from killing him I was injecting spurts of energy into the poor fellow, as if the bullets had been capsules wherein a heady elixir danced. (*AL*, p. 303)

Here there is ambiguous tension created by Nabokov: the reader knows Humbert is killing Quilty with his shots, but he describes the scene in such a manner that he could easily be tickling him instead. Quilty is becoming increasingly animated by the shots, even at one point being described by Humbert as demonstrating 'spurts of energy' in this passage. The sensory detail describing his perception of Quilty's movements – twitching, shivering, smirking – in spite of being shot makes it seem as if he is doing him no harm, perhaps he is even doing him a kindness by injecting this energy into Quilty. He occasionally uses the word 'hit' or 'caught' to describe the impact of his bullets, and at one point he replaces the word 'fire' with its French equivalent feu. "*Feu*. This time I hit something hard." This separation of the image from its referent, in this case taking away the English word and replacing it with a word from another language, and referring to the impact of a bullet simply

as “This time I hit something hard” helps Nabokov to blunt this impact of Humbert’s crimes.

If Humbert attempts to persuade the reader to accept Quilty’s murder by aestheticizing it, he performs a similar trick when he comes to the moment he and Lolita first consummate their illicit relationship. He calls upon his hyper-aesthesia to offer the reader an analogous account of how it would appear represented symbolically in the form of visual art:

There would have been a lake. There would have been an arbor in flame-flower. There would have been nature studies--a tiger pursuing a bird of paradise, a choking snake sheathing whole the flayed trunk of a shoat. There would have been a sultan, his face expressing great agony (belied, as it were, by his molding caress), helping a callypygean slave child to climb a column of onyx. There would have been those luminous globules of gonadal glow that travel up the opalescent sides of juke boxes. There would have been all kinds of camp activities on the part of the intermediate group, Canoeing, Coranting, Combing Curls in the lakeside sun. There would have been poplars, apples, a suburban Sunday. There would have been a fire opal dissolving within a ripple-ringed pool, a last throb, a last dab of color, stinging red, smearing pink, a sigh, a wincing child. (*AL*, p. 134-5)

Consider the visual images that race before the reader’s mind: the natural images of the lake, the tiger, the bird of paradise, the snake; before the human images of a sultan, a slave child and of technical items such as juke boxes take over. Nabokov

describes the scene in such elaborate visual detail that it temporarily forces the reality of the sexual congress taking place out of the reader's mind: it only returns at the very end where the imagery becomes so much less specific as to be opaquely suggestive once again: "stinging red, smearing pink, a sigh, a wincing child" are all overt references to his consummation with Lolita. But by describing this action in such aestheticized terms, coupled with the use of past conditional tense, Humbert again distances himself from the reality of his actions, and protects himself from having to confess to the reader the truly sordid nature of his deeds.

Reader's Mind, Author's Mind

To conclude this chapter, let us go back to Nabokov's *Lectures on Literature* and re-examine his ideas on literature, as well as the relationship between authors and readers.

A book, no matter what it is – a work of fiction or a work of science (the boundary line between the two is not as clear as is generally believed) – a book of fiction appeals first of all to the mind. The mind, the brain, the top of the tingling spine is, or should be, the only instrument used upon a book.
(*LL*, p. 3-4)

As Nabokov makes clear here, the brain is the locus wherein all the perceptual effects that have the ability to captivate the reader can take place. While Nabokov was in some respects using this line to ward his students away from historical or socio-economic criticism (*LL*, p. 3), his emphasis on the importance of the mind draws attention also to the essentiality of the cognitive and perceptual processes in being able to appreciate his fiction. In this lecture, Nabokov rejects socio-economic readings of a text in favour of individual imagination, and he also cautions against emotional engagement with a character – preferring instead to establish an ‘artistic harmonious balance’ between the reader’s mind and the author’s mind (*LL*, p.3-4). One can see how this becomes relevant to *Lolita*, as the novel seeks not so much to encourage direct emotional sympathy for Humbert as to establish an artistic connection between his mind and the reader’s mind. This is a subtle but important distinction: Nabokov sees emotional engagement as a “comparatively lowly kind” of imagination (*LL*, p. 4). On the other hand, drawing the reader into Humbert’s aestheticism – his wordplay, his attention to sensory detail and traces of eidetic memory – allows the reader to indulge Humbert, to be entertained by him, and consequently to potentially temper their rush to judge him on the deeds for which he is facing trial. These processes of the mind that we have been following throughout the chapters of this thesis, including the recourse to using phonetics for aesthetic effect, are the tools that Nabokov uses to create a sense of tension for his reader. So it becomes apparent why he placed so much emphasis on encouraging the reader to adhere to their individual perception rather than to seek external referents that might draw attention away from the aesthetic impact of stepping out the phonetic elements in the name ‘Lolita’, for instance.

In this chapter, we have followed Nabokov through his own fiction by examining the question of how the unique nature of his own mind influenced his work. Of course there is a strong biographical element to this approach, but in undertaking this study of synaesthesia and cross modality we have had the opportunity to learn more about the mind, and to understand more deeply how the different sensory domains can blend together. This is particularly important because it flows on from and reconfirms the work done in the other case studies to show the links between literature and media that stem from a different sensory domain.

Of course, unlike music or Impressionism, synaesthesia itself is not a strong thematic link to Nabokov's works, due to its highly idiosyncratic nature. What it does provide us with is a clearer understanding of the many techniques that Nabokov employs in these texts: semantically rich names, cross modal relations, hyper-aesthesia and sensory manipulation. Being able to understand these as a literary effect with a perceptual basis is helpful when articulating the impact of his writing. But more interestingly it also provides a window into the nature of Nabokov's own mind, and shows that what we might potentially dismiss normally as an example of over-indulgent writing was most likely an everyday perception for him. We may not devote such attention to the aesthetic effect of remembering or pronouncing names, but perhaps Nabokov did. We might be inclined to think that the perfect recall of minute details in a memory that seems to take place so long ago is unrealistic, but perhaps he did have such a gift. If this seems far-fetched, consider how a description of 'synaesthesia' and its effects might have sounded to

a sceptic before science was able to verify its existence. Yet now synaesthesia is taken to be a serious and well-studied phenomenon.

Reading 'Sounds' in light of the fact that both Nabokov and his translator-son experienced synaesthesia, the central narrative of a protagonist who is unoccupied with the signs of his faltering relationship but instead enraptured by the sensory detail of the world around him becomes a point of distinction. As we have seen, this moment of unified perception has echoes throughout Nabokov's fiction. To close this chapter, it is worth speculating on the possibility that this constant, overwhelming attention to multisensory aspects of the external world is a stylised representation of the effect of living with synaesthesia as strong as Nabokov's. Dmitri's translation draws the reader into this world by emphasising phonetic repetition, to draw attention at least to the interference of sound with the visual world. As a potential clue, consider the line "I realised that everything in the world was interplay of identical particles comprising different kinds of consonance" (1995, p. 74), where there is perhaps a faint pun on 'consonants', many of which are recurrently forming the basis of alliteration or assonance in the passage (most notably *s*, *p* and *l*). This brings us back once again to the idea that what Nabokov wanted was to bring the reader's mind closer to the author's mind.

Tsur refers to literary synaesthesia in nineteenth century romantic poetry as having "vague, dreamy or uncanny hallucinatory moods" (2008, p. 283). Although what is technically referred to as 'literary synaesthesia', does not dominate Nabokov's fiction, we can see how these kind of unrealistic, dreamlike perceptions of the sensory domains coming together provide a more unique contribution to the

intersection of synaesthesia and literature. They create a sense of heightened aesthetic engagement with the text, at the expense of external intrusions on the narrative. The reader, caught up in the sensory detail of the phonetic repetition, is drawn into the narrative and in establishing the connection between reader's mind and author's mind that Nabokov so prizes, comes perhaps as close as possible to approximating what his 'gift' is like.

Conclusion: The Telltale Tingle

At the outset of this thesis I set out to explore the potential to connect the discipline of literary criticism with the techniques, insights and theories of cognitive science. There were three key aims to this research, which I would now like to draw back together as we reach a conclusion.

The first aim was to demonstrate where cognitive science might truly be able to add to our understanding of literature by “extending the critic’s toolbox.” This particular ambition was demarcated on one side by examples of critical approaches to certain texts, most notably *On the Road*, that were lacking the means to articulate a novel’s perceptual effects in clear terms. On the other side it was bounded by examples taken from the existing schools of cognitive poetics and neuroaesthetics that have not provided this much-sought articulation, but have instead come up with either reductionist theory or mere re-categorisations of existing literary terms.

What has been shown is that cognitive science can indeed extend the range of critical tools. Crucial to this is the ability to identify a perceptual process or phenomenon relevant to a particular effect that can expand on the existing understanding in a meaningful way. Stockwell’s inconclusive discussion of feeling in literature and Ramachandran’s simplistic argument about the relevance of ‘peak shift’ to abstract art demonstrate that a potential tool needs to do more than just connect two ideas together. The way in which Tsur uses the periodicity of

speech sounds to articulate perceptual effects associated with them is more productive, as is Barry's discussion of the interaction between different regions of the brain in the production of perceptual tension.

Through our investigation of the cognitive mechanisms that are responsible for musical tension, a framework has emerged whereby tension can be articulated as a significant factor in the appreciation of literature. Semantic tension is a device that Nabokov uses to manipulate the reader during the presentation of scandalous material in *Lolita*, playing with the different properties that his descriptive terms can connote in a way that masks their more undesirable realities behind a veil of aestheticism. In Kerouac's novels, as epitomised by *On the Road*, tension functions through the creation of expectations for the reader that Kerouac then withholds for artistic effect: both on a macro level in terms of how the novel's character arcs unfold, and on a micro level in terms of how his literary style turns traditional punctuation into a rhythmic device that can imitate the cadences of music. Understanding the perceptual basis of tension allows us to discuss the idea of 'feeling' in literature with a more precise model of how certain effects are achieved. It also keeps us mindful of how these kinds of aesthetic effects are not 'universal' to all readers, in spite of what Ramachandran claims can be offered by neuroscience. It is in fact quite the contrary: as a largely perceptual phenomenon that is localised within the individual mind, tension explains why there is such scope for varied reader response to texts such as *On the Road*.

The second aim was to show how cognitive science could clarify key intuitions about the nature of literary texts. Chief among these were the notion that *On the*

Road was 'like jazz' and that *Mrs Dalloway* was impressionistic. Jackson (2002, p. 165) spoke of how the ideal model for cognitive criticism was to demonstrate how a psychological or cultural artefact functioned in an analogous way to mental or neurological functions. This is essentially the route taken in these case studies of Kerouac and Woolf: to show how the artistic form that provides the basis for comparison to literature functions as presently understood by cognitive science, and then to show how analogous processes take place in literature, or more specifically in the structural elements of those texts that give rise to the intuition of an analogy with music or art.

As noted above, the exploration of timbre, rhythm and tension as structural elements common to both music and language formed the basis for explaining the idea that *On the Road* is 'musical' in some way. In regards to Woolf, by articulating the perceptual effects associated with Impressionism in terms of their neurological mechanisms, it is likewise possible to broaden our understanding of how an analogous function arises in literature. This then can be used to extend the discussions of Woolf's Impressionism to *Mrs Dalloway*, showing how it exploits similar perceptual quirks as Monet did when depicting a field of poppies that seem to shimmer due to the equiluminance of the painting's colours.

When we talk about these kinds of analogies between two different artistic media by using 'intuitions', we are touching upon an important point that emerges from the interdisciplinary collaboration between cognitive science and the arts. Intuition refers to an instinctual or non-conscious process of arriving at a judgement, and articulating its effect allows us to discuss both the creative

philosophies and the resultant expressive effects of an author without necessarily specifying conscious authorial control or intent. As Zeki touches upon when he suggests that artists are “neurologists who unknowingly study the brain with techniques unique to them” (2001, p. 99), specific awareness of how these techniques actually functioned was not necessary for the artists to make use of them. For instance, Kerouac never wrote with any explicit understanding of the neurological mechanisms behind both jazz and literature, but he trusted his intuition enough to sense the potential for literature to borrow from jazz.

This brings us to the final aim of the thesis, which was to examine how we might broaden our approach to the topic of ‘aesthetics’ by seeking new insights from cognitive science that might explain the significance of neurological processes that are not immediately accessible to our own, direct consciousness. There have been two facets to this final investigation: the first was the continual study of phonetic and rhythmic effects in Kerouac, Woolf and Nabokov. Here it was shown that while the effect associated with these devices has a distinct perceptual presence, the neurological process that produces it is not ordinarily available to consciousness. As such, there is only intuitive recourse to the source of the effect, and it is often attributed to other subjective processes that are more accessible, such as emotion. As we have seen, literary critics often paper over these cracks by resorting to symbolic readings of these connections: such as Malcolm’s symbolic interpretation of the jazz connection in *On the Road* or McKluskey’s idea of ‘word knots’ echoing throughout *Mrs Dalloway*. Bringing the perspective of cognitive science to the debate allows literary criticism more freedom to discuss aesthetic effects without needing to resort to explanations that ignore the source of the effect.

The other facet to this investigation lies in our exploration of Nabokov's synaesthesia and the general idea of cross-modality. As we have seen, synaesthesia is a highly idiosyncratic phenomenon. At face value this might seem to render it unhelpful to literary criticism, but our exploration of synaesthesia's processes has given us an insight into the particular idiosyncrasies of Nabokov's mind. Synaesthesia itself might once have been brushed aside as a fanciful product of imagination, but only because at the time the tools were not available to validate the cognitive processes in the mind of a synaesthete that give rise to cross talk between sensory domains. In the same way, what might once have been dismissed simply as Nabokov having a flair for extravagant prose can now be understood as conforming to the patterns associated with synaesthesia in individuals: these include finding aesthetic considerations in the very names of his characters, displaying eidetic memory and thematically alluding across his fiction to a state of hyper-aesthesia or being aware of a multitude of connections between different domains. This goes some way towards establishing the "harmonious balance between the reader's mind and the author's mind" that Nabokov spoke about in his literary lectures (*LL*, p. 4). We may not be able to fully experience Nabokov's synaesthesia, but being aware of its effects gives a heightened understanding of his fiction.

But where synaesthesia is idiosyncratic and distinct, cross-modality is more stable across populations, and gives rise to perceptions that are widely accepted without individuals being conscious of their cross-sensory nature. We have seen the principles of cross-modality at work throughout this thesis: in the way that

recourse to aural language creates artistic potential to invoke sound properties in a novel, even when being read through a different domain (the visual system that receives the letters on the page). In our investigations of how Woolf appears to follow principles associated with visual art, as for Kerouac with jazz, we have seen just how many connections run between different artistic media. Cross-modality shows us that the sensory domains interact with one another far more frequently than we might suspect.

What I hope all this material shows is that much future potential for the study of aesthetics lies in the ability to understand how this interaction between the different sensory domains affects our perception of artistic works. As Grace noted, aesthetics can be thought of as “a disciplinary field... directed towards the understanding of the sensual in order perhaps to capture this field for logic” (1996, p. 1), and this allows us to unify the concerns of different artistic media to communicate using the realm of sensory information. Recalling what Barry suggested about imagery functioning as a kind of ‘euro currency’ between sensory input and memory, we may be able to broaden our understanding of the different ‘aesthetics’ associated with particular eras, where in this case ‘aesthetic’ signifies a conscious categorisation of a cultural artefact that is derived from any number of pre-conscious, cross-modal experiences. The ‘Impressionist’ aesthetic, for example, spanned visual art, music and literature, and while in some cases the connections between these different media may have been overt, in other examples they may have been drawn at a non-conscious level.

This then forms the most profitable avenue for cognitive science to be applied to the arts. Any future ‘neuroaesthetics’ should not preoccupy itself with trying to distil the very idea of aesthetics into reductionist neurological explanations that aim to account for every experience, but to help articulate to the reader what lies beyond the realm of conscious perception. When Nabokov spoke of “merging the precision of poetry with the intuition of science” (*LL*, p. 6) in the study of the novel, he also alluded to an ideal reading that adopted both conscious, rational perceptions and pre-conscious sensations as valid material to engage with, in a quote that appeared in the introduction of this thesis:

“In order to bask in that magic a wise reader reads the book of genius not with his heart, not so much with his brain, but with his spine. It is there that occurs the telltale tingle even though we must keep a little aloof, a little detached when reading. Then with a pleasure that is both sensual and intellectual we shall watch the artist build his castle of cards and watch the castle of cards become a castle of steel and glass.” (*LL*, p. 6)

As we have seen throughout this thesis, the idea of cognitive science being allowed to mediate in the arts has made some literary critics wary of what the outcome might be. We have seen the potential for redundant explanations or reductionist readings, but we have equally been entertained with the prospect of being able to account for the aesthetic effects that have until now lain just beyond our grasp. So I conclude that we should approach this coming age of cognitive literary studies with a nervous aesthetic and critical excitement. We should be, as Nabokov writes “a little aloof, a little detached,” so that we might spot the pitfalls of this approach

as they emerge; but so too should we be attuned to the possibility that the “telltale tingle” of aesthetic engagement as explained by cognitive science will be the next great literary frontier.

Glossary:

Amygdala: A small region of the brain located below the thalamus, with one lobe on either side. Considered to be part of the brain's limbic system and involved in emotional processing.

Axon: A long fibre attached to the cell body of a neuron that is responsible for delivering output or signal, enabling communication between neurons.

Cerebral Cortex: The folded outer layer of the brain that is divided into left and right hemispheres and also into lobes. It is responsible for cognitive tasks including memory, perception, rationalisation, language and attention. Compared to the areas in the limbic system it handles more of the 'higher' thought processes that result in rationalised perception.

Circadian Rhythm: An internal twenty-four hour cycle found in many organisms, including humans, that responds to light or darkness levels and influences behaviour.

Cognitive Poetics: A term used by some literary scholars to delineate literary criticism that seeks to apply the principles of cognitive science to some interdisciplinary end. See Chapter 2.

Cognitive Science: A collective term for scientific studies of the human mind. Neuroscience, cognitive psychology and linguistics can all be considered examples of cognitive science. See Introduction.

Dopamine: A chemical released by specific neurons that transmits signals to other brain areas. It has important functions associated with the motor system, but more notably it facilitates the brain's reward systems.

fMRI: Functional Magnetic Resonance Imaging. A form of imaging that captures the fluctuations in blood oxygenation associated with neurological activity, showing areas of peak activation.

Intuition: In this thesis 'intuition' refers to mental associations or ideas that are strongly felt but lack a conscious or fully rationalised explanation.

Hippocampus: A brain region located below the cerebral cortex that plays an essential role in forming memories.

Hypothalamus: A brain region located below the thalamus that controls circadian rhythm, hunger, body temperature and fatigue.

Limbic System: A group of brain areas including the hippocampus, amygdala and hypothalamus that collectively are involved in emotion, motivation and memory. Although the term 'limbic system' is the subject of debate as to whether it

accurately categorises the function of the regions within it, the limbic areas are more directly involved in emotion than the cerebral cortex.

Mesolimbic System: A dopamine pathway that is most notably associated with addictive behaviour.

Mirror Neurons: Neurons associated with a particular action that also fire when observing that same action performed by someone else.

Neuroaesthetics: A term used to describe theories of cognitive science that are applied to the arts, usually with the aim being to articulate their aesthetic impact in scientific terms. See Chapter 2.

Neuron: The basic cellular components of the brain that release nerve inputs via axons for communication between different areas of the brain.

Parietal Lobe: Part of the cerebral cortex, the parietal lobe is responsible for our perception of space and position in relation to the external world. It receives sensory information from different domains, particularly the sense of proprioception.

Perception: In terms of cognitive science, perception is how sensory information is organised and interpreted by the brain. Perception governs how the external world is understood by the mind, and in this thesis is used to refer to the way a

text and any aesthetic response to it are represented and understood by an individual.

Plasticity: Plasticity refers to the ability of the brain to change neural pathways over time. These include responses to learning and behaviour, but also responses to injury.

Proprioception: The sense of the position of various parts of the body and of the effort that accompanies moving those parts.

Sensation: In scientific terms, sensation refers to the reception of sensory information by sense regions prior to interpretation and organisation.

Suprachiasmatic Nucleus: A region within the hypothalamus that receives information about light from the retina and sends signals to the rest of the brain, governing the body's circadian rhythm.

Thalamus: A brain region that sits on top of the brain stem and facilitates the relaying of sensory information to the cortex.

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