

THE WORDS THAT MAKE PICTURES MOVE

*An implicit theory of viewer empathy
in the tacit knowledge of expert screenwriters*

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Abstract

Screenwriting is under-represented in film theory. Screenwriters conceive of their practice as deliberately communicating, through the medium of film, a coherent set of thoughts and feelings to a discriminating viewer, in order to move them emotionally and intellectually to accept an intended meaning. Thus expert screenwriters are those who consistently demonstrate, through the effective application of narrative forms and devices, their understanding of how we understand film. Yet screenwriters have been neglected by film theory as a primary source of knowledge concerning how the experience of viewing narrative film is constructed. In this thesis I argue that by directly interrogating expert screenwriters' conceptions and practices we may develop better theories of how film is understood. As evidence, I explore screenwriters' understanding of one aspect of narrative film: viewer engagement with character. I identify an implicit theory of viewer empathy in the tacit knowledge of expert screenwriters. I situate this implicit theory within the context of recent cognitive film theory. And I evaluate specific narrative strategies generated by this theory, with reference to current cognitive neuroscience. By doing so, I aim to demonstrate that by directly considering the knowledge of expert screenwriters we may enhance understanding of how film is understood.

Statement of Candidate

I certify that the work of this thesis entitled *The Words That Make Pictures Move* has not previously been submitted for any degree, nor has it been submitted as part of requirements for any degree to any other university or institution other than Macquarie University.

I also certify that the thesis is an original piece of research that has been written by me. Any assistance received in my research and the preparation of this thesis has been appropriately acknowledged. All information sources used are indicated in this thesis.

The research presented in this thesis was approved by the Macquarie University Ethics Review Committee, reference number: 5201200489.

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Chapter One

FADE IN:

Background, aims and approach

This research project has grown organically from my creative practice. I have been making narrative film, in one capacity or another, for over twenty-five years. In that time I have had the good fortune to work with many expert screenwriters and filmmakers - luminaries like Terrence Malick, George Miller, Jane Campion and Peter Bogdanovich. I have enjoyed the privilege and the pleasure of discussing their practice with them, and observing them at work. Twenty-five years is a long time watching.¹ Throughout that time, I noticed that expert screenwriters share a consistent set of foundational conceptions and practices concerning viewer engagement. I also noticed that these conceptions and practices have never been fully articulated. They remain part of expert screenwriters' tacit knowledge. It occurred to me that if I could make this knowledge explicit, it might make a welcome contribution to film theory's investigation into how the viewer's understanding of narrative film is constructed. But the conceptions and practices I observed proved to be more controversial than I anticipated.

In this chapter I briefly outline the nature of these conceptions and of the controversies attached to them. I do not intend to rehearse my full argument here. I'll let that unfold naturally as we proceed through the research. My aim here is simply to provide the reader with a context for the argument - and some clue as to why it is an argument at all. The best place to start is with the assumption that underpins my thesis: the idea that screenwriting is an act of intentional artistic communication.

Screenwriting and contemporary film theory

Screenwriters and film theorists share common aims. Christian Metz said the project of the film theorist is “to understand how film is understood” (Metz 1974, p74). This is also the project of the screenwriter. Cognitive film theorist David Bordwell defined this project further when he wrote that, “A full theory of narration must be able to specify the objective devices and forms that elicit a spectator’s activity” (Bordwell 1985, p48). Here too, screenwriters would agree. The screenwriter, in order for her work to communicate as she intends, must possess just such a “full theory”. Indeed, she must not only be able to “specify” the “devices and forms that elicit a spectator’s activity”, she must be able to *apply* them. She must have a working knowledge of how an individual viewer engages emotionally and intellectually with a screen character, how a viewer derives a coherent, holistic meaning from the fragments of image, sound and event that make up a screen narrative, and how a discriminating (and often resistant) viewer is swayed to accept this meaning (Price 2010, Moyer-Gusé 2008). In short, in order to become expert, a screenwriter must “understand how film is understood”. It would seem logical to assume that the film theorist’s project to “understand how film is understood” may therefore benefit from directly interrogating expert screenwriters’ understandings. This assumption, however, is not shared by most contemporary film theorists.

In his book *A Philosophy of the Screenplay* (2013), Ted Nannicelli points out that while early film theorists such as Eisenstein, Munsterberg and Belazs were exercised by lively and robust debate concerning the nature and status of the screenplay, in contrast contemporary theorists have largely overlooked the screenwriter and the screenplay as valid primary sources of knowledge about how the experience of viewing film narrative is created:

contemporary film theory has subordinated the study of the screenplay to other concerns. Although relevant articles have been published here and there, contemporary film theory has given us no systematic or sustained account of the

screenplay or its place in film production
(Nannicelli 2013, p3).

The notion that screenwriting is an intentional act of artistic communication is so fundamental to the expert screenwriter's practice that for many screenwriters unfamiliar with film theory it comes as a great surprise that anyone might think it could be otherwise. Contemporary film theorists, however, have argued vehemently against the "communication theory" model of cinema. For many decades they have been successful in marginalising this approach, preferring instead a deterministic interpretation of cinema in which the filmmaker is considered an "unconscious producer of meaning" inescapably "functioning on behalf of ideology" and in which the spectator is a passive dupe whose response is constrained by language (Lapsley & Westlake 2006, p111 & p89). Filmmakers have typically shown little patience for this approach. Screenwriter and director Alan Parker voiced their frustration when he declared, "Film needs theory like it needs a scratch on the negative" (Parker 1986). During the post-structuralist turn of discursive determinism in film theory it seemed there was little common ground for fruitful discussion between theorists and practitioners in film (Rushton & Bettinson 2010; Stam 2000; Price 2010). Then, in the last decades of the twentieth century, the post-structuralist paradigm was brought undone by silicon and magnets.

In the 1970's, Federico Faggin and his team at Intel developed the silicon chip microprocessor, and made powerful computers more widely available (Ceruzzi 2003). Scientists from computational science, linguistics and psychology took advantage of this enhanced computer power to facilitate complex computational modeling of human cognition. Out of their collaborations the new field of Cognitive Science was born (Thagard 2005). Their project received a boost in 1980, when Raymond Damadian released the first commercial MRI (Magnetic Resonance Imaging) scanners. These allowed brain imaging in unprecedented detail, and led to an explosion in clinical research exploring the cognitive and affective processing of a vast array of stimuli. This new science provided extensive evidence that individual human beings experience a subjective, biological response to the perception of all manner of phenomena, and that

from this response they construct their own interpretation of meaning (Adolphs 2003). There is no evidence to suggest that narrative film is a special category of phenomena exempt from this form of cognitive processing. This argument has been made comprehensively elsewhere by cognitive film theorists such as Bordwell (1985), Carroll (1988) and Grodal (1997) and it is beyond the domain of this project to reiterate it in detail here. These advances in science irrevocably undermined many of the tenets of contemporary film theory. And opened the way for cognitive film theorists to adopt a new way of thinking about the viewer's experience of narrative film. A way of thinking that is almost aligned with the screenwriter's way of thinking.

Almost.

Screenwriting and cognitive film theory

Cognitive film theory emerged in the wake of cognitive science. It rejected the psychoanalytic dogma of post-structuralist contemporary film theory, and instead embraced a more naturalistic interpretation of the way narrative film conveys its meanings to an audience. Pioneering cognitive film theorist David Bordwell advocated “rational inquiry, of which science is our most successful exemplar, as the most promising way to explain cultural practices” (Anderson & Anderson 2005, foreword pX). Accordingly, cognitive film theorists adopted the approach of the Constructivist school of cognitive psychology, which argues that the viewer actively constructs meaning from fragmentary perceptions, through a process of generating hypotheses and inferences (Bordwell 1985; Buckland 2000). Thus, according to cognitive film theory, narrative film is an art form designed, in Bordwell's words, “to encourage the spectator to execute story construction activities. The film presents cues, patterns and gaps that shape the viewer's application of schemata and the testing of hypotheses” (Bordwell 1985, p49). This approach offers significantly more common ground for fruitful discussion between theorists and screenwriting practitioners. Unfortunately, such discussion has not yet materialised. Even among cognitive film theorists, screenwriting remains subject to what Steven Price describes as a “process of academic and industrial marginalization” in which the “writing stage vanishes only through an

act of rhetoric or figuration” (Price 2010, p43). To understand why, we need to inspect cognitive film theory’s foundations.

David Bordwell is a major figure in current film theory. He has written extensively and cogently on many aspects of narrative film. His works are highly regarded and have had far-reaching influence in moving film theory out of the mire of doctrine and dogma, and towards a “rational”, “naturalistic” and “ecological” style of inquiry (Bordwell in Anderson & Anderson 2005, foreword pX-XI). His achievement in furthering understanding of the workings of narrative film has been substantial. And his approach has shaped the approach of the cognitive film theorists who follow in his footsteps. So it is significant that, in his seminal book *Narration in the fiction film* (1985), Bordwell explicitly rejects the communication model of film narrative as an intentional act of communication in which “a message is passed from a sender to a receiver”. Instead he claims that it is irrelevant - even deluded - to consider the intention of the author of the narrative, “To give every film a narrator or an implied author is an anthropomorphic fiction” (Bordwell 1985, p62). In seeking to do away with the problematic notion of the “implied author”, Bordwell also casually erases the real author. While other theorists and critics debate whether the screenwriter (Corliss 1974) or the director (Astruc 1948; Sarris 1968) should properly be considered the author of a film, Bordwell dispenses entirely with the need to consider that a film has any author at all. In a section headed “Narrator, Author” Bordwell declares that narrative, “presupposes a receiver, but not any sender, of a message” and thus, “No purpose is served by assigning every film to a Deus Absconditus” (Bordwell 1985, p62).

A long line of subsequent cognitive film theorists have adopted his stance, including but not limited to: Carl Plantinga, Noël Carroll, Murray Smith and Torben Grodal. This approach to understanding cultural products has been criticised as resembling “a laboratory without a scientist in it” (MacLean 1999, p166). To be fair, not all cognitive film theorists refute the agency and intention of the writer so wholeheartedly. Gregory Currie, for example, critiques Bordwell’s argument, chiding that, “Most of the ways we describe narrative make no sense ... if they are cut off from ... agency” (Currie 1995 p247). But Currie goes on to argue that while we must consider

the screenplay as the product of agency, we need not consider it as emanating from any actual agent. According to Bordwell, and many cognitive film theorists who follow him, film is best understood as an art form without an artist.

In contrast, I believe that if we seek to understand how narrative film is understood, then it will be instructive to investigate the communicatory intent of, and means applied by, the initial communicator - the screenwriter. As Nannicelli writes:

if the point of theorizing is to actually explain the data presented by our practices, then we must look at specific practices and the objects thereof ... because it is practitioners who determine the boundaries and the nature of the concept that we are currently investigating

(Nannicelli 2013, p7)

I am not alone in this belief. The fact that “the screenplay has been a remarkably neglected area of study” (Nelmes 2010), and that screenwriters have been excluded from academic discourse, is being increasingly acknowledged by academic writers (Price 2010; Boon 2008; Horne 1992; Nelmes 2010; Macdonald 2010; Maras 2009; Nannicelli 2013).

Academic study of the screenplay

Screenwriting studies is emerging as a healthy academic field, supported by an upsurge of vibrant discussion and publication. In 2006 Ian Macdonald founded The Screenwriting Research Network, an international academic network, dedicated to research on screenwriting. In 2010 Jill Nelmes launched the Journal of Screenwriting, “the first peer-reviewed academic journal devoted to screenwriting in the world” (Macdonald 2010), which aims to support and explore “research in the field of screenwriting [and] the linking of scriptwriting practice to academic theory”. Screenwriting studies is an eclectic field, embracing a broad range of concerns, including the history of screenwriting, processes of writing for various screen media,

considerations in balancing creativity with the demands of the production process, and analyses of cultural and societal contexts. Recent publications, such as Nelmes (2014), Macdonald (2013), Maras (2009), Price (2010) Batty (2014) and Millard (2014) have contributed to the field via a variety of avenues of research. However, while the field does include open dialogue and debate with a number of theorists from various schools, including cognitive film theory, this inclusiveness has not been reciprocated. Cognitive film theory continues to neglect screenwriting and the screenwriter as a subject of study and a source of knowledge.

But does it really matter? If cognitive film theorists and screenwriters agree on the constructivist nature of the viewer's experience of narrative - then what material difference does it make if theorists fail to consider screenwriters' views? Are we just bickering the over social niceties of inclusion? Or is there some matter of intellectual significance at stake? I believe that there is.

Cartesianism and cognitive film theory

Cognitive film theorists seek to “describe the experience of viewing visual fiction and the way in which this experience is created” (Grodal 1997, p3). They do so by considering the cognitive processes through which a viewer constructs the narrative. But there's the rub. *Which* cognitive processes to consider? Early cognitive film theory was influenced by early cognitive science. This field had its origins in computational science and artificial intelligence, and attempted to understand human cognition by comparing it to computer logic (Thagard 2005; Carroll 1988; Buckland 2000; Stillings et al 1995). Unsurprisingly, the models of cognition it generated were predominantly linear and computational. That is, they depicted cognition as an orderly and rational manipulation of invariant symbols, stored, retrieved and connected in logically structured sequences (Marcus 2009; Thagard 2005). As we shall discuss in the next chapter, this is a poor approximation of how human mental processing works. Marvin Minsky, one of the founders of the science of Artificial Intelligence, admits as much, declaring that the project to replicate human cognition has essentially failed, “we really

haven't progressed too far toward a truly intelligent machine. We have collections of dumb specialists in small domains" (Minsky in Hayes 2012 p282). Scientist and author Brian Hayes agrees, observing that, "We have many clever gadgets, but it's not at all clear they add up to a 'thinking machine.' Their methods and inner mechanisms seem nothing like human mental processes" (Hayes 2012, p282). Cognitive scientists now widely accept that more complex, embodied, connectionist models are required to account for human cognition:

Not all aspects of human thought and intelligence can be accounted for in purely computational-representational terms. Substantial challenges have been made ... that show the necessity of integrating it with biological research (neuroscience) and with research on social aspects of thought and knowledge. (Thagard 2005, p20)

In the decades since its foundation, cognitive science has moved on from the view of human cognition as an essentially linear, computational process. But many film theorists have not. The theories of many leading cognitive film theorists, including Carroll (2003), Bordwell (1985), Smith (1995) and Plantinga (2009) remain anchored to computational models of cognition.² This is problematic. Not simply because film theory is lagging a little behind science. But because a computational model of human cognition requires us to divorce the mind from the body. In order for human cognition to be seen as computational, the messy influence of bodily and emotional responses must be tidied up. Physiological and affective processes need to either be considered insubstantial 'noise' clouding the signal of pure thought, or positioned as after-effects that arise only as a result of explicit cognitions that precede them. This is how most cognitive film theorists treat physiological and emotional responses in their models of viewer engagement. (Examples will be discussed in Chapter 5). Cognitive science now refutes this dualistic model and accepts that bodily and emotional inputs are an essential part of human cognitive processing, "If an artificial intelligence needs a brain, maybe it also needs a body" (Hayes 2012, p282). This revised view of human cognition as an embodied, connectionist process accords with the conceptions I have observed in the practice of expert screenwriters. The majority of the film theorists surveyed for

this thesis explicitly declare that they reject dualism and embrace embodied thought. And yet each of them, at crucial points in their theory of viewer engagement, continues to attempt to divorce ‘mental’ from ‘physiological’ responses.

I believe this rusted-on dualism is hampering the progress of cognitive film theory. It is standing in the way our ability to truly understand how we understand film. Filmmaker and theorist, Pia Tikka, in her published thesis, *Enactive Cinema: Simulatorium Eisensteinense* (2008, p30) supports this view, arguing that this dualism places unacknowledged and unhelpful restrictions on how theorists think about film, lamenting that, “the very same Cartesian error is underpinning the culturally established but disputable separation of the scientist’s ways of thinking from those of the artist.”³ In this research project I identify how this dualism prejudices the initial epistemological stance of cognitive film theorists, exemplified by David Bordwell in *Narration in the Fiction Film*, who states, “I am assuming that a spectator’s comprehension of the film’s narrative is theoretically separable from his or her emotional response” (Bordwell 1985, p30). I demonstrate how this *a priori* assumption of dualism confuses cognitive film theorists’ models of viewer empathy, exemplified by Noël Carroll’s ‘top down’ model described in his book *Engaging The Moving Image* (2003) which insists that emotions cannot precede, or exist independent of, conscious thought because “the cognitive state must be the cause of the inner consternation” (Carroll 2003, p64), an assertion which (as we shall see in Chapter 6) appears to be contradicted by current neuroscience. And I discuss how this residual dualism blinkers cognitive film theorists to the potential contribution of screenwriters to the project of ‘understanding how we understand film’, as exemplified by Gregory Currie in his book *Image and Mind* (1995), in which he argues that writers’ reflections on their intentions for their own work contribute nothing to our understanding of the way in which the meaning of the narrative is created (Currie 1995, p248).

Bordwell is not alone among theorists in assuming that the viewer’s intellectual response and their emotional response are separable. Carroll is not alone in constructing his model of viewer engagement upon a separation of conscious and embodied responses. And Currie is not alone in assuming that the task of describing

how the experience of viewing narrative film is created is best left to those with a ‘scientist’s ways of thinking’, and that this properly excludes screenwriters. These assumptions are fundamental to mainstream cognitive film theory. The conceptions held by expert screenwriters are substantially at odds with these fundamental assumptions. Thus, by describing and providing evidence in support of expert screenwriters’ conceptions, I find myself challenging fundamental assumptions of mainstream cognitive film theory. But challenging cognitive film theorists is not a straight-forward task. Because of the cross-disciplinary nature of cognitive film theory, arguments and evidence are frequently hurled across disciplines, with evolutionary psychology slamming up against philosophy, only to be parried by cognitive neuroscience or counter-punched by narrative theory. The contestants are all erudite and fearsomely articulate. But I believe that expert screenwriters can contribute to our understanding of how the experience of viewing film is created - if only they are heard. Cognitive film theory claims to pursue a scientific style of inquiry, believing that “what can be claimed for science may be claimed eventually for film theory” (Carroll 1996, p59). If this claim is to be credible, there is an obligation to consider all the available evidence on its merits. Cognitive film theorists cannot claim to be inclusively cross-disciplinary, and then pick and choose from each discipline only those findings that support a pre-determined doctrine. They cannot claim to explore the cognitive processing of narrative film, and then make an *a priori* decision to disregard an entire raft of human cognitive processes. Such selective invocation of science flirts with doctrine, and attracts criticism that cognitive film theorists are “scientistic” in their approach (Buckland 2009, Rodowick 2007)⁴. I have the utmost respect for cognitive film theorists, and great admiration for their achievements. But on these matters I shall, with due deference and respect, vigorously disagree with them.

Aims and approach of this research

While I share the cognitive film theorist’s project to ‘understand how film is understood’, I proceed on the basis of a markedly different hypothesis:

I propose that expert screenwriters hold and employ a sophisticated implicit theory of viewer engagement with character in narrative film, which is discernible in their practice. And I propose that explicating this implicit theory will help us to “specify the objective devices and forms that elicit a spectator’s activity”.

In exploring this hypothesis I adopt three approaches to the research. The first approach is to interrogate, directly and in detail, the tacit knowledge that expert screenwriters hold and employ in regard to viewer empathy with character in narrative film. This is the focus of Chapters 2, 3 and 4. In Chapter 2, I discuss the nature of tacit knowledge, its place in the academic landscape, and the challenges of studying it. I offer a definition of tacit knowledge that will be applied in this research, and discuss current thinking on how tacit knowledge may be explicated by the researcher. In Chapter 3, I conduct in-depth, semi-structured interviews with a representative sample of expert screenwriters: Simon Beaufoy, Jean-Claude Carriere, Laurence Coriat and Guillermo Arriaga.⁵ I explore specific conceptions and strategies they employ to create and modulate viewer empathy for characters. In Chapter 4, I then cross-reference these interviews to identify consistent, shared conceptions about viewer empathy that are discernible both *explicitly* through their statements and *implicitly* through their practice. From these consistent, shared conceptions and actions I construct a model of the implicit theory of viewer empathy in the tacit knowledge base of expert screenwriters.

My second strand of research is to situate this implicit theory of viewer empathy within the context of current cognitive film theory. This is the focus of Chapter 5, in which I describe and critique the models proposed by cognitive film theorists to account for viewer empathy with characters in narrative film. Cognitive theorists are broadly in agreement that emotion plays some role in the relationship between viewer and film narrative (Carroll 2003; Stam 2000; Buckland 2000; Lapsley and Westlake 2006). However there is significant debate concerning the precise nature of empathy and its role in this relationship, with different theorists promoting different models of viewer empathy. I consider a representative sample, in the models of viewer empathy promoted by the theorists Torben Grodal (1997), Murray Smith (1995) and

Greg M. Smith (2003). I identify areas of agreement and disagreement between these models, and gaps within them. I also briefly discuss the contribution of other cognitive film theorists to this debate, including Noël Carroll, Gregory Currie and Carl Plantinga.

In order to compare these competing models of viewer empathy, some benchmark is required against which they may be evaluated. Which brings us to the third, and final, avenue of research adopted in this project. Cognitive film theorists build their models of viewer empathy on the foundations of cognitive neuroscience. So it is essential that I canvass what neuroscientists say about the cognitive and affective processes that comprise empathy. In Chapter 6, I review the relevant neuroscientific literature, including studies frequently cited by leading cognitive film theorists, such as di Pellegrino et al's (1992) study on mirror neurons, Tania Singer et al's (2004a) study into empathy for pain, and Damasio's investigations (1994, 1999, 2004, 2010) into the neural bases of consciousness. These studies form a foundation for the common ground shared by cognitive film theorists. But the knowledge base continues to expand exponentially, built upon almost daily by more precisely targeted studies, such as Singer et al's (2006) study on empathy and punishment, Eisenberger's (2012) metastudy of the shared neural underpinnings of physical and social pain, and Tamietto & de Gelder's (2010) study into non-conscious perception of emotional signals. I consider these and dozens of other studies, which provide clinical evidence to verify or falsify specific predictions generated by competing theoretical models of viewer empathy.

In Chapter 7, I explore in greater detail the specific narrative strategies and techniques used by expert screenwriters, with reference to a range of examples from cinema. And I discuss how these narrative strategies work by activating particular cognitive processes described in the neuroscience chapter.

In Chapter 8 I compare the models of empathy proposed by expert screenwriters, cognitive film theorists, and cognitive neuroscience. I evaluate the validity of the implicit theory of viewer empathy inherent in the practice of expert screenwriters. In doing so, I hope to demonstrate that the project of cognitive film

theory - to understand how film is understood - may benefit from a more inclusive treatment of creative practitioners.

SUMMARY

This research is inspired by twenty-five years of watching screenwriters at work. Over that time I observed that expert screenwriters share a raft of consistent conceptions and practices concerning how viewers engage with characters in narrative film. I noted that these conceptions and practices are held largely as tacit knowledge, and thus remain unarticulated (Polanyi 1967; Schon 1983). I noticed also that this knowledge does not align with the dominant ideas promoted by cognitive film theory. In this research project I aim to explicate and evaluate this tacit knowledge. By identifying specific conceptions and practices consistently shared by a diverse selection of expert screenwriters, I aim to expose an implicit theory of viewer empathy in the tacit knowledge base of expert screenwriters. Disagreements between cognitive film theory and the tacit knowledge of screenwriters on this matter will be explored and evaluated with reference to the best evidence: current cognitive neuroscience.

This research aims to contribute to both the theory and practice of screenwriting. Screenwriting arguably remains under-represented in film theory (Maras 2009; Price 2010; Nannicelli 2013; Nelmes 2010; Macdonald 2010). The disconnect between theory and practice in film is great - possibly greater than in any other artistic medium (Bell 2011). There is substantial dialogue and debate among film theorists and among screenwriters, but little communication between the two communities. This divide is regrettable. There is an ongoing tension between the epistemologies of tacit knowledge and conceptual / propositional knowledge, which contributes to the divide between theory and practice (McGuirk 2011). There is still much work to be done to bridge these divides, and much new knowledge to be contributed to resolve these tensions. Some intriguing and crucial questions have been raised by cognitive film theorists, and remain unanswered. One path to more complete answers may be through an approach that is more inclusive of practitioners. My aim in this research

project is to explore the possibility that proper consideration of the tacit knowledge of expert screenwriters may lead us to better theory, better practice, and better communication between the two disciplines

Chapter Two

SCHMUCKS WITH MACBOOKS

Why consider the tacit knowledge of screenwriters?

Legendary studio head Jack Warner famously called his staff screenwriters “Schmucks with Underwoods”. Warner saw them as a necessary evil, and had scant regard for their understanding of the movies. Since then, technology for screenwriters has advanced considerably. Attitudes towards them - not so much. Cognitive film theorists - whose business it is to understand how the experience of narrative film is constructed - still place little value on the knowledge of screenwriters. Gregory Currie (1995, p248), for example, argues that writers are so unreliable in understanding their own intentions, that they are best ignored. The only logical conclusion, he says, is that “it is not authorial intention that determines the meaning of the work”. Was Warner right? Is Currie? Or do screenwriters perhaps possess some special understanding of how their own creations function? And if they do, how can we access it?

This chapter is about tacit knowledge and screenwriting. In it, I discuss the nature of tacit knowledge, and the problems of situating this type of knowledge within the context of academic study. I consider the validity of studying screenwriting practice through the lens of tacit knowledge. I establish a working definition of tacit knowledge that will be applied in this research. And I outline some recent scientific models of cognitive processing that support this approach. In the previous chapter I noted that screenwriters and cognitive film theorists differ on which cognitive processes should be considered central to the viewer’s construction of the narrative. Theorists favour a computational view, while screenwriters prefer a connectionist view. This disagreement

is fundamental. So let us begin by clarifying the difference between computational and connectionist accounts of human cognition.

Computational versus Connectionist theories of cognition

It is not uncommon for authors to include material in their work without being consciously aware of its significance. So when Currie says “it is not authorial intention that determines the meaning of the work”, shouldn’t we agree? That depends on what we mean by “intention” and “meaning”. Our answer hinges on our beliefs about how the mind goes about the business of creating intentions and meanings. Psychologist Gary Marcus, in his article, *“How Does the Mind Work? Insights from Biology”* says that cognitive science has two tasks: to understand *what* the mind does, and *how* it does it (Marcus 2009). The second question, how the mind does what it does, how “the trick of biologically instantiated cognition is accomplished at all”, is the one that creates most division (Marcus 2009, p145). Models of cognition fall broadly into two camps, computational models and connectionist models. Computational models see the mind as a linear processor of discrete, context-invariant symbols, while connectionist models see the mind as a flexible network of modules processing context-dependent representations. “The question of whether the mind is a symbol processor or parallel distributed processing device (or something else altogether) remains foundational” (Marcus 2009, p146).

Rumelhart and McClelland thrust this division centre-stage with their 1986 study on parallel distributed processing. In this study they created an artificial neural network of 920 nodes, and trained it to conjugate 400 verbs of different forms. After training, the network was able to correctly conjugate unfamiliar verbs. The new conjugations it generated were not “stored” anywhere in the system, but rather emerged from the particular set of connections activated. With this demonstration Rumelhart and McClelland dramatically overturned previous assumptions of the mind as a “physical symbol system”, in which representations of information are seen as discrete items stored in a dedicated location. In its place, they offered a new model in

which representations of information are seen as ambiguous fragments spread across multiple nodes in multiple locations and called into being by particular combinations of activation (Rumelhart & McLelland 1987; Marcus 2009). Debate has raged since. Each camp has its supporters, conducting studies and stockpiling evidence to support their position. On the one hand, researchers like Kahneman and Tversky have uncovered extensive evidence that human cognition deviates from rational computation, while others such as Chater and Tenenbaum argue that human cognition follows near optimal Bayesian inference (Kahneman 2003; Kahneman & Tversky 1979; Chater, Tenenbaum & Yuille 2006; Griffiths & Tenenbaum 2006).

Historically, film theorists have characterised the cognitive processes through which the viewer apprehends film as explicitly symbolic. The viewer's construals are seen as comprised of "discrete context-invariant manipulable tokens" (Port 2000). Such one-for-one symbolic equivalence offers an ease of interpretation and readily submits to conceptual / propositional dissemination. This is evidenced by the abundance of post-structuralist academic dissertations offering Freudian / Marxist interpretations of cinema. A typical example of this approach is Ines Hedges' (1991) *Breaking the Frame: film language and the experience of limits*, which details how the true meaning of the children's film *The Wizard of Oz* (1939) is to be found in the fact that when the Wizard presents the Lion, Tin Man and Scarecrow with awards for their (respective) courage, heart and brains, the testamurs they receive are rolled up... and thus shaped like phalluses. It's all about the Oedipal lack, you see. This is an impoverished account of how human beings cognitively process, and derive meaning from, their world. Cognitive film theorists, fortunately, have turned away from such simplistic post-structuralist dogma. But, unfortunately, they still share the post-structuralist's simplified computational view of cognition. As noted in the previous chapter, a number of leading cognitive film theorists, including Carroll (2003), Bordwell (1985), Smith (1995) and Plantinga (2009) advocate computational-representational models of human cognition. Currie's claim that "it is not authorial intention that determines the meaning of the work", for example, rests on the belief that "intention" and "meaning" are explicit, context-invariant entities. Seen from a

computational viewpoint, the claim is supportable. But seen from a connectionist view, it is not.

So which view is better? The issue is not black and white. In reality, human cognition is neither purely computational nor purely connectionist. Marcus offers evidence from developmental and evolutionary biology to demonstrate that while the mind does possess innate, neurally realised ways of representing categories of things and actions (supporting computational models), it is also biologically constrained in its ability to store and retrieve these representations. It must rely on the loose, volatile associations of its neural wetware to manage this storage and retrieval (supporting connectionist models). Thus we can accept computationalists' claims that the human mind is endowed with an innate tendency to sort phenomena into certain categories and to seek certain types of relations between them. And at the same time we can accept connectionists' claims that the processes of sorting and seeking are heavily influenced by the context in which they take place, and that the mental representations being processed are subjective and unstable.

It's a messy arrangement. But it is what evolution has stuck us with. Human memory, in contrast to computer memory, is not comprised of stable representations stored in a logically structured system. Rather, the human mind is "forced to rely on a sort of cobbled-together substitute [of logically structured content] represented in approximate fashion ... bound together in transitory and incomplete fashion" (Marcus 2009, p165). Because of the way human memory is stored, the *content* of human cognition is inevitably fuzzier and richer with associational significance than any purely utilitarian, unambiguous computation symbol. And because of the way human memory is retrieved, the *context* in which this cognition takes place plays a significant role in determining what representations will be available (Bechtel & Abrahamsen 2002; Marcus 2009). The weight of current cognitive neuroscience evidence supports Marcus' view that these two cognitive systems operate symbiotically (Preston & De Waal 2002; Adolphs 2003; Damasio 1999; LeDoux 1996; Montague 2006). A "full theory" of film narrative, capable of specifying the forms and devices that elicit the

viewer's cognitive "story construction activities", must consider both computational and connectionist processes equally. At this time, most cognitive film theorists do not.

My argument is not that cognitive film theorists' models of cognition are wrong. It is that they are deficient. In this research project I proceed on the assumption that the experience of viewing a narrative film cannot be fully understood by considering cognitive processing exclusively from either a purely computational or a purely connectionist standpoint. A full theory must take both types of processing into account. By logical extension, both types cognitive processing must also be taken into account when seeking to understand the screenwriter's experience of creating the narrative (Zappavigna 2005; Bredo 1994; Hotton & Yoshimi 2011). This, of course, makes explicating the screenwriter's process quite a challenge.

WHAT WAS I THINKING?

The challenge of defining tacit knowledge

Since its introduction by Michael Polanyi in his book *Personal Knowledge* (1958), and further elaboration in *The Tacit Dimension* (1967) the concept of tacit knowledge has been slowly but steadily gaining acceptance as an appropriate subject for academic study. However, even now, after over half a century of investigation and debate, the concept is not always accepted without reservation. These reservations stem from the difficulty of defining what, precisely, is meant by "tacit knowledge" and the attendant challenge of making such knowledge explicit.

Tacit knowledge, often summed up in Polanyi's phrase "we know more than we can tell" (Polanyi 1967, p4), is knowledge that one has, and knows that one has, about how to perform a particular skill, but that one is unable to articulate in explicit terms. As Polanyi explains, "the aim of a skilful performance is achieved by the observance of rules which are not known as such to the person following them" (Polanyi 1958, p49). Behavioral scientist Auli Toom (2012, p622) notes, "The phenomenon of tacit knowledge is implicit, diffuse, and elusive in nature". For this reason, there remains a

widespread perception within academia that tacit knowledge should properly be considered a discrete epistemological category separate from conceptual / propositional knowledge. This attitude has perpetuated a “distrust of embodied, situated and tacit knowledge as other and necessarily inferior” (McGuirk 2011, p218). In a survey of attitudes to the study of practical arts in the academic setting, McGuirk offers examples of this distrust from educationalists Elkins (2009), Singerman (1999), and Levine (1982). Levine exemplifies this stance when he contends that creative practice can not, in itself, be considered an expression of knowledge, but rather that it is only “through the development of theoretical issues that a medium becomes a discipline” (Levine 1982, p49). McGuirk argues that this stance has become entrenched within many educational institutions. As evidence he cites a review of a report by the UK Council for Graduate Education, by Fiona Candlin (2000), which states that:

art practice, no matter how cognitively sophisticated and theoretically rich ... cannot be deemed research without the supporting apparatus of conventionally presented academic study
(Candlin 2000, pp. 5-6, cited in McGuirk 2011, p222)

In this view, Monet’s 250 paintings of water lilies cannot be considered research. Nor can Cezanne’s entire oeuvre. Picasso’s *Guernica*, Mozart’s *Symphony #40*, and Shakespeare’s *King Lear* also cannot, in themselves, be considered an expression of knowledge of the artist’s chosen form. Clearly there is something amiss with this view. Why then does it persist?

Distrust of tacit knowledge is rooted in its resistance to explication. Even if one succeeds in adequately defining what is meant by the term, tacit knowledge does not lend itself easily to propositional, peer reviewed textual dissemination - the traditional and expected conduit for proper academic study. The fluid, context-dependent nature of tacit knowledge can make it difficult to collate and transmit in a formalised, systematic manner. It is typically communicated directly through personal networks, observation, modeling and experience (Toom 2012). Nevertheless, there is substantial argument from thinkers in philosophy (Noë 2004; Dennett 1991) education (Dewey

1916; Bereiter 2002) linguistics (Pinker 2007; Lakoff & Johnson 1999) and neuroscience (Damasio 1994; LeDoux 1996) to support the interpretation that embodied, situated and tacit ways of knowing are an important, perhaps primary, contributor to our understanding of, and effective interaction with, our world. Indeed, some observers argue that if such an innate, inescapable and crucial aspect of the way in which human beings know their world is incompatible with the dominant mode of academic dissemination, then perhaps it is the mode of academic dissemination that requires revision (Bourdieu 2000, Dewey 1916).

Thus the very notion of tacit knowledge contains an implicit threat to traditional academic thought. In an article entitled *Tacit Knowledge - Making it Explicit*, which collates the discussions of a research group for the London School of Economics investigating the transfer of technical knowledge, Jon Adams (2006, p3) notes this threat when he observes that, “Polanyi is inverting the hierarchy that privileged the propositional, analytic intelligence over the physical, subconsciously acquired and unconsciously employed skills of the craftsperson”. Such an inversion is anathema to traditional academic notions of what properly constitutes knowledge. Resistance was inevitable, and despite the growing acceptance, in some quarters tacit knowledge is still regarded as a marginal concern. One of those quarters is film theory. Advocates of tacit knowledge as a legitimate paradigm of knowledge object that they must constantly struggle against the “exclusion from academic exchange of situated, embodied and tacit modes of knowing, whereby conceptual/ propositional knowledge and textual articulation is presented as the gold standard against which these other types of knowledge are measured and found wanting” (McGuirk 2011, p217). This accurately characterizes the exclusion of screenwriters from the academic exchange of ideas concerning the experience of viewing film. Gregory Currie (1995, p247) exemplifies this attitude when he argues that an academic interpreter of a work gains nothing by considering the author’s thoughts on the work, because “the narrative intentions the author actually had will not ... illuminate and make coherent the text”. When rival interpretations of a work exist, Currie tells us that it is an error to “suppose that we can choose between them on the grounds that evidence from the author’s diary or letters suggest that one of these hypotheses corresponds to his intentions”

(Currie 1995, p249). Instead, Currie argues, we must rely on intersubjective agreement between academic interpreters. Authors are fallible. Academics, we must assume, are not. The stance deplored by Martin Heidegger in 1919 as the “unjustified absolutisation of the theoretical”, seems to be alive and well in cognitive film theory almost a century later (Heidegger GA 56/7: 88 in Clark 2011: p21).⁶

To be fair, the issues plaguing the integration of tacit and propositional knowledge have not all been one way. As Toom notes, “the concept of tacit knowledge is often used when there is skepticism toward rationality” (Toom 2012, p4). This skepticism can be seen in the anti-theory backlash expressed by some screenwriters. As we shall see in the interviews conducted for this thesis, some screenwriters have a tendency to embrace the intuitive aspects of their craft with a semi-religious fervour, and reject analytical thought as sophistry and pretension. This view is not supported by Polanyi. Polanyi does not dismiss the validity or usefulness of scientific method. Rather, he aims to situate it within a more holistic spectrum of knowledge, which also includes tacit knowledge. Adams summarises Polanyi’s position thus:

- 1) as a matter of fact we rely more on personal knowledge than the empirical scientists would like to admit
- 2) all discernible differences ... must have a physical explanation, regardless of whether we have yet developed an instrument or test capable of making these differences perspicacious
- 3) in the absence of better instruments, personal knowledge is the best tool we have for many tasks

(Adams 2006, p4)

A number of researchers including Benner (1984) and Dreyfus (1986) offer evidence that this kind of intuitive and contingent decision making is common among expert practitioners across many disciplines, and involves non-conscious activation of complex cognitive processes, such as pattern recognition, implicit application of implicit rules, and implicit monitoring of developing outcomes (Eraut 2000). Two important facts become readily apparent. Firstly, as this type of knowing and acting is

characteristic of expert practitioners across a wide range of disciplines, it must be accepted as representing a high-order level of knowledge. Secondly, as this type of knowing and acting is necessarily flexible, dynamic, embodied, contingent on context and processed largely by unconscious cognitive mechanisms, it will be difficult to disseminate in a traditional propositional, objectivist textual articulation. Thus we are presented with a conundrum: the demonstrable existence of a kind of high-order knowledge that does not readily submit to the modes of dissemination through which high-order knowledge is traditionally expected to be communicated. This highlights two core challenges facing the researcher exploring any instance of tacit knowledge. The first challenge is that the researcher is obligated to clarify what they mean by the term “tacit knowledge” within the context of the particular practice being researched:

researchers often label particular phenomena they are studying as tacit knowledge without offering a thorough analysis of the concept ... these researchers assume that the imprecise label of “tacit knowledge” offers all the required information; however, analysis of their findings demonstrates that this label does not make the phenomenon being researched clearer.

(Toom 2012, p640)

The second challenge is that, in order to be heard, the researcher must find a way to disseminate their findings that accords with the conceptual / propositional expectations of the academic milieu. In the following sections I discuss how I will address each of these challenges in this thesis.

Tacit knowledge as defined in this research

In this research I adopt a definition of tacit knowledge based upon Polanyi’s (1967) model of “tacit knowing”, and Argyris & Schon’s (1982) model of “theories in use”. Polanyi’s model defines “tacit knowing” as a dynamic process in which two separate understandings, one implicit and one explicit, are connected by a purpose. Polanyi calls these understandings “terms” of knowledge. The crucial “first term” of

knowledge is *held outside explicit awareness*. The “second term” of knowledge is *held within explicit awareness*. And the relationship between the two is governed by an intended purpose. Polanyi explains it this way:

in an act of tacit knowing we attend from something for attending to something else ... The first term of this logical relation is nearer to us, and we are not able to perceive the knowledge that we have of it, whereas the second term is farther away from us, and we can explicate knowledge of it ... we know the first term only by relying on our awareness of it for attending to the second
(Polanyi 1967, p10)

According to this model, when applying tacit knowledge we are making an intuitive connection between two understandings or principles - one of which is explicitly known to us and one of which is only implicitly known to us. It is only through our awareness of the explicitly known thing that our awareness of the implicitly known thing is activated. In this model, the practitioner observes an explicable problem, and in response takes an inexplicable action to solve the problem. Thus the practitioner is able to identify and articulate a) the object of the problem, and b) that action needs to be taken; but the practitioner is unable to articulate either c) the precise nature of the required action, or d) precisely why it solves the problem. This structure provides a credible explanation of the process through which skilled practitioners, including expert screenwriters, make rapid, intuitive decisions about how to execute their creative practice. For example, a screenwriter may be explicitly aware of a problem in a screenplay scene that is manifested in dramatically ineffective dialogue. This explicit awareness of a deficit then activates an implicit understanding of the principles that will generate a solution. Because these principles are understood unconsciously, the screenwriter is able to apply them but is unable to explicate them. As a result the screenwriter may quickly and intuitively alter the dialogue to remediate the problem - but may be unable to explain the understanding that informed their solution.

This model of an unexplicated knowledge triggered by an explicated knowledge and an intended purpose gives us the beginnings of a working definition of tacit knowledge. But can we be more precise in delineating the nature of the unexplicated part of this knowledge? What kind of information is it? Where does it come from? How is it stored and retrieved? Why is it not available explicitly to its possessor? These are questions that the researcher seeking to identify specific instances of tacit knowledge needs to address. Philosopher Bertil Rolf, who has published extensively on the subject, restates the structural relationship proposed by Polanyi, rather more simply, as the practitioner acting upon the prompting of two questions: *why to proceed* and *how to proceed*. The question of *why* encompasses the practitioner's evaluation of the context and their beliefs about the purpose of the end product, while the question of *how* encompasses the practitioner's abilities, methods and means that they will apply to achieve this purpose (Rolf 1991). Thus, the *why to proceed* correlates with Polanyi's explicitly aware "first term" and the *how to proceed* correlates with his implicit "second term". Stating the structure of tacit knowledge in this way offers a further clue to the kinds of knowledge involved, how they are stored and retrieved, and why they are not explicitly available. Knowledge of *why to proceed* involves explicit evaluation of context; this is a high-order cognitive process that is carried out by the prefrontal cortex, a brain area whose workings are readily available for conscious appraisal (Carter and Frith 2010). Knowledge of *how to proceed*, on the other hand, draws on a range of brain systems governing procedural and perceptual memory, some of which, like the basal-ganglia, operate below the threshold of consciousness (LeDoux 1996). Studies show that such procedural memories are not restricted exclusively to physical procedures such as 'how to' ride a bicycle or hit a baseball, but also include conceptual, rule-based heuristics such as those that govern 'how to' construct regular verb forms (Ullman *et al* 1997). Thus it is unremarkable that the conceptual, rule-based heuristics governing 'how to' construct a coherent and effective screen story should be governed by similar unconscious procedural systems.⁷

Argyris and Schon's model of tacit knowledge offers a complementary perspective, incorporating both Polanyi's and Rolf's notions. Argyris and Schon's model focuses on the difference between what practitioners are *able to explicate* and

what they are *able to do*. In their book, *Theory in Practice: Increasing Professional Effectiveness* (1982), Argyris and Schon identify two types of theories that practitioners hold regarding their own practice: *Operational Theories*, being “theories-in-use”, that is, theories that are evident from the actual action of the individual’s practice; and *Espoused Theories*, being theories the individual articulates to describe or justify their practice. It is a feature of tacit knowledge that these two theories may diverge. An individual practitioner may take a consistent set of actions indicating a tacitly held underlying theory governing their practice - while simultaneously holding a conscious belief that their practice is governed by a markedly different theory. One reason for this divergence is that the operational theory - the required action - is often counter-intuitive. One frequently cited example of this is the operational theory of ‘how to turn a corner while riding a bicycle’ - an action that the majority of people are able to carry out with ease, but the mechanics of which very few are able to accurately explain. When asked how they turn left when riding a bicycle, most people answer that they turn the handlebars to the left: this is their “espoused theory”. However, when actually riding a bicycle, the rider does not turn the handlebars to the left to steer in that direction, but rather distributes their centre of gravity towards the left, essentially causing the bicycle to begin falling in that direction, and then actually turns the handlebars *in the opposite direction*, towards the right: this is their “operational theory”.

Divergence such as this between espoused theory and operational theory is common in instances of tacit knowledge. One of the aims of reflective practice is for the practitioner, through reflection, to bring the operational theory and the espoused theory into alignment (Argyris and Schon 1982). Throughout this thesis I will use the term “espoused theory” to refer to knowledge that the screenwriter is able to readily access and articulate. And I will use the term “operational theory” to refer to knowledge that the screenwriter may be able to articulate only in a fragmentary manner, or not at all, but which is evident in their practice - in what they actually do when they are doing screenwriting. In a further complication to the researcher’s task, Argyris and Schon also point out that an individual may hold an operational theory but not always act consistently in accordance with it; “a person intends to do A, but something happens to prevent him from doing it” (Argyris & Schon 1982, p10). This

notion is given due consideration in the present project to the extent that, when identifying any action in the screenwriter's practice as evidence of a tacit operational theory, the researcher will expect the action to be sufficiently consistent that it forms a typical pattern, but should not expect it to be invariant, i.e. to be applied without fail at every opportunity.

What is highlighted by Argyris and Schon's model is that real world practice is seldom as neat and clearly delineated as idealised theories would wish. This messy, blurred and ambiguous nature of actual practice must inevitably be integrated into any realistic account of tacit knowledge, which goes some way towards explaining why the theory has never sat entirely comfortably in the more rigid constraints expected of conceptual / propositional academic knowledge. Argyris and Schon do not shrink away from the challenge presented by the slipperiness of tacit knowledge. Instead they propose the model outlined above as a framework through which the researcher may actively untangle some of this messiness. In this research project I embrace this challenge and adopt their framework, by proceeding from the following premises:

The tacit knowledge of expert screenwriters conforms to Polanyi's model of "tacit knowing" as a dynamic process in which a connection between *two understandings* - one *implicit* and one *explicit* - is triggered by a *purposive intent*.

The *explicit* understanding centres around questions of *why* to proceed, and constitutes an *espoused theory*, which is consciously held and able to be explicitly stated by the practitioner.

The *implicit* understanding centres around questions of *how* to proceed, and constitutes an *operational theory* which may not be consciously held or able to be explicitly stated.

When a practitioner is able to clearly explicate an espoused theory concerning *why* to proceed, but is unable to coherently explicate an operational theory concerning *how* to proceed, this indicates an instance of the practitioner employing tacit knowledge.

In such an instance the operational theory (the implicit *how* to proceed) may diverge from the espoused theory (the explicit justification for the procedure).

Despite this divergence, the actions manifesting the operational theory will be taken consistently enough by the practitioner (when triggered by the same *purposive intent*) to constitute a discernible pattern.

These guiding principles will inform my approach. But they leave some important questions unanswered. How is the operational theory learned and applied at all if it is not part of the practitioner's declarative knowledge? And how is it possible for a researcher to explicate tacit knowledge that the practitioner is unable to articulate?

Embodied thought in screenwriting

Understanding is a verb, not a noun. According to neuroscientist and philosopher Alva Noë (2009, p8), “meaningful thought arises only for the whole animal dynamically engaged with its environment”. In Noë's view, knowledge is not an object - it is the experience of “knowing”. Our understandings of the world are an emergent product of our organism's dynamic, explorative interaction with the material world:

the content of an experience is not given all at once, as is the content of a picture given all at once ... The content of experience isn't really given at all - it is enacted. Perceptual experience [is] an activity of skill-based exploration of the environment

(Noë 2002, cited in McGuirk 2011, p225)

Noë's theory offers a useful model of the screenwriter's process. When crafting a piece of writing, understanding of the solution is never delivered wholesale to the writer's mind. It emerges from her interaction with the material, as she makes intuitive adjustments, responds to the newly wrought material, then acts again on the new

understandings that emerge from her response. Philosopher and sociologist Eric Brede offers the example of drawing as a similarly situated, experiential and emergent act:

one draws, responds to what one has drawn, draws more, and so on. The goals for, and interpretation of, the drawing change as the drawing evolves ... Acting with the environment in this way contrasts with acting on it, because this approach presupposes that the environment will turn around and alter the individual in return.

(Brede 1994, p. 28-9)

The practice of expert screenwriters then, is not simply a matter of intellectually identifying and applying the “correct” piece of propositional knowledge, or of applying some invariable and absolute theory. Rather it is a complex and shifting dynamical system of different kinds of perception, response and action. Nor are these perceptions and responses purely intellectual or conceptual in nature. They are primarily - at times exclusively - physiological, visceral, and emotional. Philosopher George Lakoff argues that this kind of embodied perception and response is the root of all human cognition:

Reason is not disembodied, as the tradition has largely held, but arises from the nature of our brains, bodies and bodily experience ... [and] even in its most abstract form, makes use of, rather than transcends, our animal nature

(Lakoff & Johnson 1999, p4)

In this view, both the viewer’s thinking about character and the screenwriter’s thinking about the script are something quite different to what many cognitive film theorists hold thinking to be. In addition to explicit computational-representational processes, screenwriters and viewers rely on many other cognitive processes, which are embodied, experiential, situated and emergent. As I shall detail in Chapter 6, this view is supported by overwhelming evidence from cognitive neuroscience (Damasio 1994, 1999, 2010; Adolphs 2003; Montague 2006; Preston & de Waal 2002; Van Overwalle & Baetens 2009; LeDoux 1996; Craig 2009). In the interviews in Chapter 3, we shall see that also it correlates strongly with how expert screenwriters conceive of their process.

Dynamical Systems Theory

Computational and connectionist cognitive processes operate quite differently. But a full theory of human cognition must take both into account. So how do we reconcile the two? The researcher requires a framework to describe the interaction of these two distinct mechanisms. Such a framework is provided by Dynamical Systems Theory. This theory posits that an organism's behavior can be best understood as dynamic interaction over time between the intrinsic dynamics of an agent and the intrinsic dynamics of the environment in which it is embedded (Hotton & Yoshimi 2011). In their article *"Extending Dynamical Systems Theory to Model Embodied Cognition"* Scott Hotton and Jeff Yoshimi state that a Dynamical Systems approach can provide a framework within which the researcher may consider both computational and embodied processes:

Embodied and dynamical system approaches to cognition have sometimes been presented as radical alternatives to traditional cognitive science ... We think this rift is unwarranted ... By considering both intrinsic and environmental dynamics, traditional analyses of internal structures ... can be pursued alongside embodied approaches
(Hotton & Yoshimi 2011, pp. 470-71).

Polanyi proposed that tacit knowledge exists in the practitioner's interaction with the tools and materials of his practice. Dynamical Systems Theory offers an approach to explicating tacit knowledge by tracking this interaction. By considering the intrinsic dynamics of the agent (the practitioner) and the intrinsic dynamics of the environment (the tools and materials of their practice) we can track how these two sets of dynamics affect each other. This method has been used to successfully model agents in action as diverse as insects traversing an environment, players in a game of Scrabble, an Alzheimer's patient finding an address, and a crew navigating a ship (Hotton & Yoshimi 2011). In the case of screenwriters, the 'agent' is the screenwriter and the 'environment' is the screenplay itself, which, when broken down into its constituent

dynamics, must be considered as both a cognitive, affective world in its own right, which the screenwriter imaginatively enters and responds to, and also as a malleable artefact within the screenwriter's real, professional world. This is a useful distinction. The imaginary world of the screenplay possesses intrinsic dynamics that act upon the screenwriter. The real world context in which the screenwriter lives and performs his practice possesses its own, quite different, set of intrinsic dynamics which shape the screenplay and the screenwriter's response to it.⁸ The screenwriter possesses intrinsic dynamics that govern his perception of and actions upon the artefact of the screenplay. Each of these sets of dynamics is comprised of a flexible collection of variables, and each set interacts with the others in an evolving, recursive fashion (Hotton & Yoshimi 2011). The researcher seeking to understand the screenwriter's conceptions and practices will benefit from distinguishing between these sets of dynamics. Thus the Dynamical Systems approach provides a helpful framework for researchers seeking to understand the tacit knowledge of expert screenwriters.

While I will not adopt the mathematical formula of formal Dynamical Systems as a methodology, my approach will nevertheless be informed by this framework. When considering the screenwriter's tacit knowledge and its application in practice, I will, from time to time, consider variously: the screenwriter's interactions with the screenplay as an imagined cognitive / affective world, the screenwriter's interaction with the screenplay as a malleable artefact, and the screenwriter's interactions with their own real world context. On this last point it should be noted that there exist two well-established theoretical approaches that have been widely embraced as frameworks for exploring how the practitioner and their practice are embedded in, and a product of, their real world context. These are Bourdieu's (1977) *habitus* and Csikszentmihalyi's (1988) *systems model of creativity*. Bourdieu's *habitus* acknowledges that an individual's creative activity is to a great degree socially constructed, because "individuals unconsciously internalize the cultural 'habitus' in which they reside that causes them to form dispositions to behave and construe their experience in certain ways" (Zappavigna 2013, p29). Similarly, Csikszentmihalyi's systems model "seeks to move the concept of creativity from the plane of purely individual (subjective) recognition to a social (intersubjective) arena" (Csikszentmihalyi 2014, p212). This model views

creativity as an interaction between *individual*, *domain* and *field*, where *domain* refers to the knowledge base and *field* refers to the social organization that is the context for that knowledge base. While these are both valuable and relevant approaches, I shall not adopt them in this research project for a number of reasons. Firstly, I am not concerned here with the *field* of screenwriting – the socio-cultural / industrial milieu within which screenwriters exist. I am concerned solely with the *domain* of the screenwriter – with what screenwriters are doing when they do screenwriting. And indeed, the focus of this research is on just one small corner of that domain – on the question of how expert screenwriters create and modulate viewer engagement with characters in narrative film. And while it is conceivable that considering the influence of *habitus* might help us form a more complete understanding of the provenance of an individual practitioner's tacit knowledge, that is not the focus of this investigation. My aim here is not to investigate from whence the practitioner's tacitly held conceptions and practices are derived, but rather to discover a more fundamental piece of the puzzle – what *are* the practitioner's tacitly held conceptions and practices? As we shall see, that in itself is more than enough to be getting on with.⁹

Relaxation Systems theory of cognition

Studying the tacit knowledge of screenwriters raises a host of hard questions. One we have not yet addressed is one of the toughest: How is it possible for screenwriters to have expert knowledge, but not know what it is that they know? In tackling the question of *why tacit knowledge is not available explicitly to its possessor*, it is instructive to refer to current cognitive neuroscience. As cognitive neuroscience develops more refined imaging capability, it is able to identify with increasing precision which brain areas are activated during specific processes. This imaging has made it clear that, for even apparently simple processing, the brain draws together information from multiple brain areas operating in flexible networks (Adolphs 2003, Gallese 2003). The old view of an orderly, rational executive is giving way to a complex model rather more akin to the stock market floor, with dozens of brain areas simultaneously shouting over each other to be heard. According to this model, multiple brain areas are

recruited simultaneously - some 'quick and dirty', some 'slow and precise' (Kahneman 2011; Montague 2006). These multiple brain areas continue their processing, with little interaction, until "as many constraints as possible (of the given problem) are satisfied, with priority given to the stronger ones" (Auyang 2000, p68). This model has given rise to the Relaxation Systems theory of cognition, first advanced by Rumelhart et al, who claimed, "The primary mode of computation in the brain is best understood as a kind of relaxation system in which the computation proceeds by iteratively seeking to satisfy a large number of weak constraints" (Rumelhart et al 1986, cited in Auyang 2000, p68).

The term relaxation system is drawn from an approach to modeling problems in mathematics, and refers to a method of deriving an approximate solution to a difficult problem by finding solutions to analogous problems that are less difficult to solve. By solving the nearby / analogous problem, information is derived that leads to an approximate solution to the target problem. The Relaxation System theory of cognition applies this same fuzzy logic to cognitive processing of complex inputs that require rapid solution. Rather than calculating a completely rational and precise solution in a sequential manner (which could prove costly to the organism if the solution is too slow in arriving) the brain essentially switches to 'all systems go' mode, and different modules simultaneously evaluate the element of the stimulus that falls within their domain. The module that sends the 'loudest' or fastest response, provides the core of the cognitive evaluation, around which information from other modules then adheres. This model accords with the brain imaging evidence, and accounts for many irrational / dysfunctional responses to stimuli, including phobic responses and cognitive biases (Buonomano 2011, LeDoux 1996, Kahneman 2011). The Relaxation Systems theory of cognition accords with the Dynamical Systems Theory of cognition, sharing the view that, "rather than thinking of the total system as a nondecomposable, holistic unit" one should "think of it as a collection of interacting subsystems, each making a distinct contribution" (Hotton & Yoshimi 2011, p471). The Relaxation Systems theory of cognition is also compatible with the parallel distributed processing model of cognition, in its view that human cognition requires "the simultaneous consideration of many pieces of information or constraints" and that "Each constraint may be imperfectly specified and ambiguous, yet each can play a potentially decisive role in

determining the outcome” (Rumelhart & McClelland 1987, p3).

Thus relaxation systems theory offers a compelling model for how tacit knowledge is processed at the neural level.¹⁰ Tacit knowledge is not achieved by a unitary process. The unexplicated operational theory held by a practitioner is not a single theory, but a loose network of hypotheses and heuristics, governed by different brain systems, and calls upon all of them to make a flexible, balanced ‘best guess’ (Roitblat & Meyer 1995). This model clarifies why our thinking and decision making about a problem may not be accessible to us. But how is it possible to take action to carry out the solution if we do not know what we are doing?

Perceptual Learning

Often when we apply tacit knowledge, we draw on perceptual learning. The phenomenon of perceptual learning was identified by Eleanor and James Gibson as part of their ecological theory of perception. Gibson proposed that through experience an organism makes long lasting changes to its perceptual system that allow it to respond more effectively to its environment (Gibson 1969). Perceptual learning is governed by the particular brain area responsible for processing the perception; for example, auditory perceptual learning is governed by the auditory cortex. The processes carried out by perceptual brain areas are cognitively impenetrable (Gibson & Pick 2000). Thus perceptual learning is not obtained or applied through conscious thought. Rather, “modifications of perceptual systems come from learning new skills, not alterations of theories” (Chemero 2009, p220). Application of perceptual learning is also rapid, occurring before conscious evaluation, and its percepts provide the raw material upon which conscious evaluations are constructed. Thus perceptual learning “exerts a profound influence on behavior precisely because it occurs early during information processing and thus shifts the foundation for all subsequent processes” (Goldstone 1998, p606).

In their paper “Perceptual Learning”, Goldstone, Braithwaite and Byrge cite evidence that expert creative practitioners are finely tuned to the demands of their craft at a neural level. The perceptual mechanisms required for their craft are literally augmented:

Experts in many domains, including radiologists, wine tasters, and Olympic judges, develop specialized perceptual tools for analyzing objects within their domains of expertise. Much of training and expertise involves not only developing a database of cases or explicit strategies for dealing with the world, but also tailoring perceptual processes to represent the world more efficiently (Goldstone, Braithwaite and Byrge 2012, p2580)

Expert practitioners adapt their perception to the demands of their practice by developing “receptors that are specialized for stimuli or parts of stimuli”. In this way “even in situations where one might think abstract or rule-based processes are used, there is good evidence that observers become tuned to the particular instances [of perceptions] to which they are exposed” (Goldstone 1998, p591). There is abundant research evidence that practitioners in the arts rely on perceptual rather than declarative learning for key elements of their expertise. This has been established in visual artists, whose heightened visual acuity correlates with increased functional neural connectivity in the visual cortex (Bolwerk et al 2014) and in violinists, whose auditory cortex is similarly enhanced, and whose somatosensory cortex area representing their playing fingers grows larger than that of non-violinists (Trainor, Shahin & Roberts 2003; Elbert et al 1995).

It is clear how such enhancement of the neural machinery of perception may augment a wine taster’s ability to detect and calibrate fine distinctions of smell and taste, or a violinist’s ability to detect and calibrate fine distinctions of pitch. But the expert screenwriter relies on more introspective skills, such as the ability to detect and calibrate fine distinctions in visceral, emotional and social responses. Is perceptual learning limited to perceptions of the external world? Or can it also enhance acuity in perceiving and representing phenomena in the internal milieu? Garland and Howard

(2009, p191) offer evidence that it can. In a review article on neuroplasticity, they cite studies demonstrating that “years of meditation experience correlated with increased cortical thickness in brain areas where visceral attention (e.g. right anterior insula) and self-awareness (e.g. left superior temporal gyrus) have been localized”. This indicates that elevated introspective awareness of visceral and affective response may be equally the result of perceptual learning, and may equally result in actual physiological enhancement at the neural level. Thus the wine taster’s palate, the artist’s eye, the musician’s ear and the screenwriter’s heart are, in fact, all manifestations of the expert’s brain.

By overlaying perceptual learning with the relaxation systems model of cognition, we gain a clear insight into how expert practitioners may possess skills that they are able to demonstrably apply, yet are unable to articulate. When an expert practitioner addresses a problem in their domain, multiple interacting brain and body systems each make their distinct contribution. Among them will be components of their perceptual systems, which are physiologically enhanced by experience to meet the demands of the practitioner’s task. When the prefrontal cortex assesses which of the inputs from the brain are fastest or strongest, and which most directly address the peculiar constraints of the problem, there is a high likelihood that the inputs from these practice-enhanced perceptual systems will hold sway. But because such perceptual learning is held and utilised in a cognitively impenetrable manner, the practitioner is unable to explain its use. The painter doesn’t need to know why this selection of colours and shapes is most harmonious. She just needs to know that it is. The musician doesn’t need to know why this level of attack and sustain on the glissando is most expressive. He just needs to know that it is. The screenwriter doesn’t need to know why this particular combination of actions and words will most engage the audience. She just needs to know that it will.

Explicating tacit knowledge

It is one thing to accept that valuable knowledge may be held implicitly. It is quite another to accept that this knowledge may be made explicit. Can we ever reliably

learn what someone else knows only tacitly? Philosopher Jerry Fodor argues that we can:

Although an organism can know how to X without knowing the answer to the question “How does one X?,” it cannot know how to X unless there is an answer to the question “How does one X?”
(Fodor 1968, p628)

According to Fodor, even if an organism (let us imagine, for instance, a screenwriter) is unconscious of, or unable to explicate, the mechanism and process via which it carries out a particular action, that mechanism and process nevertheless exist, and are subject to discovery. Fodor is not alone in holding this view. Nor has his argument remained some abstract hypothetical in the airy realms of philosophy. This principle has been widely accepted and employed in the real world. Knowledge management experts now routinely explore ways to capture, codify and communicate tacit knowledge in practitioner communities, ranging from education and nursing to science and the military (Haldin-Herrgard 2000, Parsaye & Chignell 1988, Sternberg & Horvath 1999).

Scholars in knowledge management propose a number of models of the relationship between tacit and propositional knowledge. They use these to explore ways of bridging between the two. Nonaka & Takeuchi (1995) describe the relationship as a “spiral of knowledge”. In Nonaka’s model, propositional knowledge and tacit knowledge, when viewed through a conventional academic lens, run as separate parallel tracks. Propositional knowledge is transmitted in propositional forms and thus begets only more propositional knowledge. Likewise tacit knowledge is transmitted in tacit forms and thus begets only more tacit knowledge. Nonaka’s theory is that by broadening / redefining our definitions of knowledge and the practices of knowledge transfer, we are able to bridge between the two types of knowing. In this way, tacit knowledge may beget propositional knowledge, and propositional knowledge may beget tacit knowledge. This powerful cross-fertilisation of types of knowing, Nonaka calls “the knowledge spiral”. His principle has been applied to enhancing the capture and transfer of knowledge in many disciplines. To date, however, there has

been scant endeavour to apply this principle to capture and transfer the tacit knowledge of screenwriting practitioners. This research project is intended as a step towards remedying that situation. By explicating how expert screenwriters apply tacit knowledge to create and orchestrate engagement between viewers and characters in screen fiction, I aim to bridge tacit and propositional knowledge and begin the knowledge spiral. The first step is to specify how I intend to go about it.

Toom (2012, p639) contends that, “It is not possible to study this kind of knowledge by reviewing the theoretical literature only; rather, our understanding of tacit knowledge accumulates over time through action and reflection on it.” I concur with Toom’s view, and proceed from the premise that in order to study and understand the tacit knowledge of expert screenwriters it is necessary to extend the investigation beyond the theoretical literature, and to consider directly the practitioners’ actions in context, and to examine their reflections upon these actions. Toom also notes that “while tacit knowledge is perceived as an individual and personally accumulated knowledge base” it also encompasses “the communally shaped practices, collectively developed means of action, and collaboratively constructed know-how” (Toom 2012, p638). Tacit knowledge is typically communicated across communities of practice, with demonstrable effectiveness and durability, often without recourse to traditional modes of dissemination (Eraut 2000). Thus tacit knowledge may legitimately be considered as common intellectual capital shared by a community of practitioners. This notion is strongly supported by extensive studies of collectively held tacit knowledge in other communities of practice (Zappavigna 2005, Sternberg & Horvath 1999). Accordingly, I believe it is important that this research project should be designed to explicate a set of principles and practices held in common by a representative selection of expert screenwriters - rather than simply investigating the conceptions and practices of a single practitioner.

Michael Eraut, widely considered the UK’s leading researcher into professional knowledge, contends that the researcher seeking to explicate this kind of knowledge has “two possible approaches to knowledge elicitation; to facilitate the ‘telling’ or to elucidate sufficient information to infer the nature of the knowledge” (Eraut 2000,

p119). That is, the researcher may either draw the subject into describing their process and thereby into a revelation of the principles and techniques that enable them to expertly accomplish a particular task, or the researcher may instead deconstruct the process and product, in order to isolate the principles and techniques which are salient but remain unarticulated. The two strategies are not mutually exclusive. In pursuing this research project I require a methodology that allows for both. First, to draw out subjective reflections on practice from a range of individual practitioners, in order to expose consistently shared conceptions of principles and techniques (espoused theories). And second, to analyse the practitioners' products, and compare this analysis against the practitioners' reflective accounts, in order to expose consistently shared applications of principles and techniques (operational theories). Directly investigating the subjective experience and understandings of a range of practitioners in this way is what philosopher Daniel Dennett calls a "heterophenomenological" approach (Dennett 2003). A methodology that suits these requirements is Phenomenography. In the following section I provide a brief overview of this methodology, and describe how I apply it to this research project.

Phenomenography as methodology

Phenomenography is an empirical, qualitative approach to research that was developed by educational psychologist, Ference Marton, for application to educational research. It has since been applied to explore questions of thinking, learning and experience in other fields such as engineering and design. Its aim is to "find and systematize forms of thought in terms of which people interpret aspects of reality" (Marton 1981, p180). The methodology is designed to identify and categorise the conceptions and practices of a range of subjects in order to elucidate the qualitatively different ways people perceive, understand and act upon a phenomenon.

Ontologically, phenomenography takes a non-dualistic position, assuming that an individual (or their knowledge) cannot be separated from their experiences and interactions with their external environment, and that the individual's understandings

are accessible through the individual's actions in relation to the external world (Bowden & Marton, 1998; Marton & Pang, 2008).

Epistemologically, phenomenography is based upon a stance of intentionality, and this proceeds from the assumption that “knowledge is constituted through ... relations between people and world” (Yates, Partridge & Bruce 2012, p98). This stance correlates to Nöe's theories of enactive thought and thus positions phenomenography as an appropriate method of qualitative inquiry through which to explore the tacit knowledge of practitioners.

Phenomenography proceeds from the premise that there are a limited number of categorically different “ways of experiencing different phenomena, ways of seeing them, knowing about them and having skills related to them” (Walker 1998, cited in Ornek 2008, p1). According to Marton (1994) different ways of conceiving phenomena correlate with different ways of dealing with them. The aim of phenomenography is “to describe the key aspects of the variation of the experience of a phenomenon rather than the richness of individual experiences” (Trigwell 2000, p77). Accordingly, phenomenography seeks to explicate the ways of conceiving and dealing with a target phenomenon, by ordering them into a set of related categories. The ways that a subject experiences and sees the target phenomenon are called ‘conceptions’. Put simply, phenomenographic analysis has three aims: first, to identify the ‘conceptions’ that each individual subject holds regarding the target phenomenon, second, to identify which of these ‘conceptions’ are held in common by multiple members of the subject group, and third, to order those commonly held ‘conceptions’ into ‘categories’ that illuminate shared ways of seeing, knowing and acting in relation to the target phenomenon.

Discovery

The primary method employed by phenomenography to explore the way individuals conceive of and act upon a phenomenon is the open, in-depth interview. The term “open” implies that the interviewer may allow the subject to depart from

their predetermined list of questions in order to follow any unanticipated line of discovery or reasoning which may lead to illumination of the subject's conception of the phenomenon. The term "deep" implies that the interviewer will pursue a line of questioning until it is exhausted or until a comprehensive understanding of the subject's experience of the phenomenon is reached.

As with any research approach, there is a danger with in-depth interviews that they may be tainted by the researcher's preconceptions. It is possible that the researcher may unwittingly (or wittingly) lead the interviewee towards the answers that he desires – to "see their experience through the eyes of the interviewer rather than through their own" (Francis 1996, p38). In this research project there is arguably minimal chance of this happening, as the power balance in the interviews is weighted towards the interviewees – i.e. the interview subjects are internationally celebrated experts in the field being studied, while the researcher is a mere student. The relative status of the two parties in this interaction suggests that there is negligible danger of the interviewees being swayed by the researcher to express an opinion about their practice that does not authentically reflect their beliefs. Nevertheless, in accordance with good practice, all interviews are conducted from a set list of questions prepared in neutral, non-leading phrasing. However, because the semi-structured nature of interviews in the phenomenographic approach requires some improvisation on the part of the interviewer, a set of neutral stock phrases are also pre-devised to employ when pursuing a particular line of thought or pressing the subject to go deeper: "Why do you say that?" "Can you tell me more about that?" "Could you give me an example?" "Others have expressed a contrary opinion, how do you respond to that?" and so forth. Francis (1996, p39) calls these "prompt trails". In this way, by engaging with each subject in a consistent and neutral manner, the researcher seeks to minimise any tainting of the interviewee's responses.

A further particular requirement on the researcher in conducting such interviews is to maintain awareness that a subject's *espoused* conception of a phenomenon may differ from their *operational* conception of the phenomenon – that is, a subject may state one belief, and yet act from a different belief. On this matter, Saljo

(1997) cautions that “at times, there appears to be a discrepancy between what researchers observe of a participant’s experience with a particular phenomenon and how the participant describes his experience” (Saljo 1997, cited in Orgill n.d., p3). As noted earlier in this chapter, such a divergence may frequently mark an instance of tacit knowledge. Sternberg & Horvath (1999, p54) observe that expert practitioners typically have “difficulty verbalizing” tacit knowledge “when asked to do so directly”. As a result, when asked to explicate an operational theory (i.e. when asked *how to proceed* in solving a particular problem in their practice) the subject’s responses may be marked by hesitation, incomplete sentences, digressions and circumlocutions. The researcher must be vigilant for these moments of what philosopher and psychologist Eugene Gendlin calls the “unclear edge of experience”, and be prepared to explore “the tantalizing, fuzzy limit of our thinking” - to probe, challenge and invite the implicit understanding to emerge (Preston 2008, p359). In this way, the open, in-depth interview acts as a kind of facilitated reflection, in which the interviewer enables the subject to move from unreflected awareness to reflected awareness (Marton 1994).

Number of Subjects

There is no prescription regarding the number of subjects required for a phenomenographic study, so long as the sample group is representative of the population being studied (Akerlind 2005). However, because this methodology “places emphasis on gaining in-depth understanding and provides for the selection of ‘information-rich cases’ with the potential to produce significant amounts of data of relevance to the research”, sample size typically needs to be constrained in order to “ensure that the amount of resulting data remains manageable” (Yates, Partridge & Bruce 2012, p103). Thus phenomenography is a small sample qualitative methodology.

In his book, *Qualitative Research and Evaluation Methods* (2002), Michael Quinn Patton states that in qualitative inquiry the size of samples and how they are selected must be determined by the aims of the particular research study, “There are no rules for sample size in qualitative inquiry” (p244). Indeed, he goes on to argue that the value of a qualitative inquiry is found not in the breadth of its sample, but in the depth

of its analysis: “The validity, meaningfulness and insights generated from qualitative inquiry have more to do with the information richness of the cases selected and the observational / analytical capabilities of the researcher than with sample size” (p 245). As an example, he points out that some remarkably small samples have yielded some remarkably large outcomes, for example “Bandler and Grinder (1975a, 1975b) founded neurolinguistic programming (NLP) by studying three renowned and highly effective therapists: Milton Erickson, Fritz Perls, and Virginia Satir” (p245). Accordingly, Patton goes on to recommend that qualitative research utilise “minimum samples based on expected reasonable coverage of the phenomenon given the purpose of the study” (p246). In line with this approach, in the present investigation I restrict my analysis to four subjects. Even with this number of subjects in-depth interviews yield a prodigious amount of relevant data. Given the constraints of word count for this thesis, and the necessity of also surveying and analyzing cognitive film theorists’ and cognitive neuroscientists’ models of viewer engagement with character, increasing the sample size of expert screenwriters would result in an unreasonably lengthy dissertation, or require a shift to a quantitative, rather than a qualitative methodology - which I believe would diminish the value of the research. No doubt more in-depth interviews with expert screenwriters would broaden and deepen the data, and potentially yield even more detailed and more robust findings. And at some time in the future, I fervently hope that I (and other researchers) will pursue these.¹¹ But, as noted by Patton (2002, p245), the present sample size is consistent with the standards and aims of rigorous qualitative inquiry.

How should the researcher choose their sample subjects in such a qualitative investigation? Patton (pp 243 – 244) identifies 16 distinct sampling strategies. The sampling strategy adopted by this research project is Combination (or mixed) Purposeful Sampling. Purposeful Sampling is a strategy in which the researcher selects information rich cases with a particular purpose in mind. This strategy is appropriate in cases where the researcher is already immersed in the area of study, and is sufficiently familiar with the available subjects to be able to identify which cases are likely to be information rich (Patton 2002). Combination Sampling indicates that multiple purposes inform the selection of subjects. The purposes informing the selection of

subjects for this research study are 1) Criterion sampling (i.e. picking cases that meet some criterion – in this case the criterion is that the subjects must have attained significant critical and/or commercial success as a screenwriter) and 2) Diversity sampling (picking cases that represent diverse variations, or have emerged from different conditions – in this case the subjects are screenwriters of different nationalities who have succeeded in different languages, cultures and industries). The advantage of such diversity sampling, according to Patton (p 235), is that:

the data collection and analysis will yield two kinds of findings: (1) high-quality, detailed descriptions of each case, which are useful for documenting uniqueness, and (2) important shared patterns that cut across cases and derive their significance from having emerged out of heterogeneity.

This accurately reflects my aims in selecting the interview subjects for this research project.

Analysis

Upon completion of the interviews, the researcher examines the interview transcripts of multiple subjects, and through a process of reduction, compilation and classification, evaluates similarities and differences between them, to identify distinct qualitative ‘categories’ of ways in which the subjects conceive of and act upon the phenomenon. Marton and Booth (1997, p125) propose three criteria for constraining the categories of description:

- i. Each category should reveal something distinct about a way of experiencing or acting upon a phenomenon.
- ii. Each category should stand in a logical relationship with other categories.
- iii. The number of categories should be parsimonious, that is, as few categories should be explicated as is essential for capturing the critical variation in the data.

The process through which this sorting and collating is carried out is relatively fluid, with different researchers employing slightly different processes. But they are all underpinned by a shared philosophy. Typically the interviewer transcribes the interviews themselves, as a way to familiarize themselves with the respondents' answers, and to immerse in the nuances and details. The researcher then reads and re-reads numerous times, searching for common threads of thought or action towards the target phenomenon. As these threads are identified, the sections of the transcript containing each of them are "pooled" together in some way (Reed 2006, p7). Marton literally cuts the relevant pieces out of the paper transcript and sorts them in piles on a table (Marton 1994, p4428). Other researchers prefer to keep the sections in the context of the interview, and employ other methods to collate related conceptions (e.g. colour coding – the method I employ). This process is then repeated within each interview transcript. And then across all the interview transcripts – revealing a weave of threads of common conceptions within each interview and across multiple interviews. This part of the process is too unwieldy to reproduce in its entirety within this thesis publication. Here I reproduce the process in part by furnishing a list of shared conceptions prior to categorisation. At this point in the process, the conceptions are presented in no structured order, and with no weighting given to them. Once these shared threads of conception have been identified, the researcher then repeats the process – reading and rereading the conceptions, and finding connections between them and common features underlying them. The conceptions are then pooled together into 'categories' which illuminate this commonality. And finally, the 'categories' themselves are placed into some kind of hierarchical order.

There are no set parameters according to which this hierarchy must be arranged. The factors governing the hierarchy depend on the focus of the research and the nature of the particular phenomenon being studied – the hierarchy may be chronological (which knowledge or action comes first?), weighted for perceived importance from the subjects' point of view (which understanding or skill is deemed most crucial by the subjects?), representative of cognitive explicitness (which understandings and skills are most / least explicitly held?), or any number of other variations. In the present research project, the hierarchy of categories is arranged

according to the subjects' perception of which considerations are primary for the screenwriter when creating viewer engagement with character (i.e. what understandings and actions are most important and therefore must be attended to first?).

Through this method, the researcher is able to draw inferences regarding the consistency with which particular conceptions of, and ways of acting upon, the phenomenon are present throughout the group being studied. According to Marton, these categories represent a "kind of collective intellect" concerning the conceptions and practices being examined (Marton 1981, p177). These categories are then graphically represented in a hierarchically arranged relationship referred to as the 'outcome space'. The ultimate utility of this analysis is to reveal collective, rather than individual, experiences of, and relationships to, the specific aspect of the world being researched (Akerlind 2005; Barnard, McCosker & Gerber 1999; Bruce 1994; Marton 1994). This type of phenomenographic analysis has been used to examine practitioners' ways of experiencing their practice in a variety of fields, with the aim of facilitating better practice through enhanced understanding (Partridge & Edwards 2006). In this research project I employ this methodology to reveal expert screenwriters' collective conceptions of and actions towards the viewer's empathetic engagement with characters in narrative film. My intention is that the enhanced understanding gained should facilitate better practice and better theory.

SUMMARY

Expert screenwriters possess valuable knowledge about their practice that they 'know but cannot tell'. This tacit knowledge may be defined as two understandings, one explicit (the espoused theory) and one implicit (the operational theory), linked by an intentional purpose. The researcher seeking to explicate this tacit knowledge must identify each of these components. Tacit knowledge is 'knowledge in action', and is best understood as an embodied, situated interaction between the practitioner and the material world. Models of cognition that offer analytical frameworks for understanding instances of such 'knowledge in action' include embodied thought, dynamical systems

theory, relaxation systems theory of cognition, and perceptual learning. These frameworks all inform the present research to some degree, and I shall refer to each of them from time to time throughout this disquisition. Because of its personal, contingent nature, any instance of tacit knowledge cannot be understood merely by reference to existing theoretical literature. To understand and explicate tacit knowledge the researcher is required to directly interrogate and analyse the practitioner's own conceptions of, and actions towards, the specific problems of their practice (Marton 1981). Expert screenwriters are part of a community of practitioners who share certain understandings, norms, evaluations and routines "embedded beliefs, attitudes, and values" (Toom 2012, p640) that stem from tradition. Therefore it is appropriate for research into the tacit knowledge of expert screenwriters to draw conclusions concerning tacit knowledge held in common by the community of screenwriting practitioners. A heterophenomenographic research methodology is required to elicit such shared tacit knowledge. This is the approach that I pursue in this research.

Chapter Three

CIGARETTE BUTTS, CHEWING GUM WRAPPERS AND TEARS

Expert screenwriters' conceptions of viewer empathy

Filmmaking is a collaborative process. The role of storyteller is passed on in a relay as the film moves through development, production and post-production. Nevertheless, many of the primary creative decisions governing the effect of a film are made during the screenwriting process. This in no way devalues the contribution of directors, actors, cinematographers, designers, composers and editors to the ultimate effectiveness of a film narrative. But, as Billy Wilder put it, “What does the director shoot? The telephone book?” (Linville 1996, p1). Wilder was himself an Academy Award winning director. But he is expressing here, in his inimitably dry style, his awareness that the events, characters, images and tone that are interpreted through performance, *mise-en-scene*, lighting, camera angles and music must be supplied, in the first instance, by the screenwriter.

Wilder was nominated for Oscars twenty one times and won six times - three times for Best Screenplay. His films have been screened in a retrospective at the Museum of Modern Art in New York, and chosen for preservation by the Library of Congress. As writer, director and producer Wilder is now considered one of the great filmmakers of his era. With close to two hundred produced screenwriting credits, he was a consummate screenwriting craftsman. Wilder declared in an interview, “I know what is going into my pictures before I start. When I’m finished, there is nothing left on the cutting room floor except cigarette butts, chewing gum wrappers and tears” (Gehman 1960, p33). But Wilder’s screenwriting habits were famously fluid and

contingent - in many of his films, including Academy Award winners *Sabrina* (1954) and *The Apartment* (1960), scenes were written on set while actors and crew waited, prompting his interviewer to add the wry caveat that, “although Wilder always knows where he’s going in every script, he is not always sure how he is going to get there” (Gehman 1960, p26). In the interviews in this chapter, we shall see that this is very frequently the case with expert screenwriters - they knew where they were going, but they are not always clear how they got there. It is apparent that, in the language of tacit knowledge, they are guided by an espoused theory concerning the question of ‘why to proceed’, which they are able to clearly articulate, and also by an operational theory concerning ‘how to proceed’, which remains to a great extent opaque (Argyris & Schon 1982; Rolf 1991).

In this chapter I analyse interviews I conducted with four expert screenwriters. The subjects were selected from a range of backgrounds, working in a range of filmic styles and genres. The aim of this analysis is to identify consistent conceptions held across this cohort regarding the principles that govern viewer empathy with characters, and consistent practices they employ to create and modulate this engagement. As noted in the previous chapter, the nature of semi-structured in-depth interviews dictates that the subject must be allowed to follow their natural line of thought with minimal redirection or prompting from the interviewer (Marton & Booth 1997). This was at times a somewhat challenging exercise, as some of the respondents had a tendency to stray rather far afield. However, it was surprising how often they would eventually find their way back to the central concern of the original question in an unexpected or lateral way. It is not, however, essential to include these meanderings and digressions here. Accordingly, in surveying the interviews in this chapter I omit those segments of the discussion that are not directly relevant to the concerns of this research project. A more economical presentation is offered, in which the salient question is introduced and then the relevant sections of the interviewee’s responses directly addressing this question are furnished, along with discussion and analysis. Where relevant I discuss examples of the interviewee’s work that serve as evidence of their operational theory in practice. In this chapter I consider each of the expert screenwriters separately. In the following chapter I will consider them collectively, at

which time I will identify similarities and differences between them, and group their shared conceptions and practices into coherent categories. Before we proceed, however, a couple of brief notes on format are required.

Conventionally, in academic theses, brief in-text quotes and large block quotes are formatted differently. But when recounting an extended interview it is necessary to quote numerous small snippets and many extended exchanges from the same source. In this situation the conventional switching of formats very quickly becomes tiresome and confusing. In order to alleviate this problem, I have taken an unconventional approach to formatting in this chapter. All quotes from the interview transcripts, whether brief in-text quotes, or extended block quotes, are *presented in italics*, in the same font size and margin widths as the body text. This solution offers a simple and reliable way for the reader to distinguish quickly and effortlessly between my present commentary, and the original interview discussion. I hope the reader will excuse this breach of convention, as it has been adopted to facilitate ease of reading.

The use of ellipses also requires clarification. In academic writing, ellipses are conventionally used to indicate elisions from a quoted text. However, in a verbatim interview transcript, ellipses are also required to indicate where the interviewee's thought trails off or a sentence is left unfinished. Thus, in a selectively edited transcript of a verbatim interview, the humble ellipsis is forced to perform double duty, for which it is sadly ill equipped. So, in this chapter I will again breach convention and use two distinct signs in order to avoid confusing the reader. I will use conventional ellipses to indicate where verbatim speech leaves a sentence incomplete. And I will use ellipses placed inside square brackets, like so [...] to indicate elisions from the transcript. Once again, I trust the reader will excuse this breach of convention.

INTERVIEW ONE:

Simon Beaufoy

Simon Beaufoy is an English screenwriter best known for the critically and commercially successful film *The Full Monty* (1997). Born in 1967 in Yorkshire, Beaufoy read English at Oxford and graduated from the Arts Institute at Bournemouth. He began working as a screenwriter with the television series *10x10*, on which he also directed. Working with director Danny Boyle, he adapted Vikas Swarup's novel *Q&A* (2005) into *Slumdog Millionaire* (2009) for which he won an Academy Award for Best Adapted Screenplay. Beaufoy worked with Boyle again on *127 Hours* (2010), the true story of extreme adventurer Aron Ralston, who amputated his own arm after becoming trapped between two boulders while trekking alone. Beaufoy's other screenplays include *Salmon Fishing In The Yemen* (2011), and most recently the box office hit, *The Hunger Games: Catching Fire* (2013).

Beaufoy meets the selection criteria for this study, having attained significant critical and commercial success. He has been nominated for, and won, Academy Awards, Golden Globes, BAFTA Awards and WGA awards, along with literally dozens of other accolades. Beaufoy also satisfies the diversity requirement for inclusion in the sample group for this research. Despite his Oxford education and his international success, Beaufoy maintains a fierce sense of his Yorkshire origins. His connection to the economically ravaged north of England predisposes him towards an unpretentious and practical attitude to his work, an abiding kinship with the disenfranchised, and a deep-rooted appreciation of the power of humour as a survival mechanism. These factors inform his writing, and are evident in his screenplays. His education at Oxford equipped him with a high-level of analytical ability, and an extensive understanding of narrative theory. His time at the Arts Institute

Bournemouth (at the time one of the few higher education institutes in the UK dedicated to creative arts) provided him with practical instruction in the technical and craft skills of film production in the mainstream / canonical tradition, and also steeped him in a culture of personal expression and creative experiment.¹² Beaufoy's background and training, and the works he has produced, are distinct from those of the other interview subjects selected for this research project.

I met Beaufoy in the lounge of the BAFTA club in London where we talked for several hours. I found Beaufoy to be considered, articulate and disarmingly modest in his answers. He was also among the most focused of the interviewees, almost always holding in mind the thread of the original question as the conversation developed and, more often than not, returning to that question as each phase of the discussion concluded.

I begin by addressing a central concern of this research - the question of the degree to which viewer empathy with character is desirable or necessary in narrative film. Beaufoy is unhesitating in his conviction that for a film to be effective it is imperative that the viewer engages emotionally with the character:

"I've become very interested in the beginnings of films. And there's a very interesting moment in a film where you see an audience, feel an audience's shoulders just relax. Because they... every sense is engaged. You sit in the seat in a cinema in the dark and the film comes on and you have no idea really - you might think you know it's a comedy, you might think you know it's a thriller, but actually you're switched on absolutely to gauge whether you like or you don't like it, whether it's going to be alright or not alright. Who's in charge? Who's the lead character? Who do I care about? [...] You are absorbing an immense amount in the first few minutes of a film. And there comes a moment where their shoulders just drop, and they go, "Ah, it's okay, I know where we are. I know what world I'm in. I know who's in charge. I know what journey I'm on." And it's that moment, that you know you're going to be alright. And I'm always looking for that moment."

The language Beaufoy uses here reveals three key conceptions that he holds concerning viewer engagement. The first is that the viewer is engaged at two levels - on

one level with the character and on another level with the story. The importance of engagement with story is evident through his reiterated metaphor of story as a journey: *“taking the audience with you travelling – seems to be more powerful as a way of engaging than if it’s just a state [...] people like that journey and they become involved in the journey – because once you start on a journey you know you’re going to get to an end of a journey and so you are engaged”*. The second, related, conception is that there is a strong correlation between the viewer’s engagement with character, *“Who’s in charge, who’s the lead character, who do I care about”* and their depth and quality of engagement with story, *“I think if you want emotional engagement you’re going to have to have a sort of ringmaster taking an audience with them”*. So, in Beaufoy’s representation, it is possible for an audience to be engaged either with story or with character, but the most satisfying and meaningful experience is for them to be engaged in both, with their engagement with character propelling them emotionally into engagement with the story. Beaufoy conceives of the moment when the viewer attains this dual-level engagement, when they think, *“Ah, it’s okay... I know who’s in charge. I know what journey I’m on”* as a kind of surrender, in which *“there comes a moment where their shoulders just drop”* and the viewer allows themselves to immerse in an embodied experience in which *“every sense is engaged”*... *“They’re utterly involved. [...] Not on an intellectual level, but emotionally engaged.”*

To confirm that this interpretation of his account was correct, I ask Beaufoy whether he feels that this moment of audience surrender to the story is an accepting of their relationship with a main character. He confirms that this is the case - even in an apparently ensemble film:

“I’ve written a number of ensemble films, and they’re very difficult because actually audiences need a leader... in the same way that people want to know who’s the Prime Minister, or who’s in charge of that regiment, or who the narrator of a book is. They want to be guided. And the person who should be doing the guiding on screen is your lead character. Unless you’re in some deliberately complex system of obfuscation. But on the whole, your lead character is the person who will take everyone on the journey. And even in an ensemble film you need to have someone pushing the narrative along and others will follow in its wake. [...] That’s what I’ve learned.”

When invited to elaborate how this moment of surrender is manifested in the beginnings of some of his own movies, Beaufoy is immediately forthcoming. The readiness of his full-formed articulation of this understanding indicates that he holds a conscious and explicit espoused theory that the viewer requires a character “in charge” to facilitate their surrender to the experience of the narrative. However, on the question of precisely how the viewer is lured to engage with that character, his articulation is less ready and less fully formed, indicating that the operational theory governing his actions towards that conception remains at least partially unconscious and implicit:

“With the Full Monty [...] the beginning of that’s a complete mess. The first three scenes that we shot aren’t even in the film. We excised them completely. We start the film on this weird wide shot of characters in a disused steel mill; you can’t really see who they are, it’s virtually voice over, I mean it’s a terrible way to begin a film. [...] It’s only when the two main characters are standing on the middle of the car in the middle of the canal and someone comes past and goes “Alright?” and they go “Ay, not so bad” and then in every cinema all over the world that’s when everyone laughs. Up until that point they’re going, “I don’t know. Funny accents. Can’t really get a grip on whose in charge of this film” It’s sort of... because it’s not well done, they’re all at sea, and then it’s that moment that you just... all the levers click into place (click, click, click, click) and everyone relaxes and goes “It’s gonna be fine”.”

Beaufoy is unhesitating when asked how the viewer knows that Gaz (played by Robert Carlyle in the movie) is the “leader” in this scenario:

“He’s in charge. He’s saying “come on down here I’ve got a job for you”. [...] It’s very clear who’s going to be pushing this story along.”

This picture of the person “in charge” who is “pushing this story along” is commensurate with the notion, espoused by cognitive film theorists, that telic concerns are helpful, perhaps even essential, in directing the viewer’s alignment to a particular character (Grodal 1997). Gaz is the one with the goal, driving the others to accomplish his plan “come on down, I’ve got a job for you”, and Beaufoy indicates that it is this goal-oriented

concern that directs the viewer to single Gaz out as the central character who will be their eventual emotional conduit into the story. However, according to Beaufoy's account here, this telic, goal-oriented concern is not, in itself, sufficient to actually trigger the viewer's surrender to engagement. Beaufoy tells us that Gaz's telic concerns are apparent from the outset, but he also tells us that it is not until a later point, when the two men and the boy are trapped on top of the sinking car in the middle of the canal, that the audience surrenders completely to engagement with character and story, "*it's that moment that you just... all the levers click into place*". The implicit principle the screenwriter is revealing here is that while telic concerns may be necessary, they are not in themselves sufficient to draw the viewer into complete engagement. Beaufoy is communicating a degree of awareness that some other factor must be in play, which his espoused theory does not adequately account for. This is also evident in the way he talks about the recurring issues he encounters with the beginnings of his screenplays, both here, when he states in a casual aside, "*the beginning of that's a complete mess. The first three scenes that we shot aren't even in the film. We excised them completely*", and elsewhere in the interview when he states more explicitly:

"I've always struggled, and to this day struggle, and always will struggle, I now sadly realise, with the beginnings of films. It's that on the page they all look absolutely fine. And no one ever – producers, directors, actors – no one ever questions the beginnings of my scripts. There's always bits in the middle that need all sorts of attention, but the beginning's always fine. But when it comes to shooting it and editing it, they're always a nightmare – every single film. The beginning is always the biggest headache. And we have to re-edit, re-cut, re-shoot. [...] Every single film has it. Has the beginning chopped around..."

What is indicated here is that the screenwriter has an espoused theory - an understanding of certain principles of which he is consciously aware, and which he is able to articulate quite explicitly, and upon which he acts in his practice. Yet in seeking to realise those principles, he finds he consistently includes redundant material which ultimately ends up being cut from the film during the picture edit, as the essential, effective components become apparent in what he describes as an emergent fashion. This indicates that his awareness of these essential, effective components is to some

extent unconscious - part of an unexplicated operational theory (Argyris & Schon 1982).

When pressed to examine how the (extant) beginnings of his films *The Full Monty*, *Slumdog Millionaire*, *Salmon Fishing In The Yemen* and *127 Hours*, serve to create viewer engagement with characters, Beaufoy exposes a much richer, more complex and nuanced understanding of the components that ultimately proved to be effective and essential. His explicit espoused theory, at first apparently monolithic and simple, gradually delaminates and reveals a complex, stratified, implicit operational theory. I initiate this examination by asking whether, in Beaufoy's view, the audience's agreement to align with a particular character as a kind of "leader" is a conscious choice or an instinctive, unconscious choice. Beaufoy's response is, *"I'm not sure it's a choice. They're being coerced by the film-maker"*. This statement marks a very clear acceptance of the communication theory - the notion that the screenplay is an intentional act of communication, an utterance by a communicator to a receiver, which is deliberately rhetorically framed to communicate specific intellectual and emotional content. As noted in Chapter 1, the film-maker as intentional communicator remains poorly represented in cognitive film theorist's models of viewer engagement. But the implication of Beaufoy's statement here is clear - the screenwriter intentionally uses specific rhetorical and narrative strategies to *"coerce"* the viewer into alignment with the character. When I ask Beaufoy how he coerces them, he responds unhesitatingly, *"I will guide them. I will give them a series of subtextual, or sometimes just textual clues. It's very interesting"*. This confirms his conviction that screenwriting is an act of intentional communication, and introduces a more specific construal that some of the strategies employed by the screenwriter are "subtextual" - that is, designed to work on the audience below the level of their conscious awareness. It is also worth noting that this unconscious, subtextual coercion is assumed by the screenwriter to be the primary mode of delivery, with the more conscious mode of delivery indicated as a secondary option to be used less frequently: *"or sometimes just textual clues"*.

Also indicated in this statement is a discernment that the creation of alignment between viewer and character is not a singular event, but rather an incremental

accumulation, “*a series of [...] clues*”. Even the use of the word “clues” is revealing, implying an assumption that the viewer has an active role in this transaction. Rather than being a passive dupe having their strings pulled by the puppet-master, the viewer is seen as proactively engaged in unraveling the narrative as some form of puzzle. This depiction of the relationship between screenwriter and viewer is confirmed later in the interview when Beaufoy states, “*A bond is signed at that moment between the audience and the film-makers. Where the audience go, ‘We’re in this together, and we’re happy to go along with it’*”. So we can see that Beaufoy’s apparently simple statement (about guiding the audience towards alignment by using a series of subtextual clues) under closer examination yields an extraordinary wealth of information about the principles guiding the screenwriter’s practice. His ability to clearly and unhesitatingly articulate them indicates that, at the coarse level at least, these conceptions are held as part of his conscious espoused theory.

However, as we shall see, the precise nature of the subtextual and textual strategies that he uses to coerce the viewer into alignment with the character are not immediately accessible as part of his conscious, espoused theory. They remain submerged in his largely unconscious operational theory. When I directly invite him to describe the details of the subtextual and textual clues he uses, Beaufoy responds: “*I read someone’s script only yesterday and they start... the first two scenes are very engaging and they don’t have the lead character in. So they’ll never end up in the film. Because it’s not about them. It’s a real mistake to start your film not about your lead character*”. Rather than describe specifically what he himself does, Beaufoy displaces the focus to someone else’s work and offers rather generalised advice on what this other writer should *not* do. Such digression is characteristic of practitioners asked to explicate tacit knowledge, and thus suggests that Beaufoy’s understanding of how he creates these “clues” in practice is probably not explicit (Stenberg & Horvath 1999). I probe further by prompting him with a specific example from his work - asking him to describe how he uses subtextual clues to align the audience with the central character Jamal at the start of *Slumdog Millionaire*. Beaufoy’s response begins in a highly fragmented and generalised manner: “*It’s sort of really hard because they’re so... it’s... it’s just the language of storytelling... to start with your main character. It’s his... it’s clearly his film*”. From his adamant tone and expression it is

apparent that he holds a strong conviction that the considerations of his espoused theory are addressed in this sequence of the film. But the fragmented, digressive and generalised content of his response demonstrate that he is unable to readily articulate how. This is characteristic of an expert practitioner attempting to access tacit knowledge (Stenberg & Horvath 1999). In this moment, in Polanyi's words, the screenwriter knows more than he can tell.

I urge Beaufoy to persist, and he continues to cast his mind around for specific evidence, picking up various threads that appear not to be predetermined, but rather emerge as he speaks. From that moment the "unclear edge of experience" begins to become clearer. First he offers the thought that, *"Everything revolves around the person being tortured. You start with a mystery... and a guy hanging there being tortured."*¹³ This apparently simple, seemingly self-evident statement reveals two specific conceptions that are consistently utilised in Beaufoy's work. One of these he goes on to articulate more explicitly, and the other remains implicit and could easily be overlooked. The conception that remains implicit is contained in his statement that "you start with a mystery". This is true not just of *Slumdog Millionaire*, but of any film. At the beginning of a film narrative, the viewer doesn't know who the characters are, what they want, or why they are doing what they are doing. What Beaufoy is indicating here is an understanding, perhaps intuitive, that the expert screenwriter embraces this unavoidable fact, and deliberately frames the opening of the screen story as a mystery. There is ample evidence in Beaufoy's work that this understanding forms part of his operational theory, as may be confirmed by examining the openings of his other films; *The Full Monty* begins with *"this weird wide shot of characters in a disused steel mill; you can't really see who they are"* before revealing that we are watching two men and a boy apparently stealing an iron girder, though from whom and for what purpose we are left to wonder for some time. *127 Hours* begins with a young man and woman running and leaping, screaming down a chasm in a desert... plunging deep into an underground spring. And *Slumdog Millionaire* begins, as noted, with a young man being tortured and interrogated, for reasons that are not immediately revealed. This strategy of employing mystery at the beginning of a screen story is not unique to Beaufoy - the highly regarded screenwriting teacher, Frank Daniel, explicitly advocated it.¹⁴

Later in the interview Beaufoy expands on this device of withholding information from the audience, *“you know, they’ve got another ninety-seven minutes in here. And it’s the unfolding of a narrative which is part of the delight of sitting in a film. It’s... there’s an increasing sense of the development of the understanding of what’s going on... and the people and... so I would be very wary of letting too much go”*. And later in the interview he once again explicitly refers to this process of incrementally revealing the narrative and the character as creating a sense of “mystery” for the audience:

“I wouldn’t put all my cards on the table about any of my characters. Straight off. I mean it’s a relationship. I’m very suspicious of... going to a party and telling someone everything about myself. If someone told me everything about themselves within minutes of meeting them. You’d go, ‘I don’t know. I don’t know. No mystery here. Why do you need to tell me everything right now?’ It’s the same with storytelling, you don’t... [...] You want it to unfold... in a way that is... is the... in the same way that relationships unfold... which is over a period of time. If you want to believe in those characters.”

The second strategy revealed in Beaufoy’s statement springs from his declaration that *“everything revolves around”* Jamal in this sequence, *“everyone on screen is interested in him so everyone off screen, in the audience, is interested in him”*. This is a specific, nuanced application of focalisation, which Beaufoy utilises in this sequence and elsewhere as a strategy to direct audience engagement towards a particular character. This strategy has particular relevance to ensemble films, a mode of storytelling that is of special interest to Beaufoy. It also has relevance to a central question in the ongoing debate about viewer engagement with character - the question of how, when offered multiple characters with whom they might engage, the viewer chooses among them. In Beaufoy’s account, the expert screenwriter directs the viewer towards a particular character by making them the focus of the concerns and actions of other characters. This arrangement helps resolve a conundrum in cognitive film theorist’s models of viewer empathy. Many cognitive film theorists point to telic concerns and focalization as two prime movers in directing viewer empathy towards a particular character (Grodal 1997; Smith 1995; Plantinga 2009). However, in many screen narratives several characters may have compelling telic concerns and equal focalization in terms of screen

time and shot size - which begs the question of what, precisely, directs the audience to engage more with one particular character among them. Beaufoy offers a possible / partial solution to this problem, indicating that while a number of characters may have strong telic concerns and equal focalisation, the central character is the common element linking otherwise unconnected people and events. All of the other characters' telic concerns converge in some way upon that character; *"it's a series of concentric rings. The people... he's at the centre of a group of people who are [...] interested in him"*.

I ask Beaufoy why the viewer connects with Jamal at the start of *Slumdog Millionaire*, rather than say the policeman, who is also the focus of concerns of both other characters in the sequence up to this point, and who is an archetype (the investigator) with whom, in many stories, we might be expected to align. Beaufoy's response is initially hesitant, but soon latches onto a coherent hypothesis: *"Well I suppose he's... the role of the underdog is a very powerful one in films. I think audiences immediately, abh... empathise with the powerless in a situation. And they seem to love stories of the powerless succeeding... or overcoming their social position"*. The suggestion here is that the screenwriter can entice the viewer into empathetic engagement with the character by showing a character robbed of agency in a situation where agentive action is required to serve some basic survival need (i.e. in biological terms, to maintain the integrity of the organism). This is another more specific and nuanced variation on the general notion of the importance of telic concerns. When asked whether this same dynamic of the character being robbed of agency and rendered powerless is utilised in the opening sequence of his film *The Full Monty*, Beaufoy pauses to mull this over as though it was a new thought, *"Yeah... Yeah... Very definitely. They're dispossessed. They're financially and emotionally... they've lost their dignity. I mean, it's a landscape of loss, really."* Here again a new and vital intuition slips in almost unnoticed; in describing the character's disenfranchisement as "a landscape of loss" he is indicating that the character's psycho-emotional situation is expressed by the screenwriter not only through action, but also through the *mise en scene* - the choice and arrangement of expressive visual elements in the frame. In this way the character's psycho-emotional situation becomes 'naturalised' and all encompassing. The screenwriter provides clues in the way the world of the narrative is presented that are designed to coerce the viewer into

interpreting the character's circumstance as the way of the world rather than simply as a quirk of individual fate. This somewhat more nuanced application of the notion of the 'pathetic fallacy' is discernible in the openings of Beaufoy's screenplays; we typically first meet his characters embedded in viscerally provocative environments that are deeply expressive of the character's life circumstances. Jamal hanging by his wrists in a run down provincial police station, Gaz struggling to carry a heavy iron girder over a filthy canal in an abandoned steel mill, Aron leaping into a dangerous desert chasm. This strategy bolsters Beaufoy's primary intention to capture and engage the audience emotionally rather than intellectually, *"actually they see... they see... they respond with their hearts [...] that's... subconsciously everyone knows that that's where it's at really [...] is that emotional engagement with a person on screen"*.

In the screenplay for *Salmon Fishing In The Yemen*, though, the application of these strategies is not immediately obvious. I ask Beaufoy how he approached the writing of the central character, Fred (played by Ewan McGregor), in that film. The subsequent conversation is revealing. Beaufoy lays out a number of explicitly held conceptions about viewer empathy with characters in narrative film, and then goes on to describe his intuitive application of several specific strategies, thereby explicating his (hitherto implicit) operational theory. Beaufoy's response warrants considering in some detail:

Beaufoy: He (Fred) was really interesting. I tried to make him as dislikable as possible. And that's always a real battle in developing scripts, because you know it's the film studio's... the film developer's... trope that you have to have a likeable central character.

Interviewer: Yes. Tell me about that?

Beaufoy: It's such a dull thing to do. But they're so scared. They're scared of exactly what I'm saying... is that you don't emotionally engage with the character. But that's a very different thing from not liking them.... from not being likeable. It doesn't mean to say that you don't empathise with them. It's not that sophisticated a differentiation. But it's quite hard to explain to certain studios. That just because he's not very nice... to Emily Blunt... doesn't mean that we don't really like him. And actually

it's much more interesting to make him as unlikable as possible, as dislikable as possible, before you see actually, in... the world... in the register of his language... the small things he does to help her - make her a sandwich... Which is a ridiculously small thing. But in his world, it's a huge... that's a great gesture of openness and love and companionship. That's someone saying "I'll do anything I can to help". But it's tiny. But I think it has a... it's unduly emotional because you've set up this person's world and the register of his emotional engagement with things as being so small on this scale of ups and downs... I mean it's tiny so when it goes up that much that's a lot in his world.

Interviewer: I'm really interested to dig into that a little bit more, that notion of... you said it was absolutely important for the audience to emotionally engage with the character, and that's not the same thing as liking the character... so how - sticking with Ewan's character in Salmon Fishing - how do you engineer that engagement? How as a writer do you look for little cues and little motors for the audience?

Beaufoy: I think humour's really important. And it's very subtle and sophisticated. I think if someone's dislikable... you can make someone dislikable, but if they have a sense of humour, albeit odd, and eccentric, it doesn't really matter... that they are capable of being forgiven.... Because they have humour, which means they have perspective... which means they have somewhere within them a sense of empathy about other people. And humour's such a... I find humour's... jokes are so complex in why they work. And humour is such an interesting tool because it's so sophisticated because it comes from - at its root it comes from a recognition of shared pain. And so if someone has humour in their bones, they have had pain. And they know that and they recognise it and therefore they have made a connection... they're saying "I understand pain".... "and I'm prepared to show it". And so that is a way of emotionally engaging with... you know... some sort of... it's a reaching out of some kind. [...] Humour is deeply serious. That's the truth of humour. It's an incredibly serious coping mechanism."

There are a number of key conceptions revealed in this passage. First Beaufoy makes a clear distinction between a character being likeable and being empathetic. He notes that some readers of screenplays who are not themselves creative storytellers have difficulty apprehending this distinction. Beaufoy aims this criticism at "*film studios... film developers*" not at screenwriters or directors or actors. Beaufoy distances himself from these people, and his attitude is one of frustration, even disdain,

describing their view as “dull” and “scared”, and implying that their understanding is limited: *“It’s not that sophisticated a differentiation. But it’s quite hard to explain to certain studios.”* The palpable sense of ‘us versus them’ in these statements stands in stark contrast to the highly inclusive language Beaufoy uses elsewhere when discussing his collaboration with directors on his projects. What is highlighted here is a view that those who are not themselves storytellers have an impoverished understanding of the mechanics of storytelling - that those who are not expert screenwriters harbour flawed and prescriptive notions of how screenwriting is done.

It is worth noting here that many screenwriting manuals promote the notion that the central character must be likeable, and one may reasonably deduce that these screenwriting manuals are the likely source of this received wisdom among non-creative readers of screenplays in the film community. Elsewhere in the interview Beaufoy distances himself from manual writers also, *“I’m always terrified by those American screenwriting manuals and things, because they always appear to know exactly how it works. And I never know exactly how it works. It’s a very, very instinctive thing for me.”* In contrast, Beaufoy states an explicit awareness that his writing process is a balance of intuition and conscious craft knowledge, *“an instinctive need... to write about... I mean... it’s an instinctive part of me to write about people I care about. I don’t have to like them but one has to care about them. Combined with an increasing - as I get older - an increasing structural awareness of how to do that efficiently in terms of craft”*. This is evidence that the tacit knowledge of expert screenwriters and the espoused theories of screenwriting manuals are distinct bodies of often diametrically opposed propositions, and should not be conflated. It is also crucial to understand that while Beaufoy is adamant that the central character need not be likeable, he is equally adamant that the viewer must engage empathetically with that character. His assertion that we need not like the character must not be mistaken for an assertion that we need not care about them. As he says elsewhere in the interview, Beaufoy is firm in his belief that, *“You have to care desperately about that person”*.

The question that flows inevitably from this is how, then, does the expert screenwriter coerce the viewer into empathetic engagement with a character who is not inherently likeable? In the subsequent discussion Beaufoy outlines a couple of broad

strategical approaches, which reveal two very powerful underlying conceptions. First, in discussing the disproportionate emotional impact of the scene in which Fred makes a sandwich for Harriet (played by Emily Blunt in the film), Beaufoy notes that the act of making the sandwich is, in itself, “*a ridiculously small thing*” but proposes that if the viewer is situated by the screenwriter to perceive the events of the narrative in a way that is attuned to the emotional scale those events have for the character – “*in his world, it’s a huge... that’s a great gesture*” – then the viewer is able to conditionally feel the world and events as they are felt by the character. If the viewer is situated appropriately, then the affective resonance of even such a small moment is capable of creating a strong alignment with character: “*it’s unduly emotional because you’ve set up this person’s world and the register of his emotional engagement with things as being so small on this scale of ups and downs [...] so when it goes up that much that’s a lot in his world*”. The explicitly held theory that Beaufoy is revealing here is that the screenwriter creates viewer engagement with character by calibrating the viewer to the character’s emotional register. By mirroring the character’s response to events and world the viewer comes to know what it feels like to be that character. By facilitating this mirroring, the screenwriter enables the viewer to conditionally apprehend the world in the “*register of his (the character’s) emotional engagement with things*”.

It is apparent that such an approach may not only create engagement with character, but may also augment the effectiveness of the narrative by enabling audiences to experience a different perspective on the world. Implied within this is the notion that engagement with character and subsequent understanding of narrative is primarily driven by emotional rather than intellectual processing in the viewer – and is reliant on some mechanism whereby the viewer is able and inclined to mirror emotional responses that are different to their own emotional responses to a stimulus. This is no small implication, as it departs significantly from the accounts offered by cognitive film theorists who privilege the viewer’s intellectual processes as the core driver of their engagement with, and understanding of, the narrative (Bordwell 1985; Smith 1995; Carroll 2003; Plantinga 2009). However, as we shall see in Chapter 6, Beaufoy’s conception aligns closely with cognitive neuroscientists’ accounts of cognitive processing (Damasio 2010; Preston & De Waal 2002; Adolphs 2003).

I ask Beaufoy for examples of how he applied this idea (of calibrating the viewer to the character's emotional register) in his screenplay for *Salmon Fishing In The Yemen*. He responds initially with a general statement, "*I think humour's really important*". Once again, the failure to immediately respond with specificity may be interpreted as an indication that while the espoused theory is held explicitly, the actual means for carrying it out - the specific techniques and strategies that he employs in practice - remain predominantly submerged an implicit operational theory. Nevertheless, as he continues to elaborate, some details of how he applies this conception begin to emerge. As noted previously, the fragmented, iterative manner in which these ideas are articulated by the screenwriter also indicate that the understanding he holds is not immediately available as a coherently formed piece of conceptual / propositional knowledge. Once again the screenwriter has to hunt for it, to dredge it up from some difficult to see place, "*humour's such a... I find humour's... jokes are so complex in why they work. And humour is such an interesting tool because it's so sophisticated because it comes from - at its root it comes from a recognition of shared pain.*" The emergent point that Beaufoy eventually latches onto here is that humour is an effective "tool" for creating alignment between viewer and character because humour comes from "*shared pain*". To share pain is literally to experience affective and somatic resonance. Thus, the underlying conception revealed here is that the screenwriter calibrates the viewer to the emotional register of the character through inducing them to experience affective and somatic resonance. Humour is one tool for achieving this. It is a "sophisticated" and "interesting" and "complex" tool, perhaps because it is so powerful yet seems so innocuous.

I encourage Beaufoy to continue pursuing this line of thought, looking for clues to his specific screenwriting strategies and am met with a small surprise that turns out to be immensely revealing:

Interviewer: Is there a moment in Salmon Fishing... (where this approach provides) this "shoulder relaxing" moment?

Beaufoy: Yes. Yeah there is... I'm just trying to remember what it is... Again there's a lot of intercutting, which keeps people intrigued and interested up to a certain point, but if you leave it too long they just get confused they switch off and you lose their emotional engagement. So we had to work quite hard at that. I think it's probably the scene where Harriet meets Fred, or rather Fred goes to her office and they have that first long exchange about the ridiculousness...

Interviewer: Of the whole concept of... (fishing for salmon in the middle of the desert)?

Beaufoy: Yes. And he walks into the door. Which is a really cheap gag. And if I'd read that in anyone else's script I would've said, "That's a really cheap gag, that's pathetic." But actually I thought it was really important"

This is a fascinating moment because what Beaufoy is revealing here is that despite a conflict with his espoused theory - *"that's a really cheap gag"* - he acted on his instinctive operational theory because intuitively he felt *"it was really important"* to do so. I would argue that it felt *"really important"* to the screenwriter because it served three convictions that are fundamental to his implicit theory of viewer empathy. These are, in his own words:

1. *"action is a portal to emotional engagement"*
2. *"at its root it comes from a recognition of shared pain"*
3. *"emotion always wins in cinema"*

This small moment in the screenplay for *Salmon Fishing In The Yemen* in which Ewan McGregor's character walks into a door may easily be overlooked as an incidental joke that does not warrant further consideration, but on closer examination it is revealed to be a crucial keystone in the emotional structure of the narrative. Through sharing this anecdotal example, Beaufoy has opened a door onto one of the fundamental conceptions of the expert screenwriter's implicit theory of viewer empathy. Let us examine this moment more closely and see if we can distil the essence of what is at work here. Let us first consider what it is not. In Chapter 5 I survey the models of viewer empathy proposed by leading cognitive film theorists. Each of these film theorists nominates a different phenomenon as the prime mover in the creation of

empathy. None of those proposed prime movers is in evidence in this moment. The moment is not directly related to any primary telic concerns essential to the narrative; while the character of Fred does have a minor, short-term goal to excuse himself from a job which he sees as frivolous and futile, walking into the glass door is not an action essential to determining the success or failure of this goal. The moment is also not an event of any moral or ethical significance; neither the action itself nor the reaction of the characters indicates that they should be considered either morally admirable or deplorable. The moment does not carry any intellectual meaning, either literal or symbolic. The moment is not primed by, and does not itself prime, any pervasive emotional mood; it is a fleeting anomaly, a blip on the emotional radar. In fact the moment is not even primarily an emotional event, but simply a visceral / somatic response to a purely physical event. And yet the expert screenwriter nominates this as the crucial moment in which the audience slips into alignment with the character.

So, what we can say with any certainty this moment *does* consist of? It consists of a visceral / somatic response to a purely physical event. Nothing more and nothing less. This may perhaps seem too insubstantial an armature on which to hang our engagement with character. But remember that, as Beaufoy reminds us elsewhere, this is just the beginning of our incrementally developing relationship with the character, *“you want it to unfold... in a way that is... is the... in the same way that relationships unfold... which is over a period of time”*. Remember also Beaufoy’s statement that humour and engagement *“at its root ... comes from a recognition of shared pain”*. If, in this moment, the screenwriter is able to coerce the viewer into sharing the character’s embodied visceral / somatic response to walking into a door, if he is able to activate in the viewer their own flinch response and the cascade of subtle physiological and affective changes this triggers at precisely the same time that the character experiences them, then he will have succeeded in placing the viewer inside the character’s experience of physical vulnerability and social humiliation. He will have induced the audience to share the character’s pain - both physical and emotional. He will have succeeded, as he puts it, in calibrating the viewer’s experience of the narrative to the emotional register of the character. This moment perfectly illustrates a keystone of the expert screenwriter’s operational theory at work. It is this implicit operational theory that compelled the

screenwriter to include this moment in the screenplay, and to recognise it as *“incredibly important”* even though it contravened his conscious, espoused theory, which told him it was *“a really cheap gag”*. As this investigation unfolds, we shall see that this narrative strategy - employed by Beaufoy as part of his implicit operational theory, and described by him as quirky and counter-intuitive - is in fact a common strategy among expert screenwriters. We shall also see that it finds substantial support from cognitive neuroscience.

In the previous chapter I noted that it is imperative, when claiming that some action in the screenwriter’s practice is evidence of a tacit operational theory, to establish that the action is sufficiently consistent that it forms a typical pattern. Accordingly, I ask Beaufoy to identify the equivalent moment in *Slumdog Millionaire*, to ascertain whether he employed the same strategy of inducing a shared visceral / somatic response to a purely physical event in order to create an initial alignment between viewer and character. The moment Beaufoy nominates confirms the pattern:

“Again, the moment when everyone’s shoulders relax is when the little boy, the little Jamal, jumps into the shit. [...] And after that it just races along and everyone’s weirdly on the journey.”

As with the moment of Fred walking into the door in *Salmon Fishing*, this moment in *Slumdog Millionaire* when young Jamal jumps into the pool of shit is a purely physical action that provokes a powerful visceral / somatic response. (In Chapter 6 I discuss the particular power of disgust as a shared response). As with the previous example, the moment is not essential to any primary telic concerns of the narrative; while the action does serve Jamal’s immediate, short-term goal to get the movie star’s autograph, which later helps him answer a question on the quiz show, this goal could have been otherwise achieved, or not achieved, without altering the course of major narrative events. It is noteworthy that, in nominating this event as the primary moment of alignment, Beaufoy does not even mention little Jamal’s desire to meet the movie star. This indicates that Beaufoy’s theory is that provoking a strong physiological response simultaneously in the viewer and the character may create engagement between viewer and character - regardless of the character’s telic concerns. This is not to say that telic

concerns and relatable character desires are not a factor in building viewer empathy for character; as noted in the discussion of *The Full Monty*, it is clear that Beaufoy holds character goals to be an important consideration in this regard. However, the fact that he nominates these moments of visceral provocation as the point where alignment between viewer and character is cemented makes it clear that, in his implicit theory, shared visceral / somatic responses trump relatable telic concerns.

Beaufoy also notes that both moments are funny. He talks at some length about the importance of humour as a tool for making the character relatable and the story accessible to the audience. Of the moment in *Slumdog Millionaire* he says, *“I didn’t want this to be a ‘brutality in a third world country’ film. I wanted it to have enough humour to go ‘this guy’s going to be alright. He’s got resilience. He’s got defiance. He’ll get through this.’ And it’s funny – we’re in a film where you can laugh. [...] And everyone goes ‘Oh, okay, it’s funny. Thank god for that. It’s not going to be one of those films where small Indian children die of diphtheria.’”* The assumption that Beaufoy is revealing here is that viewers approach the film narrative with a certain degree of resistance. This resistance is well documented in the theoretical literature (Moyer-Gusé 2008). It also accords with clinical studies of resistance to empathy in subjects observing the suffering of objects whom they feel unable to help (Cameron 2012), and with psychological studies of the “bystander effect” in which witnesses to public brutality fail to intercede (Garcia et al 2002). Beaufoy’s choice of language, *“He’s got resilience. He’s got defiance. He’ll get through this”*, confirms that the screenwriter’s intent in using humour here is not to superficially sugar coat an unpalatable situation, but rather to communicate to the viewer that the character will not become abject. The humour with which the moment is conveyed indicates to the viewer that there will be hope as well as fear and suffering and degradation for the character in this narrative. In this way the screenwriter ensures that the viewer does not step back emotionally into an objective rather than a subjective stance - a position which dilutes the effect of the narrative. Beaufoy’s belief, implied here and explicitly stated elsewhere is that emotional pain and humour do not negate each other, but are in fact symbiotic, *“I always thought that The Full Monty is only as funny as it is because it’s as sad as it is”*.

The notion of humour as a tool for overcoming the viewer's resistance to the narrative is also apparent in Beaufoy's discussion of the moment in *Salmon Fishing In The Yemen*, of which he says,

"I thought it was really important that everyone knows that they are allowed to laugh. It's a funny thing. Audiences are so respectful... of the images on the screen but they... certainly in England... but they need to be given permission to laugh. To make a noise. [...] You know that collective experience is wonderful once it is collective but the first however many minutes of a film is not a collective... it's a bunch... a much more nervous experience... a bunch of strangers sitting very close to each other in a dark space going "I don't know. I don't want to look stupid [...]" So you have to do something to tell them."

What is interesting here is Beaufoy's avowal that the viewer is drawn into somatic / affective resonance not just with the character, but also with the other viewers.

Beaufoy conceives of this communal sharing of somatic / affective resonance as a significant part of the power and pleasure of the cinema experience, *"It is a process of syncing. Because there's nothing better than sitting in an audience of sunk up [sic] people. [...] there is a sense of a collective. You can feel them all breathing together, all moving... all silent at the same moment. It's very powerful like that. [...] you feel like you've been through something with a lot of people. [...] Because it is so visceral sometimes. You can feel a sort of collective "other"."* His interpretation of this shared, "collective" resonance is that it is a direct result of the screenwriter's intentional communicatory actions, and that it is part of the screenwriter's craft to establish and maintain this resonance, *"You know, you are the conductor. [...] And the trick is to keep people in sync"*.

The implication here that this collective resonance between viewer and character, and between viewer and viewer, requires maintenance, suggesting that even once established, it may be lost. I question Beaufoy about this, and his response is emphatic, *"Oh, you're in danger of losing it all the time. I mean that's the great trick – is to keep that engagement. It's not just an engagement with story. It's an engagement with the plight of your character. And its... that's the constant challenge."* The conception Beaufoy is sharing here, and which he reiterates piecemeal throughout the interview, is that the audience

engages intellectually with the narrative as a form of thought puzzle or problem to be solved, but that this intellectual engagement is secondary to, and contingent upon, their emotional engagement with the character - that is to say, the viewer's investment in the problems of the narrative is made only to the degree to which they feel aligned with the character's subjective experience of the situation. Elsewhere in the interview Beaufoy offers an example of the problems that can arise from this for the screenwriter, when he discusses the struggle he faced in writing the screenplay for *127 Hours*, in which he initially set out to communicate a rather more ambivalent intellectual interpretation of the character, but ultimately found he was unable to do so simply because of the raw emotional power of the character's experience; *"We tried to make it a more ambivalent film than it ended up being. Just because the narrative is a real juggernaut and it just blew those rather more tentative questionings of the sort of person he was out the window really"*, concluding, *"catharsis is a pretty straightforward emotional response. It doesn't brook much complexity. It doesn't like it" [...] "emotion always wins in cinema."*

The *Full Monty*, Beaufoy's first, and arguably still his most loved, film, is an ensemble film. I ask Beaufoy about the particular challenges of establishing viewer engagement with a number of different characters within the same narrative. His thoughts on this dovetail with his notion of collective audience empathy. He explains, *"I think there's a collective empathy that comes into play. [...] if the people in the film [...] have a group ideal or a group ethic or a group ambition, a group empathy is created from the audience. So they want them all to succeed. So although you're leading the charge with one lead character people feel like... they talk about "those blokes", "Oh I love that film, those blokes". It's a collective empathy."*

The implication that Beaufoy reveals here is that if a group of characters shares a collective goal, *"a group ambition"*, then it is easier for the screenwriter to build empathy for all members of the group on the basis of that telic concern. Cognitive film theorists are broadly in agreement with the notion that telic concerns play some role in establishing viewer engagement with character, though, as we shall see in Chapter 5, there is some variation in their interpretation of the nature and importance of this role. Screenwriting manuals, too, have heavily emphasised compelling character goals as an essential ingredient in effective screenwriting. So Beaufoy's assertion that the

screenwriter may extend the effect of that goal to encompass more than one character seems at first glance to be relatively straightforward, even unremarkable. However, if we examine his words a little more closely, and do not allow ourselves to be immediately drawn to the familiar idea to the exclusion of all else, then we see a more nuanced formulation within Beaufoy's words. Yes, he does tell us that "a group empathy is created" if the characters share "a group ambition" - but only after he has told us that the same empathy may be created if they share a "group ideal" or a "group ethic"; shared ambition is only one of the possibilities. The real constant is the sense of group. When considered closely it becomes apparent that Beaufoy is saying not merely that a shared goal makes it easier to empathise with a group, but, rather more interestingly, that if a group of disparate characters can be seen as united by some collective concern, *whether or not* that concern is a telic, goal-oriented concern, then any empathy garnered for an individual character via that concern may extend to other characters who share that concern. This idea is only opaquely revealed here, trailing in the gravity of the more obvious notion of telic concerns. But it is revealed. And it has intriguing consequences for our understanding of the working of viewer empathy for character in ensemble films in which multiple protagonists do not share a common goal. Beaufoy's implicit theory predicts that in such films there is some mechanism or mechanisms by which the viewer may transfer or project their affinity with one character onto another character who shares a similar ethic or ideal. In subsequent interviews in this chapter, we shall see that other expert screenwriters reveal similar conceptions in their tacit operational theories. And in Chapter 6 we shall see that cognitive neuroscience and evolutionary psychology do, indeed, propose just the kind of mechanisms predicted by this conception.

SUMMARY

Simon Beaufoy proved to be an articulate and accessible interview subject. He was equally comfortable discussing screenwriting craft, film theory, and personal reflections on his own work process. He seemed unperturbed, even genuinely curious, when faced with questions to which he could not immediately provide a ready answer.

His responses were detailed and frank, and revealed specific conceptions that he holds about the phenomenon of viewer engagement with character, and about his actions as a screenwriter towards that phenomenon. It is clear that while many of these conceptions are clearly held as part of an explicit, espoused theory, some are held tacitly, as part of an implicit operational theory evident in his practice.

Key conceptions include the following:

Screenwriting is an intentional act of artistic communication.

In order for the work to communicate its intended meaning, it is imperative for the viewer to engage with the character.

The viewer's intellectual engagement with the narrative puzzle problem is secondary to, and contingent upon, their emotional engagement with the character.

Initial engagement is created by provoking the viewer to experience a visceral / physiological responses simultaneously with the character.

Non-conscious clues are the screenwriter's primary tool for creating viewer engagement with character.

Further engagement is triggered by inducing the viewer to anticipate satisfaction of a character's relatable individual desires.

This engagement may be amplified by focusing other characters' telic concerns around this POV character.

Engagement may also be amplified by frustrating the expected outcome of the character's goal-oriented actions.

Ensembles, rather than diminishing focalisation because screen time is shared, actually serve to create a kind of enhanced focalisation through a process of reflection and resonance.

Engagement is deepened by coercing the viewer to adopt the social perspective of the character. This perspective is not reliant on moral / ethical absolutes – the viewer does not have to like the character.

And, finally, Beaufoy also holds the conception that the screenwriter's practice is a mix of intuitive tacit knowledge, and explicit technical know-how.

In Chapter 4 I collate and compare these conceptions and strategies with those employed by other expert screenwriters.

INTERVIEW TWO:

Laurence Coriat

Laurence Coriat is a French screenwriter. Born in France, Coriat studied psychology before moving to England in her early twenties. Since then she divides her time and work between London and Marseilles. She is best known for her screenplays written for (and in collaboration with) English film director Michael Winterbottom, including *Wonderland* (1999), *A Mighty Heart* (2006), *Genova* (2008) and *Everyday* (2012). Her work sits within the realist tradition of European art films, and eschews many of the conventions of mainstream Hollywood narrative, such as neat three-act structure and closed resolutions.

I was brought up with the French New Wave, which I think in a way is the precursor of low-budget filmmaking because they decided to make films in the streets without extras, without lights, on the fly. And that gave them the freedom to do the films they wanted to make. In that sense they found a new language of cinema by doing that ... a creative way of making films.

(Coriat 2008, p1)

Her primary concerns lie with character and relationships and how they are affected by a particular world / environment. Graham Fuller notes that while Winterbottom's films sit within a strong British tradition of social realism, Coriat's training in psychology lends her work a "psychological rather than social realism" (Fuller 2000, p1). Coriat's work is a contemporary example of the kind of art cinema described by David Bordwell as a mode of production which is "motivated by two principles: realism and authorial expressivity" and in which "characters and their effects on one another remain central" (Bordwell 1979, pp. 57-8). In contrast to Bordwell, however, I am interested in the degree to which these characteristic elements are the product of the screenwriter. Earlier interviews with Coriat indicate that she too believes that these elements originate with the screenplay:

I think the way I approach writing is a bit unusual - it is not very structured. The ensemble piece is a different structure and I like different structures. It is almost like a symphony and *Wonderland* ... to me it was very much about rhythm and motif and writing it like music.

(Coriat 2008, p2)

Deborah Allison in her book *The Cinema of Michael Winterbottom* (2013) concurs, and notes that the screenwriter's contribution is frequently overlooked:

Amid all the critical focus on directorial influences, Graham Fuller would be a near lone voice in assigning part-credit for *Wonderland*'s blend of social and psychological realism to writer Laurence Coriat. While Winterbottom's eloquent explanations have helped to secure him most of the critical plaudits for it, Coriat's background as a student of psychology is perhaps not entirely irrelevant (Allison 2013, p79)

Coriat meets the criterion for selection in the sample group for this research project on the basis of the critical acclaim her screenplays have received. *Wonderland* was selected for competition at Cannes, *Me Without You* was invited to the Venice Film Festival, *A Mighty Heart* was nominated for a Golden Globe, and *Everyday* for a BAFTA. She also contributes to the diversity of the sample, as a female writer with a cross-cultural background, trained in psychology rather than traditional screenwriting, and emerging from a unique blend of post-New Wave European art cinema and British social realism.

I met Coriat at an outdoor cafe in the Place des Vosges, beneath the apartment where Victor Hugo lived and wrote some of his greatest works, including part of *Les Misérables* (Robb 1998). We talked for around an hour and a half, which at the rate Coriat talks is the equivalent of a normal three hour conversation. Coriat is an effusive, energetic conversationalist, her mind racing ahead of every topic and careering off down interesting side alleys and tributaries of thought before she has completed verbalising her first thought. She apologised for this tendency in advance, declaring

with a laugh, *"I'm told I don't answer the questions!"* In fact Coriat does answer the questions... eventually... in her own way.

I commence by asking her why we need screen stories. Coriat begins by noting that her responses will inevitably be subjective, *"I can only go from my personal point of view"*, then goes on to identify the kind of film that interests her, *"indie films. Which I think are quite commercial.... But they're considered as art films"*. She expresses a belief that this kind of film tends to appeal more to a non-Anglophone European audience, *"here I'm always amazed everyday people will go and see quite difficult films, or what you would call art films. So I think it's different. It's a different culture"*, whereas the English speaking market is dominated by mainstream commercial films, *"In London I think it's more difficult because I think the audience are going to see American films - the big blockbusters - and they don't get as much chance to see as here"*.

Coriat expresses a conviction that the screen stories that best represent the strength of the medium are complex and layered, exploring difficult characters and relatable personal issues in an understated way that allows the viewer scope to construct and interpret events in their own way:

"It's like you try to hide... One of the good notes Michael gave me is that he said, 'Hide the story'. And that I love also, because [...] to me that's what script writing is about and that's very interesting. And you have the possibility because of the medium of film that you can have somebody saying something and then in the way that it's shot or in the way the actor does the body language completely contradicting what they say... or you can have a lot of information that's in the subtext. So that's the beauty of it I think, in terms of the difference between the other mediums".

This implies that effective screen storytelling relies on the screenwriter's ability to create nuanced, personal moments that communicate their meaning to the viewer through non-explicit, non-literal means. To determine how Coriat achieves this in practice, I ask her how she thinks of her work as she's writing, whether she writes to please herself or to have a particular effect on the audience. In response Coriat reveals that she conceives of the audience in two distinct ways, firstly as a market, and

secondly as a collective of individuals to whom she wishes to communicate. The ‘audience as market’ is not a primary concern for her when writing, *“I wouldn’t... I wouldn’t think... I mean yes, you are forced to think of the audience in a way, because if you want to sell your project you get confronted with that. But I’ve not been confronted with that so much because I work with directors. Directors think about that”*. The ‘audience as individual respondent’, on the other hand, is a primary concern for her, as evident in her discussion of *Wonderland*, *“I didn’t write it for my self, of course I want people to see it. And I had been in London for so long and I wanted to write a film about London. And my experience of London. Now when I wrote it I didn’t think, “Ohhh...” I just thought “You know, I haven’t seen that in film, this experience and I want to translate it for people” and I was hoping that if I can kind of relate to these experiences, people out there will relate...”* Here Coriat is confirming the Dynamical Systems view of screenwriting I described in Chapter 2, in which the screenplay is understood as two distinct types of ‘environment’ with which the screenwriter interacts (Hotton & Yoshimi 2011). For Coriat, the screenplay exists on one level as a malleable artefact - a product within a commercial world, *“you are forced to think of the audience in a way, because if you want to sell your project you get confronted with that”*. On another level it exists as an imaginary world which the screenwriter enters and responds to, on the understanding that, *“if I can kind of relate to these experiences, people out there will relate”*.

Coriat also clearly articulates an explicit, espoused theory that the screenwriter may gauge the success of her films by the degree to which she succeeds in sharing experiences with the viewer. This is consistently expressed throughout our interview, *“it made me feel so good because it was my first produced film and people came to me and they said “Oh that moment and that moment and that moment”. People who lived in London, but also when I went to Australia they showed it, and that was almost ten years after the film, and people still responded to it. So there was a connection between what I had... you know... and that was very... made me feel very good...”* Inherent in this conception is an acceptance of the communication model - a belief that the screenwriter is intentionally communicating thoughts and feelings to the viewer through the medium of narrative film.

When I quiz Coriat about the degree to which she is conscious of designing this communication as a set of structured appeals to the viewer, her answers fragment and

become far less articulate, *“I think... It’s like... I... yeah... I could... when I’m reading your question I’m thinking, “So how did that work?” but at the time I didn’t think like that. If you see what I mean. I didn’t articulate, “Oh, I’m going to... to...” It was a surprise that it happened. But I think that film was magical also because, I don’t know, there was something that everything worked together in that way.”* As discussed in Chapter 2, when practitioners employ tacit knowledge they proceed from a conscious intention, (in this case to share the experience of personal moments through subtextual means) but achieve this desired end via a set of actions and skills that are applied unconsciously, and not available for explication (Polanyi, 1967; Argyris & Schon 1982; Rolf 1991). When asked to describe the means through which they achieved their stated intention - i.e. when asked to explicate their tacit knowledge - practitioners typically struggle to verbalise the details of their practice (Sternberg & Horvath 1999, p54). This is evident in the Coriat’s response here. She expresses her conscious intention to share her personal experiences of London as a young woman, yet finds herself unable to articulate precisely how she accomplished this intention. The fragmentation of language during her attempt to answer is indicative that she is searching her semantic knowledge, but that the search is not yielding results - because the knowledge she seeks is held tacitly, not explicitly. Unable to locate explicit semantic knowledge of the procedure she applied to accomplished her intention, Coriat defers to the mystical explanation that something “magical” must be responsible for the fact that “everything worked together”. This semi-mystical view of creative skill is not uncommon. And it is, at least in part, responsible for the problem noted by Toom (2012, p4) in which advocates of tacit knowledge sometimes display a degree of “skepticism toward rationality”.

I continue to pursue my line of questioning in the attempt to unearth some element of the unconscious operational procedure that Coriat employed to create this “magical” something. I ask her to consider what it is in the writing of the film that she feels people relate to. Her response again exhibited digressions and fragmented language - typical characteristics of the struggle to verbalise tacitly held knowledge. But eventually yielded some specific conceptions and strategies:

Coriat: So in the writing... actually when people read the script a lot of people didn't get it. They thought nothing happens. But the idea was that it was operatic and it will build and the city was going to be a... And Michael got it when he read it. He liked the writing.

Interviewer: So you could see it in the writing what was happening, but they were minute and subtle things...?

Coriat: Yes. Exactly.

Interviewer: What sort of things? Can you give me some specific examples of the kind of events or subtle developments that you knew were in the script that some of those other readers weren't able to see?

Coriat: Well it's like if you... because it's a whole... complete... maybe it feels more like a... in terms of... little things, okay.... It's a difficult one. Okay. I've got an example. There's one point where the mother of the little boy - the father comes and gets the boy and they go away to the football - and there's a shot of her sitting on the bed and putting all the things away in the bedroom. It's nothing. And its... when you see it on the screen you feel it. Because she's alone and you get a whole picture. And so I put a lot of things like that. You know. Or you stay with a character. Like when Nadia has the affair, when she sleeps over with the guy, the Irish guy [...] and then she leaves and you stay with him again. He's like, he doesn't care that much but he has a cigarette and so you are with the character. Even if nothing happens, because you automatically project as an audience... what he's thinking or... you leave that room for projection. So I guess that's a different way of writing than writing everything in... like what everybody should be feeling. There's a lot of gaps I guess in the way I write.

This passage reveals several beliefs that are common among the screenwriters interviewed for this research. The first is that many readers who are not filmmakers find it difficult to extrapolate from the page the full effect that a moment will have on screen. She explicitly states this view later in the interview, *"It's hard to read scripts. It's really hard I think."* The reason Coriat offers is that *"in itself as a form screenwriting is a hybrid"* because it is *"writing for a director then to translate into a film"*. The difficulty for the

reader of screenplays is that while the moment is conveyed in the screenplay through the explicitly symbolic medium of words, the impact that the moment is intended to have on the viewer of the finished film may often not be explicitly symbolic. Visceral and emotional resonances are created by witnessing another human being experiencing even the smallest, apparently inconsequential moments in life. Words on a page, in and of themselves, cannot reliably provoke these resonances – “*It’s nothing.*” It is only “*when you see it on the screen you feel it*”. To envisage the ultimate impact that such moments will possess when filmed is an act of translation requiring some skill or expertise in the medium, and a degree of creative imagination. Advocates of perceptual learning would also argue that it relies on an expert’s augmented perceptual system (Goldstone 1998). Hence Michael Winterbottom, a skilled and nuanced film director, was able to recognise these moments, while other readers were not.

Coriat expands on this idea later in the interview, when discussing why she enjoys the work of David Lynch, “*It’s not about... what works is not the explanation of suddenly the twist and turn and the plot that you... okay you can get pleasure out of that but that pleasure is very... is kind of quite limited. [...] But what’s interesting... is what it relates to unconsciously*”. The nature and significance of these kinds of unconscious resonances do not yield easily to succinct, unambiguous verbal description. As a consequence, the reader of a screenplay must be able to imaginatively project the nuanced human enactment of the moment, as well as the visual and aural augmentation of the moment allowed by the medium of film, and allow themselves to respond to this imagined projection. Coriat construes screenwriting as a medium constructed of words, but not to be experienced in words. This construal is clearly central to Coriat’s understanding of her practice, “*I think there’s a lot of unconscious processes going on*”. It is said that Mozart could hear the music when simply reading the score. In order to effectively read a screenplay, the reader must be able to perform a similar feat. Little wonder then that most screenwriters express the view, as Coriat does, that few people are able to read and fully apprehend a screenplay. As a consequence Coriat sees her work as a screenwriter as fundamentally collaborative, a point which she reiterates throughout the interview, “*I work with directors*”, “*I work for the director*”, “*I’m working with a Russian*

director". She believes that the full resonance of a moment is only realised when the performance of it has been filmed.

At times, Coriat believes, even the writer doesn't quite know what it is they have written, "*The actor told me - Shirley Anderson - told me "Oh, it was great because as an actor there was a lot there". And I was thinking "Oh!?" You know, I didn't realise*". This accords with Jean-Claude Carrière's insistence that sometimes even "the author doesn't know what he has written". Both writers accept that the process of writing, of creating these moments, is to a significant extent governed by non-conscious cognitive processes. Coriat confirms throughout the interview that the act of screenwriting for her is "*kind of an instinctual, emotional thing*". For Coriat, this process is natural and inevitable, "*I have to do it like... [...] unconscious and instinctive, you know, that's how I work. Then of course I apply some intellect afterwards*". Her process correlates with Noë's view of creative practice as enactive, "an activity of skill-based exploration" (Noë 2009, cited in McGuirk 2011, p225), and with Bredo's description of artistic practice as an iterative process in which, "one draws, responds to what one has drawn, draws more, and so on. The goals for, and interpretation of, the drawing change as the drawing evolves" (Bredo 1994, p28).

When pressed to identify specific moments that she knew were resonant but that untutored readers felt were purposeless, Coriat descends into the fragmented, incomplete sentences that typify a mind rummaging through explicit semantic knowledge for a hidden trace of some tacit understanding, "*Well it's like if you... because it's a whole... complete... maybe it feels more like a... in terms of... little things, okay.... It's a difficult one*". But eventually her mind locates a specific instance, and once she finds one example it leads to another, and then to the beginnings of a conscious explication of the principles at work. First, Coriat identifies the example of the mother left alone in the wake of the father leaving with the little boy, and this leads her to recognise a similar moment when Nadia's casual lover is left alone in the wake of their one night stand. There is a clear similarity between these moments, and even though the meaning of each moment is not reducible to explicit 'context invariant symbols', they have a resonance and a significance - a numinous quality which is difficult to define. Coriat conceives of this resonance as emerging when the screenwriter creates a relatable and

authentic situation, and then leaves time and space for her audience to project their own response onto the character. In terms of the theory of film practice, this concept is not novel. Lev Kuleshov demonstrated the effect in his famous experiment conducted in the 1910's in which he intercut a single close up of the matinee idol Mosjoukine with cutaway shots of various stimuli, and reported that viewers projected their own emotional interpretations onto the actor's expressionless face (Prince & Hensley 1992). Coriat ends her response with an observation that this strategy is a constant in her work, *"There's a lot of gaps I guess in the way I write"*.

I enquire whether, when constructing such moments in Wonderland, she exclusively or predominantly sought to place her characters within situations and experiences that were similar to her own. Coriat's response is that while her own personal experiences provided the spark for her initial concept, and suggested some specific situations experienced by some of the characters, ultimately what she sought was to create a rich and complex tapestry of varied experiences that exceeded her own, woven through the ensemble:

"I think that's my strength because I think I can build... If you want to talk about character I think with an ensemble you can do a lot of layers. Because you can have one character in one situation and then you can have the same character in another situation, so you know, you can do a lot very quickly... because you see them in different... react in different ways. So I think that's what I really like about an ensemble. That you can juxtapose and get meaning out of all the juxtaposition."

When I was compiling these interviews, I almost discarded this section. Coriat's fragmented and branching manner of expressing her thoughts almost masked the relevance of what she was expressing. The conception that Coriat reveals here is particularly interesting in that it argues against an accepted wisdom promoted by the screenwriting manuals. The manual writers predominantly argue that screen stories should properly be about a single central character pursuing a single line of action. But Coriat is actually saying something quite different:

“So I was thinking to have as much of different experiences of the city [...] it was going to be all these characters and having a kaleidoscope. [...] so that kind of spread out, and that’s what I liked in that ensemble that you can touch on a lot of... and you can have this feeling of all these lives so it’s quite operatic. So you have the character but at the same time you have this view that I think is kind of [...] it’s what it’s like to live in a city and struggle with everyday struggles in different situations.”

Coriat is saying that by showing a range of characters grappling with similar concerns and experiences, the variations resonate with each other, and enhance the impact of each of them, *“because to me it enriches this one character if you go away. Because it’s a different perception”*. Like harmonics in music, she sees this layering as an enhancement rather than a diminishing of the core experience, *“I think for me script writing is more like music”*. I’m not sure how many times I read and listened to that passage of the interview before its significance broke through into my consciousness. But it is a salutary example of the difficulty of sifting through a practitioners words to find a nugget of tacit knowledge. And of the value of doing so. Although Coriat’s interpretation of this phenomenon may initially seem counter-intuitive and unconventional, it correlates directly and strongly with Simon Beaufoy’s view that ensembles, rather than diminishing focalisation because screen time is shared, actually serve to create a kind of enhanced focalisation through this process of reflection and resonance. Later in this chapter we shall see that Guillermo Arriaga holds a similar belief. And in Chapter 6 we shall see that there are very sound neurological bases for this conception.

I ask her how Nadia came to be the central character. Was it a conscious decision in the writing? Coriat’s response again echoes Simon Beaufoy’s:

Coriat: Well they always push you when you do an ensemble, to say “but who is the one a little bit more...?” And that was more... when I was writing on my own, with the people who gave me the money. Not Michael but... but there was one thing... the producer said to me about her, the character, that she was a little bit of a pain in the arse. And I was like, I couldn’t understand, I was thinking “Why? Okay, she’s struggling... And surely people would feel empathy for that.” So it’s interesting, because, you know... when people read they bring their baggage. So maybe somebody doesn’t

like weakness. So they won't want to see weaknesses. Or I got told for instance... I shot a film in Poland and we had a screening and the guys afterwards were saying, like, "but the men, the way you portray the men, they're so weak - all the men are really weak" And I never noticed that. I never thought of it that way. But the women as well, all the people are struggling in the film. That's what I think people relate to.

Interviewer: This is a common thread among the writers I've interviewed. That concern coming from others in the production process that the character needs to be likeable or admirable.

Coriat: Even here in France? I would think of that as a very Anglo-Saxon thing. But look at Taxi Driver. The first one that springs to mind is that. Taxi Driver, it's like, okay, how do you explain that. You want to see fascinating people. You don't want to see somebody who's like...

It is particularly interesting that Coriat, unbidden, argues against the view that characters need to be morally preferable in order to be engaging. Later in the interview she reaffirms this stance when talking about Kenneth Lonergan's film *Margaret* (2011), *"this character is not likeable. She's not likeable. She's like... you know, she's a teenager she does very wrong things. She's really like... you think "Why do you do this? You horrible little bitch" kind of thing. And at the same time you just... you feel for her at the end. You feel for her."*

It is clear that Coriat, like Beaufoy, holds an explicit and unambiguous conception that a character does not need to be likeable in order for the audience to engage empathetically with them. When I tell Coriat that some cognitive film theorists argue that a character must have moral preferability within the narrative in order to create viewer empathy, Coriat adamantly refutes the idea.

Coriat: I'm just so shocked. It's so bizarre. You can't imagine anybody... You imagine somebody saying that in the fifties maybe.

Interviewer: In relation to your work, do you think the characters you present are morally superior to the other people in the film? Do you think that's why the audience relates to your characters?

Coriat: No. It's the opposite. Okay, the Polish guys didn't like the way the guys were presented because they were weak, but I think some people would relate to that because, like some guy whose girlfriend's pregnant and in real life they're lost and so they see it on the screen they think "Okay I'm not completely fucked up it happens to a lot of people to have these feelings" that might be complicated feelings. So I think it's the opposite. I think people would appreciate to see... maybe more on an unconscious level they would relate to that. I mean I don't know. Obviously, I was very surprised with Wonderland that it... that people responded so much. And I think it's because of that. It's just those people struggling. You struggle morally. It's like when you make decisions you're not always making the right decision. You want to see the struggle. I mean Martin Scorsese's films. Come on. They love Martin Scorsese's films, the audience. Because I think it shows a lot of complicated things and the appeal of certain dark things. You're talking about gangsters. And it's complex. It's morally complex.

Coriat expresses a strong conviction that the more interesting and engaging characters in screen narratives are often the most morally ambiguous or problematic ones. As Coriat fluently and articulately expresses this disposition, we can reliably assume it is part of her explicit, espoused theory. She also reveals a belief, equally explicit, that a factor in the viewer's willingness to align with morally imperfect characters is that they see themselves as morally imperfect, *"I think it's because of that. It's just those people struggling. You struggle morally. It's like when you make decisions you're not always making the right decision. You want to see the struggle."* Implicit in this depiction of the viewer / character relationship is the sense that a central purpose of screen narrative is to provide a venue for the viewer to wrestle with such moral ambiguities. To struggle with - and not always resolve - competing social imperatives. This notion corresponds with her conception that ensemble narratives that offer variations on the experience of this struggle are strongly engaging and resonant for viewers.

SUMMARY

Coriat was an intriguing interview subject. While her espoused theories concerning *why to proceed* were explicitly held, and expressed articulately and passionately, her operational theories concerning *how to proceed* in solving the problems of her practice were frequently buried deep in implicit, tacit knowledge. As a result, many of her responses were fragmented and digressive. Even so, a number of key conceptions were clearly revealed. These include:

Screenwriting is an intentional act of artistic communication. The screenwriter is intentionally communicating thoughts and feelings to the viewer through the medium of narrative film.

The screenplay exists on one level as a malleable artefact - a product within a commercial world, and on another level as an imaginary world which the screenwriter enters and responds to.

Screen stories that best represent the strength of the medium are complex and layered, exploring difficult characters through nuanced, ambiguous personal moments that communicate their meaning to the viewer through non-explicit, non-literal means. The viewer constructs the experience primarily through unconscious and emotional mechanisms.

The screenwriter creates viewer engagement with character by provoking visceral and emotional resonances that are triggered by witnessing another human being experiencing even the smallest, apparently inconsequential moments in life.

A character does not need to be likeable or morally preferable in order for the viewer to engage empathetically with them. Viewers are most engaged by characters in screen narratives who are morally ambiguous or problematic.

A central purpose of screen narrative is to provide a venue for the viewer to wrestle with such moral ambiguities. To struggle with - and not always resolve - competing social imperatives.

The viewer's apprehension of narrative film relies on unconscious resonances and raw emotional and physiological responses rather than explicit propositional interpretations.

For this reason many readers who are not filmmakers find it difficult to extrapolate from the page the full effect that a moment will have on screen. The unconscious resonances that the medium relies on do not yield easily to succinct, unambiguous verbal description.

The act of screenwriting is an unavoidable balance of non-conscious intuitions and conscious craft.

Ensembles, rather than diminishing focalisation because screen time is shared, actually serve to create a kind of enhanced focalisation through this process of reflection and resonance.

These conceptions are remarkably consistent with those held by Simon Beaufoy, even though the two work in quite different genres and styles. Our next two subjects, Jean-Claude Carrière and Guillermo Arriaga work in different genres and styles again. But, as we shall see, their core conceptions remain remarkably consistent.

INTERVIEW THREE:

Jean-Claude Carriere

Jean-Claude Carriere is a French screenwriter, playwright and novelist. Born in 1931, Carriere learned his film craft working with Jacques Tati and collaborated for many years with director Luis Bunuel and with theatre director Peter Brook. Carriere is one of the most prolific and highly respected screenwriters in Europe, with over 130 produced screenplays to his credit, including *Cyrano de Bergerac* (1990), *The Return of Martin Guerre* (1982) and its US remake *Sommersby* (1993), *Belle de Jour* (1967), *The Discreet Charm of the Bourgeoisie* (1972), *Swann in Love* (1984), *The Tin Drum* (1979) and *The Unbearable Lightness of Being* (1988).

Carriere meets the criteria for selection as a subject in the research project on the basis of significant and sustained critical and commercial success. He has been nominated for and won Academy Awards, BAFTA Awards, WGA Awards, New York Film Critics Awards, and the Palme D'or and Grand Jury Prize at Cannes. David Bordwell called him “one of the most distinguished and respected screenwriters of the last fifty years” (Bordwell 2011, p1). The film from his screenplay *Cyrano de Bergerac* was at the time of its release the highest grossing French film ever. He also contributes to the diversity of the sample group. Even within Carriere's oeuvre there is remarkable diversity. His films range in genre from quirky absurdism, to intimate realist human drama, to sweeping historical romance. Carriere's on-the-job training with master of filmic comedy Jacques Tati, and his collaborations during his formative years with art film auteurs Godard and Bunuel provide Carriere with a unique perspective on the craft of screenwriting. Carriere is fond of recounting his first lesson in film making, given him by Tati, which consisted of watching *M. Hulot's Holiday* on a flat bed editing machine, shot by shot, and line by line. What this taught Carriere was an appreciation of “the film that you don't see” (Bordwell 2011, p1). It also instilled a belief that

“Writing for films requires a know-how, a technical knowledge. You have to know how a film gets made. If you don't, there is no point in writing” (Colville-Anderson 1999, p1). Carriere has lectured and taught screenwriting extensively around the world, for a time overseeing the French film school la FEMIS. And he has published his thoughts on the craft of screenwriting in his books *The Secret Language of Film* (1994) and *Exercice du Scénario* (1990).

I met Carriere in his house in Paris where we conversed for two hours without interruption. Carriere is an enthusiastic raconteur and enjoys regaling the listener with anecdotes from his time working with Bunuel, Brook, Godard and others. At times this meant that he was apt to stray from the questions. It also meant that, because these anecdotes are well rehearsed, it was at times difficult to move Carriere beyond the comfort zone of his familiar espoused theories, and get him to enter the less comfortable and less familiar territory of his operational theories - and to examine the minutia of his practice. While he has a love of philosophy - as one might expect of a Frenchman of his generation - he has markedly little tolerance for film theory. Carriere clearly sees himself as a craftsman and a collaborator, and the work of film making itself as something greater than any single participant.

I begin by asking what he believes to be the purpose of screen narrative. His response typifies his pragmatic view of his work:

“Capture an audience. That’s all. There are many different ways. I mean... You can make them cry, can make them fear, or laugh. Every time you need to get a reaction from them but the main thing is... your real job is [...] to keep the audience in the theatre. If they leave, that’s a bad sign. [laughs] [...] To keep them captivated. And to make this encounter unforgettable.”

Carriere’s response conveys a number of key conceptions. His conviction that viewer engagement is essential to screen narrative is evident in his reiteration that the narrative’s purpose is to “capture an audience”, “to keep them captivated”. Also clearly conveyed is an understanding that this is a job intentionally undertaken by the screenwriter, “your real job is to keep the audience in the theatre” (later in the interview he

reiterates that the screenwriter's job is *"to lead us where he wants us to go"*) and that this is job requires a range of skills and strategies, *"There are many different ways"*. Also clearly expressed is his view that this task is accomplished primarily through provoking emotional experience in the viewer, *"You can make them cry, can make them fear, or laugh... every time you need to get a reaction from them"*. And finally, his response conveys a conception particularly dear to Carriere - that the experience of the narrative should in some way be transcendent, *"to make this encounter unforgettable"*. So, Carriere's apparently succinct and matter-of-fact response actually reveals a cluster of quite complex and technically challenging ideas. Perhaps it takes someone who has written over a hundred produced screenplays and collaborated closely with some of the great film and theatre minds of the twentieth century to make it all sound so simple. As the interview progresses, it becomes apparent that beneath these simple 'headlines', Carriere's understanding of each of these conceptions is anything but simple.

I raise the question of the degree to which this orchestration of the audience's experience is controllable by the screenwriter. Carriere's response is that it is an endless process of refinements and adjustments in response to the shifting and alive nature of the audience,

"The notion of audience is very mysterious. [...] Every day it will change. That's a mysterious phenomenon. With the same story, the same acting, the same directing, from one day to another day the reaction is not the same. The silence is not the same. The laughter is not the same. Why?" [...] "the whole society around them, around the audience, around the actors, is not the same" [...] "In film we all know very well that the reactions of the audience at four o'clock and six o'clock are not the same. The same day. And you have to admit, that, as Peter Brook says, some things work, you never know why. When they work, don't change them. Some other things don't always work. And some do not. So you better get rid of the ones that do not work."

Carriere clearly construes the viewer's response to the film as situated and embodied. The audience come to the screen narrative not as blank slates, but rather as real, living, conscious organisms who are also situated and embodied in a real world. For this reason the viewer's interaction with the narrative will inevitably shift

depending on the nature of their real world context “*the audience at four o’clock and six o’clock are not the same*” because “*the whole society around them, around the audience, around the actors, is not the same*”. However, Carriere sees that despite this variability there are nevertheless some universal constants that are within the screenwriter’s control, “*some things work... don’t change them*”, “*And some do not. So you better get rid of the ones that do not work.*” Revealed here is the conception that the screenwriter’s work is also situated and enactive, evolving in a cycle of real or imagined responses between screenwriter and viewer. These notions are consistent with the theories discussed in Chapter 2 of enactive thought and dynamical systems (Lakoff & Johnson 1999; Noë 2009; Hotton & Yoshimi 2011). I ask Carriere how aware he is of using this kind of situated dynamical system when he is actually in the process of writing, and he confirms that it is completely aware and intentional. He illustrates with the example of a process he used when working with Luis Bunuel. To ensure that they never lost touch with the sense of interacting and communicating with a real audience while they were in the act of screenwriting, Carriere and Bunuel invented an imaginary middle-class couple, Henri and Georgette, with whom they would converse as they worked:

Carriere: When we were working, Bunuel and I, we had imagined a couple of French petit bourgeois always with us - Henri & Georgette. Then there were not two people - there were beside us two people also. And our main purpose was to keep them with us until the end of the film. If they stand up and go out of the theatre, that’s bad.

Interviewer: And not just to keep them there, but to challenge them and see how far...?

Carriere: Totally. Yes. From time to time they were very useful too, “What do you think about that Henri?” We were talking to them.

Interviewer: So you and Bunuel would stop and talk to them while you were working...?

Carriere: Absolutely. We would stop and talk to them. I still remember Bunuel, when I was, for instance, proposing an idea that he thought was too extravagant, he would stand up like this, taking his notes and say, “Let’s go, Georgette. This film is not for us.” And he would go out of the

room, you know. [laughs] That's a very good way. Always to think you are not alone. That we are working for an audience.

Carriere notes that this situated, interactive process is even more typical of writing for the stage, and talks about his experiences collaborating with theatre director Peter Brook, and the degree to which moments were refined, sometimes over the course of years and hundreds of performances,

"...we were watching all the rehearsals and performances here and there in theatres and jails and asylums... before we were starting at the theatre. And then we would - for at least the first twenty-five, thirty performances - we would attend, writing down notes. And after the end of the performances, talking and working with the actors. Just to try to reach with the help of the audience what could... changes in the text that you cannot do in the film."

Carriere revisits this idea several times throughout our interview, always with the sense that this situated interaction is the ideal process for a writer. However he duly observes that there is, as a matter of practical necessity, a limit to how long this can go on in a film production, and illustrates his point with an anecdote about filmmaker Jacques Tati,

"At the premier of M. Hulot's Holiday, was in the projection booth changing the editing. The people were in the theatre clapping "Commencez!" (Start, start, start!). Because in the afternoon at another private screening some of the reactions were not exactly the ones he was waiting for. So he was trying to cut to... make it longer or shorter, I don't know. Desperate. You cannot every screening change the editing - it's impossible."

I query whether Carriere sees this constant refining, and the application of craft skills that it requires, as an act that is carried out intellectually or instinctually by the writer. Once again Carriere responds with an anecdote,

"There is a beautiful phrase by Jean Louis Barrault. Which I quote all the time: 'The author never knows about what is right... he writes what appears good, fair and alive at one moment."

But it can come from many different directions. He cannot analyse himself what he is writing because it doesn't work if you write according to certain logical concepts, theoretical concepts... One day in rehearsal an actress came up to him and she said - he was a very polite man - she said "I'm sorry, but I don't understand my character, page 27 she says this, this, this, and then on page 51 she says that, that, that. How am I supposed to do this, my motivation, psychology, it must be clear, it's what all the actors say, all the actors all over the world. And he said, "Yes, but why do you ask me that? I am not the character. I am the author". [laughs] It's the perfect answer. The author doesn't know. [...] He doesn't know what he wrote, so don't ask him."

It is clear from this that Carriere considers the writer's work to be, to a significant degree, intuitive and non-conscious. Yet it is equally clear that he simultaneously holds a number of craftsman-like notions of writing as a job the writer undertakes with deliberate intentionality and to which he applies a set of skills and knowledge and a conscious awareness of their effect on an audience. Carriere's comfort with this apparent contradiction demonstrates that he conceives of the screenwriter's understanding of his work as partly explicit and partly tacit.

I explore the borders between these explicit and implicit understandings by asking Carriere where his focus is when he is actually immersed in this process of writing, responding and rewriting, whether it is character, or plot or theme, Carriere responds, *"I care about the action. Everything comes from the action. Working on the characters is easy."* Essentially, for Carriere, a film character is the sum of his actions. *"You know, the way he behaves. Already gives you some indication. That's creating the character in what he does. The way he does what he does."* *"It's always easy to talk about what the scene should do. [...] For hours. And then at one moment someone goes like this [claps hands] "Who enters and what does he do?" The action always is the model."*

Carriere's espoused theory is that the viewer's engagement and the meaning of the narrative are driven by the character's actions. His operational theory is that the screenwriter chooses these actions intuitively, applying conscious analysis only to evaluate whether the chosen character action will "captivate the audience" and "make the encounter unforgettable". Carriere is dismissive of the value of attempting to

consciously interrogate, justify or pre-empt the non-conscious, intuitive elements of the process, because *“the author doesn’t know what he wrote”*, and therefore *“he cannot analyse himself what he is writing”*. This belief in the need to surrender conscious control of aspects of the work is not unique to Carriere. It is a common and constant feature of the way expert screenwriters conceive of the process of screenwriting. As discussed in Chapter 2, it is compatible with the models of tacit knowledge proposed by Polanyi (1966) and Argyris & Schon (1982). It acknowledges the role of cognitively impenetrable learning mechanisms and enactive thinking within dynamical systems. Carriere’s approach might be summarized by paraphrasing Niebuhr’s Serenity Prayer; “God grant me the serenity to accept the things I cannot control, the courage to control the things I can, and the wisdom to know the difference”. Carriere sees the screenwriter’s surrender to the non-conscious parts of the process as a kind of wisdom that results in the most authentic work,

“...we all know today that we have a subconscious. Dr. Freud told us that we have. So - what about our characters? Do they? If we want them to be really alive, we must admit that they have a subconscious that we don’t know. I’m the author. I don’t know. The best moment always is when one of the characters surprises you. ‘My god, is that possible that he said that?’ [...] in this moment, for one reason or another, the character comes alive.”

Conversely he sees the attempt to make the non-conscious parts of the process conscious as futile and trite, a view he states very forcefully, *“Theory is to apply what was successful before”* and *“Theory is easy. You must understand. Very easy to write theory. Practice is difficult.”*

I prompt Carriere to elaborate on what it means for the character to “come alive” and why that is important. I begin by asking how he judges that aliveness, whether it is an instinctive feeling or a conscious assessment. Carriere responds,

“After a few days or a few weeks when you go back to what you have written that day all of a sudden you realise that the character was right and you were wrong. When it comes from an unknown origin it’s always right. We have to work with our... Bunuel used to say that every good writer every

morning has to kill his father, rape his mother and betray his country. Which is exactly what our characters do. If we prevent them to do this because logically they shouldn't do it then we are wrong. We prevent them to be alive. Because you and me we are unexpected in our lives. The same for our characters."

Carriere's perspective is that by applying conscious evaluations the writer is likely to censor their choices and thus remove the extremes of human behavior and emotion that are the stuff of great drama, which relies on capturing what is "*unexpected in our lives*". Carriere is strong in his belief that "*it doesn't work if you write according to certain logical concepts, theoretical concepts*" arguing that "*If you decide before, what the characters are going to do and say, you are lost. Because you cut this possibility.*" But there is a potential danger in this uncensored approach. It may result in the writer simply striving for effect, reaching for the gratuitously outrageous, surprising or confronting moment. I ask Carriere how he monitors this danger.

"What the character tells you in that moment comes from you, of course. It has no real existence. So it's part of you that can not express itself by your own movement – it needs to go through the character. But it's part of you of course. So that's why it's right. It's the only way for the writer to say more than what he thinks he could say... Probably that's why we write."

Carriere believes that writers, and indeed all people, have within them unexpressed and unacknowledged drives and emotions and potentials, which, although suppressed, are authentic parts of their experience and psyche. And if the writer is allowed to express himself in the absence of conscious censorship, then these hitherto suppressed elements of his psyche will emerge. This idea is so widely accepted among psychologists, that it may seem unremarkable (Gendlin 1996). However, in the context of the present investigation, it offers evidence of the perceived benefit to the screenwriting practitioner of applying tacit rather than explicit declarative knowledge. In an art form which is fundamentally concerned with laying bare the subterranean workings of the human psyche, it is arguably advantageous for the artist to adopt a procedure that allows him to bypass conscious censorship and access the extreme, the

socially unacceptable and the taboo, in a way that is authentic and truthful to his own experience.

Nevertheless, Carriere's response, while justifying the validity of the process, does not actually address the core concern of my question: How does he monitor and assess the authenticity of these extreme, surprising or socially unacceptable character actions? This pattern of response from the interviewee - stating an explicit espoused theory (why to proceed) and then, when directly asked, failing to articulate the attendant operational theory (how to proceed) - indicates that the screenwriter is applying tacit knowledge (Sternberg & Horvath 1999). As discussed by Nonaka & Takeuchi (1995) one reason for this is that declarative knowledge and tacit knowledge run on separate, parallel neural 'tracks'. Many people - including practitioners who habitually use tacit knowledge in their practice - have great difficulty connecting the two. Carriere appears to be one such person. I encourage Carriere to elaborate, to see if a clearer connection between his espoused theory and his operational theory will emerge. His response is protracted, and oscillates between abstract principle, anecdote, and analogy - common fallbacks when the subject is unable to directly state 'how to proceed':

"We all - you have and I have - somebody inside me. I don't even know if it's man, woman or boy... what we call the invisible worker. For instance I worked for two months closely with Luis on a script. Finally we reach a first version of the script - 100 pages. Then we go away. Bunuel goes back to Mexico, I am coming back to Paris. I work with Peter Brook on something totally different. Then we meet again two months later... which is on the same script, which has been sleeping all this time. And all of a sudden we start looking at things that we liked before and we don't like them no more - they look ordinary, commonplace, bad. And some solution that we were looking for, suddenly we find them. Why? Because our invisible workers they have been working day and night during these two months. I talk with psychologists, even with scientists, about it and they agree. We have part of us, when we are a real writer, a part of us which works and works with sort of a stubborn... and it's a very good worker because you don't have to pay him, you don't have to feed him, he's never on strike. He's a very good worker. So you know that when you work on something, from time to time you will find that the unconscious will help with the writing. You close it and forget about it - you believe you

forget about it but you don't. The invisible worker is keeping working. And that's absolutely wonderful when it happens. And you must know that. And that you learn, step by step all along the line."

What Carriere is describing here is the "eureka" effect arising from what psychologists call an "insight" solution to a problem (Jones 2003). The phenomenon has been widely studied in psychology (Dorfman, Shames & Kihlstrom, 1996) and anecdotal evidence from science is abundant, with stories of Einstein, Crick, Sir Alec Jeffreys, Edison, and of course Archimedes contemplating difficult problems, only to have the solution appear to them unbidden in a moment of repose. Carriere's conception is that this type of insight solution is a routine event in a screenwriter's work, *"We all - you have and I have - somebody inside..."*; *"You close it and forget about it - you believe you forget about it but you don't"*; *"some solution that we were looking for, suddenly we find them. Why? Because our invisible workers they have been working day and night"*. He also holds the conception that part of becoming expert as a screenwriter is learning to accept this, *"if you are really a good scientist or a good writer you know..."* and surrendering to it, *"you must know that. And that you learn, step by step all along the line"*. In terms of practical process, Carriere is expressing a belief that it is desirable to have an incubation period between the writer's initial draft and a revised draft in order to allow time for unconscious processing of the core problems of the work. Underpinning this belief is a broader conception that effective screenwriting is not the result of conscious, conceptual-representational thought. In contrast, Carriere argues that the screenwriter benefits from deliberately avoiding conscious thought - allowing the "invisible worker" to do their work.

I enquire whether he can offer any specific examples of this phenomenon in his film work, and Carriere responds with two anecdotes, one about working with Peter Brook adapting their stage version of *The Mahabharata* (1989) to the screen, and one about the film director Jerzy Skolimowski directing his first play,

"Skolimowski is a Polish film director. He made some very good films. One day in Warsaw about six or seven years ago he went to direct his first play on stage. And when they came to the first

flush something goes wrong. And nobody could see what it was. He was thinking, you know - the writer told me, he was there - and he was thinking and trying many things. So one day one of his assistants got the idea to shoot it and to show it to him on screen... and then he found it. What was wrong. Isn't it fantastic? As a film maker he found what was wrong. And he change it. It's a different vision."

Carriere's story about Skolimowski also indicates that Carriere holds some nascent intuition of perceptual learning as "*a different vision*" that the artist develops which is particular to the demands of his craft. This representation of the screenwriter's mastery is completely aligned with the literature on perceptual learning from psychology and neuroscience (Goldstone 1998; Bolwerk et al 2014). When I ask if this kind of insight is entirely the result of intuition, of "the invisible worker", or if the writer is applying some kind of personal theory, Carriere is ambivalent. At times he says that there are theories and rules that the expert writer must be aware of, stating that:

"I do believe, and Peter Brook agrees, that every theoretical has its good with its bad", and, "Of course there is a certain number of rules that the Greeks and the French Classics established. You have to know them but then to forget about them. You have to know the rules to break them".

At other times he indicates that theory is personal and the rules are fluid:

"You know, every day, every play is different. And you have to find a new approach every time you work again on a new play or a new film", and the problem with theory is that, "theory is to apply what was successful before [...] but it changes all the time. Within the rules." And that "these rules, they vary according to the play, you know" meaning that ultimately, "Every good writer has his own writing".

However, when pressed to consider what theories or rules he himself might apply to specific narrative problems, Carriere strenuously rejects the entire notion of theory altogether:

“Forget about theory. All these words mean nothing to me.” He insists that, *“every great film we’ll remember doesn’t follow anything... It broke all the rules”* and that ultimately, *“Every adventure is a new one. There is nothing – no conclusion to draw from another experience before. You have to consider that it is alive, it is direct.”*

Carriere’s perspective on the value of explicit theoretical knowledge shifts in a marked and consistent manner. When considered from the most general or historical perspective, he concedes that there are theories of varying degrees of validity: *“every theoretical has its good with its bad”*, and that, consistent with his craftsman-like approach to the job of screenwriting, that there are certain inescapable considerations - rules or principles - and that *“you have to know”* these before you can circumvent them. In contrast, when any general narrative consideration is raised to which these putative theories or rules might apply, Carriere’s position shifts, such that theory is seen as essentially restrictive and conservative *“what was successful before”* and rules as fluid and contingent, *“they vary according to the play”*. And finally, when the question is raised of whether a specific theory may apply to an actual instance of his own work, Carriere’s position shifts again to an outright rejection of all theory, *“Forget about theory. All these words mean nothing to me”*, and an equally emphatic denial that there are any inescapable considerations for the screenwriter, *“every great film we’ll remember doesn’t follow anything... It broke all the rules”*.

Quite clearly his first and last position flatly contradict each other. What is indicated through this shifting perspective, is that while Carriere accepts a historical poetics of dramatic writing, he is deeply resistant to thinking analytically about his own act of writing. For Carriere, the act of writing is situated and enactive, *“it is alive, it is direct”*. And it is mysterious *“the author himself doesn’t know. He doesn’t know what he wrote. So don’t ask him”*. He suspects that explicating the principles that guide his intuitive process will somehow destroy the process. This fear is representative of the “skepticism toward rationality” that sometimes attends discussions of tacit knowledge (Toom 2012, p4). Carriere’s inability or unwillingness to connect these two types of knowledge exemplifies Nonaka’s (1995) model in which propositional knowledge and

tacit knowledge may co-exist, but remain disconnected, running in parallel on separate ‘tracks’. I persist in probing Carriere in search of a connection between the two.

Interviewer: How do you feel about theories of screenwriting?

Carriere: I don't know anything about it you know. The theory of screenwriting has been published by people who never worked in that form. It's sad but true. I know this theorist who comes here from time to time. Every time he comes to Paris he comes to teach and I say to him when are you going to write a script?

The supposition Carriere communicates forcefully here is that one cannot truly understand the product of a particular practice unless one is able to produce it oneself.

I ask Carriere his thoughts about the theory proposed by cognitive film theorists, that in order for the viewer to empathise and engage with the character, the character needs to assume a superior or at least preferable moral position to other available characters in the narrative. Carriere's response is blunt, *“What's the moral superiority of [...] Macbeth?”*. And later he reiterates, *“Macbeth. Of course everybody is waiting for Macbeth to die. We know very well he is going to be castigated. Punished. But the character is so magnificent and the way he is drawn - by himself and with lady Macbeth that we are transfixed. Here we are at the top of the top.”* When I ask if he can think of any instances in his own work where engagement with the character is created by placing them in a superior moral position, Carriere is adamant,

Carriere: No. I don't know what it means. I don't understand what it means. The character has to be interesting, touching, we have to be interested by what's going to happen to him, to be close to him, sometimes to reject him. It depends very much. Of course we must establish a relation but this sort of moral superiority – maybe that could go for the Greek heroes...”

Interviewer: I'm very interested to hear your thoughts about this theory in relation to Cyrano de Bergerac. Because when we first meet him in that film, he's violent, he's angry, he's breaking up a public occasion - these are all things that we wouldn't necessarily say were a highly moral person.

Carriere: No. But yet we had an incredible surprise with Cyrano de Bergerac. Because at that time it was the number one public success of French cinema in the world ever. Millions of people.

Carriere unequivocally rejects the notion that a preferred position in the moral hierarchy is important to character engagement. On the contrary he holds the conception that great dramatic writing is concerned with holding the viewer “transfixed” with morally ambiguous or flawed characters like Macbeth, “*Here we are at the top of the top*”. He also speculates that such characters hold popular appeal for mass audiences, explaining why Cyrano could be “*the number one public success of French cinema in the world ever*”.

I ask if he believes it is important for the audience to engage with the character. “*Of course. You have to care about them not to make the audience getting bored.*” Implicit in this response is an assumption that to engage with the narrative, the viewer must engage with the character. When I press him to describe how he as a screenwriter creates this engagement with character, Carriere is dismissive of character psychology, and states emphatically that he is concerned purely with character expressed through action,

“Chekhov ... took the right choice... everything comes from the action. What you do... make him or her do something. And then we’ll see who they are by how they do that. It’s the action. Character doesn’t mean anything. The Psychology of the character is absurd. Because you can on the paper decide that she’s introverted, that she thinks about her father who died, and it doesn’t bring anything to the comedy, to the acting. The action yes.”

Later in the interview he reiterates this belief, and elaborates,

“Of course we have to be interested about what’s going to happen to the character, in the story in general, if not we have no reason to pay our ticket. And also not only this, not only we have to be interested in what’s going to happen, but how is it going to happen... [...] ...sometimes the writing is surprising. You have a surprise at every phrase, like in Jarry. So that it keeps your mind awake.”

Two conceptions are revealed here. First, that viewer engagement with character is necessary. Carriere holds this to be so self-evident that it barely warrants discussion. Second, that the unfolding of the plot also plays a part in engaging the viewer in the narrative, specifically in terms of playing with the audience's predictions and "surprising" the viewer. This arrangement correlates with Bordwell's account of how the viewer's cognitive construction activities engage them in the narrative (Bordwell 1985). It also correlates with several cognitive phenomena that will be discussed in Chapter 6.

When I raise the notion, shared by a number of leading cognitive film theorists, of the importance of focalisation to the creation of viewer empathy for character, Carriere is once again dismissive, *"If you count the minutes the character must spend on stage, then you're lost - that doesn't mean anything. A good writer plays with time and pace."* The screenwriter's take is that time on screen is irrelevant to creating engagement with the character.

The subject of authorship raises less ire from Carriere. Indeed he freely discusses the fluid, collaborative nature of the writer / director relationship he has experienced with Bunuel and Brook, *"At one moment it's difficult to make the distinction between writing and directing. But when I'm writing the production of Mahabharata, Peter is always there, and when he's directing, I am always, you know, there too. So in a way we have to separate, you know, our work, but at the same time to be together"*. In discussing the nature of this collaboration he reaffirms the conception communicated in his opening statement that the screenwriter's job is fundamentally practical, and proceeds from a deliberate intention to solve particular problems, *"It's not just a question of writing, it's a question of thinking about how the film is going to be made"*. Once again Carriere illustrates with an anecdote:

"In the fourth act of Cyrano, the French army is surrounded by Spanish army and they're starving to death, they have nothing to eat. It means they cannot go out. But every morning Cyrano goes to mail a letter to Roxanne who stays in Paris. So in the theatre it's easy. He goes in the wings, he goes off stage and comes back. But in a film you have to be realistic. It's impossible. So you have to

find a way how is it possible for him to be able to cross the Spanish line. I had invented a few ways... but they didn't do them they were too expensive. But somebody said to us in the 17th century the wheat in the field was much higher than today – 30 or 40 centimetres higher. So that it was possible to hide. So we went to the museum of natural history in Paris. And we asked them if they had seeds from the 17th century. They had. A lot. We said could you send them to us for a film? They did on the condition that we would give them back. So a year before the shooting was to take place we went to prepare the plain - huge place and they put the seeds in and we were waiting all the winter. In March it began to show and in June it was yellow and beautiful. And then it was even the poster with the wheat and the feather of Cyrano's hat and so. But I just tell you that this is a problem, which has to be solved right away in the script because you have no time when you are shooting... "What should I do?" You have to think about all this."

Here (in one of his well-rehearsed anecdotes) Carriere is reiterating the point made wryly by Billy Wilder, that the events, characters, images and tone that are interpreted through performance, *mise-en-scene*, lighting, camera angles and music must be supplied, in the first instance, by the screenwriter.

Finally, Carriere also talks freely about the nature of the relationship between the characters, audience and storyteller, echoing Simon Beaufoy's observation that the audience needs to feel a sense of trust in the storyteller, to understand the nature of the contract they have engaged in. Carriere illustrates with an anecdote about the first scenes of *The Mahabharata*, a nine hour stage adaptation of an ancient Indian classic, for which he and director Brook understandably had some concerns that "*the danger was that the people would come and see a "cultural must" and maybe there was a risk it could become a little bit boring*". So Carriere devised an unexpectedly bawdy joke for the God Ganesha in the first minutes of the first scene, and the effect of this one small signal to the audience, "*...it was incredible. The effort was good for the whole play. Because the audience felt relieved. The audience felt that the people had the right to laugh. They were not going to a mass. And that's priceless. It doesn't change anything to the play. The play has many different levels anyway, layers. But it established a contract with the audience which is very, very precious*". Implicit in this is the conception (shared with Beaufoy) that in order to induce the viewer to accept this contract, certain types of inherent resistance must be overcome (Moyer-Gusé 2012).

Carriere operates from the foundational conception that the writer is deliberately coercing the audience to engage with and respond to the piece in the manner he wishes them to, *“That’s the miracle of the writing, how is it going to be written, how the author is going to lead us where he wants us to go.”*

SUMMARY

Interviewing Carriere was a unique challenge. He is a commanding raconteur with an extraordinary depth of experience. But he is a paradox. On the one hand, he is a craftsman who is comfortable talking in general terms about the nuts and bolts of screenwriting. On the other hand, his conviction that his own process of writing is a mystery, and should remain so, frequently made it difficult to coax him to move beyond his well rehearsed anecdotes and confront the uncertainty that inevitably results when a practitioner attempts to explicate his tacit knowledge. He has not, in Nonaka’s terms, closed the “spiral of knowledge”. And, now in his 80’s and at the close of a prodigious career, he is not inclined to begin doing so. Nevertheless, Carriere did reveal a number of core conceptions that inform his practice. These include:

Screenwriting is an intentional act of artistic communication. The writer intentionally coerces the audience to engage with and respond to the piece in the manner he wishes them to. And this is job requires a range of skills and strategies.

Viewer engagement with character is essential to apprehension of screen narrative.

Viewer engagement with narrative is created primarily through provoking emotional experience in the viewer.

The viewer’s response to the film is situated and embodied.

The screenwriter’s work is also situated and enactive, evolving in a cycle of real or imagined responses between screenwriter, viewer and screenplay.

The screenwriter’s understanding of his own work is partly explicit and partly tacit.

The viewer’s engagement and the meaning of the narrative are driven by the character’s actions, which inevitably involve telic concerns. Unexpected frustration of the character’s telic concerns is an essential component of viewer engagement with

narrative.

In order for the viewer to empathise and engage with the character, it is not necessary for the character to assume a preferable moral position to other available characters in the narrative.

In order for the viewer to empathise and engage with the character, it is not necessary for the character to be focalized through greater screen time.

Once again, even though Carriere is working in quite different styles and genres to Beaufoy and Coriat, and even though he adopts a much less analytical view of his own process, there is nevertheless a substantial overlap of conceptions.

INTERVIEW FOUR:

Guillermo Arriaga

Guillermo Arriaga is a Mexican screenwriter and director. Born in 1958 in Mexico City, he is known for his striking multi-protagonist non-linear films, including the Academy Award nominated *21 Grams* (2003), as well as *Babel* (2006) and *Amores Perros* (2000), all directed by Alejandro González Inarritu, and *The Burning Plain* (2008), which Arriaga himself directed. Growing up in Mexico City, Arriaga was witness to casual brutality which has found its way into his films in various guises. Despite this, and his well-publicised passion for sports and hunting, Arriaga pursued a formal education, completing a BA in Communications and MA in Psychology, and went on to lecture at the Universidad Iberoamericana. Arriaga began his writing career as a novelist, influenced by other South American novelists like Martín Luis Guzmán “for his narrative suspense”, Hernando Téllez, a master “of intrigue, of revealing human nature”, and Fernando Butazzoni for his “powerful look at the relationship between life and death” (Prieto 2001, p71).

Arriaga meets the criterion for selection in the sample group for this research project on the basis of the overwhelming critical acclaim that his work has received. His screenplays have been nominated for Academy Awards, Golden Globes, WGA Awards, BAFTA Awards, as well as Cannes, Venice, Sundance & Toronto Film Festival Awards. He also contributes to the diversity of the sample group. His Mexican origins and lack of formal screenwriting training ensure that the conceptions shared by the screenwriters in the sample are not Euro-centric, or the product of the traditional film-school curriculum.

I interviewed Arriaga via skype. Arriaga was in his office in Mexico city, where he writes from midnight until dawn. We spoke for just over an hour. He was articulate, passionate and disarmingly frank about his work and his process. The conversation,

like Arriaga's screenplays, was non-linear, jumping freely back and forth between topics.

I begin by asking his thoughts on why we tell stories. Arriaga's response is unhesitating and clearly articulated - indicating that he holds a well-formed espoused theory on the matter:

"We are used to see the world like this, you know. [Arriaga cups his hands around his eyes like blinkers] And fiction, what it does, it is like, it helps us to turn some other place. And turning to that other place, helps me understand where I'm standing [...] And this has been going on since we were painting... animals in the caves, and hunting with spears, no? We have that need. We have a need to portray what happens to us. [...] The word in Spanish, 'entertaining', the root comes from being out of yourself. To be a little bit out of yourself. [...] an experience of being different. Of watching something that I am not. Of experiencing emotions that I don't have. [...] It becomes something that transforms your way of seeing life."

It is clear that Arriaga sees narrative as a way of expanding human experience by indirectly or vicariously sharing others' experiences. I ask if he thinks this expansion is experienced by the viewer primarily intellectually or if it is a more emotional or visceral experience. Arriaga's response is again emphatic, but this time a little more fragmented, a little less easily articulated, *"No. This, this is a process you can see between creators. You cannot have any, uh, will, and, you can have no, no powers."* This fragmentation suggests that he may be skirting the fringes of the "unclear edge of experience" – straddling the border between explicit and tacit knowledge (Sternberg & Horvath 1999; Preston 2012). Having done a few of these interviews now, I recognise the signs. And I experience a little charge of excitement. I know that if the subject is willing to explore this disconcerting territory, there is likely to be a surprising and illuminating revelation of some kind hidden there.

I encourage him to continue, prompting him by asking if this shift that takes place in the viewer is not intellectual, then what is it? *"This is completely... this is a complete work of intuition. It's a complete work of sensibility."* The belief revealed here is that the effect

of the narrative on the viewer is primarily non-conscious “*a complete work of intuition*”, and sensory “*a complete work of sensibility*”. This construal agrees with the other screenwriters interviewed, and accords with the view of embodied thought proposed by Noë (2009) and Lakoff & Johnson (1999). In contrast it contradicts the view of mainstream cognitive film theorists such as Carroll (2003), Bordwell (1985), Smith (1995) and Plantinga (2009).

I ask if it is important for the viewer to be emotionally engaged with the character in some way. Arriaga’s response is immediate and forthright, “*I think that you have to be emotionally engaged but I disagree with people that say that you must have likeable characters.*” It is noteworthy that Arriaga, uninvited, argues against the notion that characters need to be likeable to be engaging. Arriaga believes absolutely that viewer engagement with character is essential. Elsewhere he states adamantly that viewers “*have to be invested in those characters*”. But here he expands, unprompted, on the question of likeability and morality. Arriaga believes that neither are necessary or desirable prerequisites for a dramatically interesting or engaging character:

Arriaga: If you, if you, if you go through my films, I have, uh, written the most disgusting kind of people.

Interviewer: Yep.

Arriaga: Amores Perros for example... Have you seen Amores Perros?

Interviewer: Yes, yes.

Arriaga: Okay, Amores Perros, the guy, Octavio... he’s trying to steal the pregnant wife of his brother...

Interviewer: Uh huh.

Arriaga: And for doing so, he’s trying to get money fighting his dog. And he doesn’t give a

damn about anything. He's not a likeable character. Then, the character of the, of the hit man. He's a guy, a hit man, you know? He kills people.

Interviewer: Yes.

Arriaga: He cares more about his fucking dogs than human beings.

Later, when talking about the character of Jack in *21 Grams*, he reiterates, *"But you know this is a guy, who runs over a family, he escapes and, uh, even there you have some understanding of him."*

The question of likability or morality was not raised by the interviewer. But Arriaga's espoused theory on this question is clearly strongly held. In direct contrast to cognitive film theorists Smith (1995), Carroll (1999) and Plantinga (2009), he believes it is not essential - nor even desirable - for the character to be morally preferable. Quite to the contrary, Arriaga believes that the screenwriter's aim is to explore morally problematic characters, *"Because what I'm trying to portray is not... Is the contradiction in the human soul... [...] trying to create characters that have a, um, having... are going in one direction and they don't want to stop going in that direction [...] What I'm obsessed with is, is playing the contradictions."* But in doing so, it is important for his viewers to be empathetically engaged with these characters. Arriaga is adamant that the viewers *"have to be invested in those characters."* Arriaga judges the success of his screenplays (and the resultant films) by their emotional impact, *"I saw people crying, crying, just reading it. The reason it was greenlighted is, and the President, the CEO, told me this, is that she cried so much that she said it had to be made."* He sees this emotional power as emanating from connection with the characters. This is confirmed elsewhere when he talks about the international success of *21 Grams*, *"And there were people from Vietnam and from Finland saying me that I was telling the story of their lives [laughs]."*

I probe for specific operational theories concerning how he provokes the viewer to become *"invested in those characters"*. I ask if this emotional investment is reliant, as some theorists (Smith 1995, Grodal 1997) suggest, on pictorial focalisation

of the character. Arriaga immediately rejects this notion, *‘It has nothing to do with screen time, it has to do with point-of-view. Who is gonna carry the story and why? It’s that simple. [...] audiences need to grab to something to experience the move of the story and basically they grab to the point-of-view. More than the screen time. More than close-ups.’* Several conceptions are packed into this response. The first is that pictorial focalisation is incidental as a driver of viewer engagement with character. The second is that the viewer’s engagement with character is a portal to their engagement with, and comprehension of, story. This echoes Beaufoy’s belief that the viewer can engage with story and with character, and that the most effective kind of engagement is when the viewer engages with story through character. Interestingly though, Arriaga doesn’t actually directly address the question of *how* this POV is created. But throughout our non-linear discussion I keep returning to this question, and lucid fragments of an espoused theory are incrementally revealed.

One surprising revelation is that Arriaga sees fragmented non-linear narrative structure as a way of creating emotional engagement with character. With a structure that offers *“no clue of when is the present, when is the past, when is the future and three stories so I had the third of the time”*, the demands on the viewer’s cognitive construction activities are increased. As a result the viewer is placed in a position *“where they don’t know what’s going on, they begin to build a story of their own. So they’re getting, they get engaged”* [...] *“I think that the audience has surrendered and the only way to get attached to the film is emotionally.”* The startling insight Arriaga is revealing here is that, in the absence of a coherent, conceptual framework, the viewer is compelled to rely more on visceral and emotional clues and connections. This is an intriguing proposition – that non-linear narratives, by placing exhausting demands on the viewer’s story construction capabilities, can force them to respond on an intuitive emotional level. This account offers a potentially valuable contribution to the existing theoretical discussions of the workings of non-linear films, as undertaken by Buckland (2009) and Murphy (2007). Although it is counter intuitive, it dovetails with Beaufoy and Coriat’s notion that ensemble narratives can enhance the viewer’s engagement and the emotional resonance of the narrative, via the juxtaposition between world views and emotional states of the characters. Arriaga also specifically reiterates this idea, arguing that even though each has less screen time (and thus less

focalisation) *“You know, most of writers they have 120 pages to make interesting the life of one character. In my case I had three stories so I had the third of the time to make them interesting”* a cumulative or symbiotic effect is created by the resonance between the separate narrative strands, by *“playing the contradictions”*. In Chapter 7 I discuss evidence from neuroscience that suggests that this apparently counter intuitive narrative strategy may have a strong neural basis.

Arriaga volunteers a further hypothesis about the effectiveness of non-linear narrative structure, which, though it is not directly connected to the question of viewer engagement with character, is pertinent to the question of viewer engagement with story. Arriaga believes that non-linear structure is more naturally representative of how people think of, and use, story in every day life: *“And listen, we, in real life, we use very sophisticated narratives. We tell, uh, a story in daily life, we use extremely sophisticated structures. We never go linear, ever in our lives. So, why are critics and academics and theorists thinking that just linear films are the ones that can tell well the story?”* This, too, is an intriguing concept, with potentially far reaching implications. Unfortunately it is beyond the scope of this research project to investigate it in the depth it deserves. But, given the increasing utilization of non-linear approaches to narrative in cinema, and the burgeoning theoretical interest in such narratives (Buckland 2009; Murphy 2007; Dancyger & Rush 2013), it suggests a tantalizing area for possible future research.

At various points throughout the interview Arriaga reveals several other specific narrative forms and devices that contribute to creating and maintaining engagement, and to directing the viewer to a particular POV character. Two of these warrant mention here. The first is a nuanced aspect of focalisation, and the second is a nuanced aspect of telic concerns. Both of these phenomena are nominated by the cognitive film theorists surveyed for this research as being crucial to the creation of viewer engagement. But the way these theorists characterise their operation lacks nuance. So it is pertinent to point out more refined applications employed by expert screenwriters - if only to bolster my argument that there is value for film theory in considering expert screenwriters as a primary source of knowledge.

So, to the first conception: When asked how he directs the viewer's POV to a particular character, Arriaga shares, with some pleasure, a personal discovery:

Arriaga: You know, one thing... is how you close the scene. With whom you close the scene.

Interviewer: Tell me about that.

Arriaga: This is something I didn't have, uh, intellectualised when I was writing. Then after reviewing, I say, 'Ah. Okay. I'm always finishing the scene with a character who I want to carry the point-of-view'.

Interviewer: Right.

Arriaga: So... who finishes the scene? Who I'm staying with in the last shot of the scene? And that's point-of-view. [...] for example, the other day a friend of mine brought the first cut of a film and it was very badly cut because the character we are following never ended the scene, you know. [...] It's difficult for an audience to understand a point-of-view like that.

Arriaga is describing a personal discovery - that emotional attachment may in some way be enhanced by lingering on a character after the narrative action of the scene is complete. The ramifications of this simple strategy are easily overlooked. But if Arriaga is right that this device can enhance viewer engagement with character, then it does have ramifications for the central argument of this thesis. In the technique Arriaga describes, engagement is not created through telic concerns, because the character's activities in pursuit of the scene goal have already been played out – the dramatic question of the scene is already resolved. It is also not an engagement through moral structure, because Arriaga does not specify a requirement for the character to assume any particular position in the moral hierarchy. And it is not engagement purely through focalisation - because if that were the case, then allocating the same amount of screen time or screen space to the character *at any point* during the scene would have the same impact. But Arriaga is specifically saying that the moments at the end of the scene, when the action is over, are prime emotional engagement real

estate.

One might think this is just another of Arriaga's well-known eccentricities - like his passion for hunting, or his preference for writing at midnight. But this conception is also articulated by Coriat. She too pinpoints some indefinable emotional power that emerges when we linger with a character in the afterglow of a dramatic scene. Coriat also hints at the source of the emotional power of this moment. Emotional resonance between viewer and character has been created by the action of the scene. By lingering on the character once the action of the scene is over, it allows the viewer - relieved of the cognitive burden of managing the relentless barrage of stimuli and information that pour from the screen - time to simply resonate, and space to project their own concerns upon those of the character. One is reminded of the poignancy of the last lingering note of a concerto as it fades into silence. Several points are worth noting about this technique. First, its impact is not the result of any conscious construal - it is purely emotional and almost abstract. Second, its impact is only felt when the scene is performed and filmed - but it is devised, and present, in the writing. This illustrates the difficulty of reading and truly appreciating a screenplay.

Now to the second conception. This is a nuanced aspect of telic concerns. And one that specifically concerns effective construction of non-linear narratives. One of the challenges in creating non-linear structures is shifting between narrative strands in such a way that the viewer does not lose the thread of the stories not currently on screen. Arriaga describes one technique he employs:

Arriaga: For example, when I was writing Babel... I always wanted to stop when there was a dramatic question, you know.

Interviewer: To switch between the strands?

Arriaga: And I, and I didn't have a plan. And after writing like 50 pages I realised it was like every 6 pages.

Interviewer: Yeah?

Arriaga: Naturally, you know. I didn't say 'I'm going to write every 6 pages'. I was not, not, not focusing on that. I was just writing the story and then, I realised it was every 6 pages.

Interviewer: Right.

Arriaga: Or someone noticed it to me. Yeah, because I... I used to write... read my stuff to, to, to a group of people. Every 10 pages. And suddenly page 50, someone say 'Have you realised that you are going 6, 6, 6, 6?'. I had no idea.

This nuanced application of telic concerns suggests that creating or redefining a character's goal (*dramatic question*) the moment before we set aside their story facilitates the viewer's ability to return to that story and resume where they left off. This implies some mechanism which focuses the viewer's attention and engages their desire for a solution. In Chapter 6 we shall see that neuroscience has identified just such a mechanism. The intuitive switch every 6 minutes also suggests a tacit understanding on the writer's part that the structure of non-linear stories is in some way subject to natural cognitive constraints. We shall see that this, too, is borne out by the findings of neuroscience (Bor 2012).

Exploring the notion of telic concerns further, I ask Arriaga's thoughts on the importance of character goals. His response is immediate and unhesitating, indicating a clear espoused theory, *"I like that because I'm very influenced by the Greeks and Shakespeare [...] how Shakespeare and the Greeks had very clear dramatic objectives. But, that doesn't mean that has to happen in every story."* [...] *"Sofia Coppola's characters... they don't have any fucking goals [laughs] They are just going up and down in life with no goal. And these are great, great films."* [...] *"It can be for some audiences they need that really dramatic goal. And for some stories"*. But Arriaga makes it clear that he believes the viewer does not always have to agree with the character's goals, *"what I do is, is trying to create characters that... are going in one direction and they don't want to stop going in that direction"* [laughs]. This notion aligns with models of Greek and Shakespearean tragedy, in which characters are ultimately destroyed by the

thing they pursue (Martindale 2004).

I ask Arriaga how he believes the viewer apprehends and is affected by these kinds of techniques. Is it intellectually or emotionally or viscerally? He comes down adamantly on the side of emotional / visceral connection: *“Never intellectually. [...] If I want to move someone intellectually, I should write an essay. Not, not make a film. Not fiction. Fiction is not for... You cannot... It cannot... It’s not an intellectual process. Fiction is not an intellectual process”. [...] “the only way to get attached to the film is emotionally” [...] “[For the audience] It’s a complete work of sensibility”.*

When I raise the question of the degree to which he is conscious in his apprehension and application of these principles and techniques, Arriaga vacillates somewhat. He is equally keen to acknowledging the importance of craft know-how, and of creative intuition. It is clear that he believes there are some things that can be known and others that cannot – or at least that are better left unknown: *“the very first rule of creativity, of writing, is that there are no rules. I can share ... what has been working to me. I can share how, how my process and how it can help you but that’s not a rule. [...] there’s basically no ‘follow the steps to success’ kind of methodology [laughs]. It’s like, there are many steps, some work for these people, some doesn’t”.*

When I press him on what works for him – how he goes about the process of writing, he reveals a recursive process that begins with intuition, and then is subjected to a more conscious scrutiny, which triggers a further round of intuitive writing, and so forth: *“when I begin writing a story I have a very bad idea of what it’s about. I basically don’t write any kind of outlines at all.” [...] “what I like about writing is that the unconscious part of myself begins bubbling up... and creating the story.” [...] “It’s not calculated. For me, it’s intuition. It’s a feeling.” [...] “This is something I didn’t have, uh, intellectualised when I was writing. Then after reviewing, I say, ‘Ah. Okay. I’m always finishing the scene with a character who I want to carry the point-of-view’.” [...] “But there’s no way of intellectualising even your own experience”.* This process accords with the description Bredo (1994) offers of drawing as a recursive, emergent, enactive process. It is also consistent with Nonaka & Takeuchi’s (1995) notion of the “spiral of knowledge”, in which tacit and explicit forms of knowledge

feed into, and enhance, each other.

Interestingly, Arriaga takes ownership of both of these aspects of his work – the conscious application of semantic knowledge and the intuitive, non-conscious application of tacit knowledge, “*I don’t know if my work is good or not, but at least I- [laughs] I know how it works, how I did it*”. And he believes that both of these approaches are acceptable – even essential – paths to the act of intentional artistic communication: “*I want to tell the story of the car accident I had. [...] My commitment is to tell the story. The best way possible. [...] What I’ve been trying is that if you watch one of my films [or] you read one of my books, you’ll say ‘this guy was there’ [...] what I’m trying to portray is not... Is the contradiction in the human soul...*”

In contrast, Arriaga sees theoretical interpretations of the writer’s work as too often tendentious and prescriptive. “*Yeah, it’s funny because, um, my kids they are studying at college... and for some reason they have to study my films. And the interpretations that the professors give... the academics... the academic guys do about my work has nothing to do with [laughs] what I was thinking when I was writing it. [...] what many theorists and academics do is they, they have a theory and then they will push it into your work. [...] And, and then they see influences that I didn’t really have*”. Arriaga extends this criticism to screenwriting manuals also, “*I don’t believe in those, uh, three-act seminars, you know. But they are like, ‘You have in page 25, you have been blah, blah, blah’ and in page 50, or 60, whatever, you have to have this because if not... [...] Those stories I wrote, I write, don’t fit into that*”. This criticism is shared by the other screenwriters interviewed for this project. It is also widely shared among the community of film academics (Murphy 2007; Millard 2006)

And finally, at one point in the interview Arriaga expresses his encouragement for the aims of this research project, “*It’s good that you do these things to us directly - writers. To ask what was really our method of working, you know, and what really, uh... drives us to tell our stories. And what drives us to write the way we write and how, and why, we build those kind of characters*”. Apart from being personally gratifying, this is an indication that at least some expert screenwriters are open to a dialogue with researchers seeking to understand ‘the experience of viewing film and how that experience is created’.

SUMMARY

Guillermo Arriaga was a thoughtful and frank interview subject. He was comfortable discussing his beliefs about screenwriting craft, creativity, and his own work process. When faced with questions he could not immediately answer he had a tendency to digress. But when invited to probe, his responses were detailed, and revealed specific conceptions, and specific actions he takes as a screenwriter. It is evident that many of these conceptions are held as part of an explicit, espoused theory, while others are held tacitly, as part of an implicit operational theory evident in his practice. Arriaga was particularly comfortable accepting this fact.

Key conceptions include the following:

Screenwriting is an intentional act of artistic communication.

Viewer engagement with character is essential to effective apprehension of the narrative.

The viewer may engage with character or with story. The most effective form is when engagement with story is created through engagement with character.

The screenwriter employs a range of narrative forms and devices to achieve this, depending on context.

The viewer engages with the character primarily emotionally and viscerally. They are enticed to adopt the character's POV - to experience the world as the character does. This is essential to apprehension of the narrative.

Engagement with the viewer does not require the character to be likeable or morally desirable.

On the contrary, the aim of the screenwriter is to explore problematic, contradictory characters, and to find redemption for them.

Framing the character as pro-social prior to launching the main narrative problem is an effective device for creating engagement with such challenging characters.

The viewer apprehends the film narrative primarily emotionally and viscerally.

Character goals are a useful way of creating engagement with character and story - but they are optional. Not all stories require them. Nor do all viewers.

Pictorial focalisation is of marginal importance in creating viewer engagement.

Multi-protagonist and non-linear narrative types can enhance viewer engagement, rather than diminish it, by increasing demands on the viewer's construction activities, and by robbing the viewer of conscious construals, thereby forcing them to apprehend the narrative emotionally.

Screenwriting is a mix of intuition and conscious application of craft. It is a recursive process that begins with intuition, and then is subjected to conscious scrutiny, which triggers a further round of intuitive writing.

Non-writers' theoretical interpretations of the writer's work are too often tendentious and prescriptive. This criticism applies to both academics and manual writers.

Once again, these conceptions are consistent with those held by the other expert screenwriters interviewed. Arriaga's particular concerns with non-linear, multi-protagonist narrative structures served to illuminate and expand upon several of these conceptions.

Chapter Four

DEUS NOT-SO-ABSCONDITUS

Expert screenwriters' implicit model of viewer empathy

The interviews in the previous chapter reveal that expert screenwriters hold a wealth of conceptions concerning the creation and modulation of viewer empathy in narrative film. When they put these conceptions into practice, a range of consistent narrative strategies is also evident. However, as predicted by both Polanyi's (1966) and Argyris and Schon's (1982) theories of tacit knowledge, agreement was not unanimous on every point. Interestingly, there was more consistent agreement between expert screenwriters' *operational theories* than between their *espoused theories*. What expert screenwriters actually do is more consistent than what they believe they do. In this chapter I collate these shared conceptions and actions. Using the methodology of phenomenography (described in Chapter 2) I find common threads of espoused theory (*'why to proceed'*) and operational theory (*'how to proceed'*) and group them into categories. From these categorical sets of shared principles and practices, I construct a hierarchical graphic representation (*the outcome space*) from which I identify a model¹⁵ of viewer empathy held in the tacit knowledge of expert screenwriters.

Consistent Conceptions:

The expert screenwriters interviewed share a significant number of core 'conceptions' regarding the creation and modulation of viewer engagement with character in narrative film. These conceptions are listed here, prior to categorisation, in no particular order and without any weighting:

#1: Screenwriting is an intentional act of artistic communication.

Carriere: The writer intentionally coerces the audience to engage with and respond to the narrative in the manner he wishes them to, *“That’s the miracle of the writing [...] how the author is going to lead us where he wants us to go.”* And this is job requires a range of skills and strategies, *“There are many different ways”*.

Coriat: The screenwriter intentionally shares their experiences and feelings with the viewer through the medium of narrative film, *“I just thought [...] this experience [...] I want to translate it for people. And I was hoping that if I can kind of relate to these experiences, people out there will relate...”*

Beaufoy: The writer intentionally constructs a set of appeals (nonconscious and conscious) to guide a willing but discriminating viewer through a narrative journey with an intended meaning. *“They’re being coerced by the film-maker” [...] “I will guide them. I will give them a series of subtextual, or sometimes just textual clues.” [...] “A bond is signed ... between the audience and the film-makers. Where the audience go, “We’re in this together, and we’re happy to go along with it””*

Arriaga: The screenwriter intentionally uses the techniques of their craft to share their experiences and expand the viewer’s experience of the world. *“I don’t know if my work is good or not, but at least I- [laughs] I know how it works, how I did it.” [...] “I want to tell the story of the car accident I had. [...] My commitment is to tell the story. The best way possible.” [...] “What I’ve been trying is that if you watch one of my films [or] you read one of my books, you’ll say ‘this guy was there’” [...] “Because what I’m trying to portray is not... Is the contradiction in the human soul...” “It becomes something that transforms your way of seeing life.”*

#2: Viewer engagement with character is essential to understanding of narrative film.

Carriere: The narrative’s purpose is to *“capture an audience”, “to keep them captivated”*.

Coriat: The measure of the screenwriter's success is that *"people out there will relate"*.

Beaufoy: In order for the work to communicate its intended meaning, it is imperative for the viewer to engage with the character, *"You have to care desperately about that person"*. [...] *"if you want emotional engagement you're going to have to have a sort of ringmaster taking an audience with them"*. The screenwriter creates that engagement, *"you are the conductor. [...]* And the trick is to keep people in sync". And he must orchestrate and maintain it, *"you're in danger of losing it all the time. I mean that's the great trick – is to keep that engagement."*

Arriaga: *"I think that you have to be emotionally engaged but I disagree with people that say that you must have likeable characters."* [...] *"audiences need to grab to something to experience the move of the story and basically they grab to the point-of-view. [...]* Who is gonna carry the story and why? It's that simple."*"[The audience] have to be invested in those characters."*

#3: In order to achieve this essential engagement, the screenwriter utilises a range of specific narrative strategies.

Carriere: This is job requires a range of skills and strategies, *"There are many different ways"*.

Beaufoy: The viewer engages with narrative film in two distinct ways - intellectually with the narrative as a form of thought puzzle or problem to be solved: *"taking the audience with you travelling – seems to be more powerful as a way of engaging than if it's just a state [...]* people ... become involved in the journey", and emotionally / viscerally with the character: *"Who's in charge? Who's the lead character? Who do I care about?"*. The viewer's intellectual engagement with the narrative puzzle problem is secondary to, and contingent upon, their emotional engagement with the character, *"if you want emotional engagement you're going to have to have a sort of ringmaster taking an audience with them"*. The viewer's investment in the problems of the narrative is made only to the degree to which they feel aligned with the character's subjective experience of the situation.

Coriat: The screenplay exists on one level as a malleable artefact - a product within a commercial world, *“you are forced to think of the audience in a way, because if you want to sell your project you get confronted with that”*. On another level it exists as an imaginary world which the screenwriter enters and responds to, on the understanding that, *“if I can kind of relate to these experiences, people out there will relate”*.

Arriaga: *“the very first rule of creativity, of writing, is that there are no rules. I can share ... what has been working to me. I can share how, how my process and how it can help you but that’s not a rule.” [...] “there’s basically no ‘follow the steps to success’ kind of methodology [laughs]. It’s like, there are many steps, some work for these people, some doesn’t.”*

#4: Initial engagement is created by provoking the viewer to experience a visceral / physiological responses simultaneously with the character

Beaufoy: *“on film the way into somebody’s head is through what they’re doing. So action is a portal to emotional engagement”* and *“at its root it comes from a recognition of shared pain”*. This kind of resonance is *“a subtextual clue”* experienced non-consciously by the viewer. Such non-conscious clues are more powerful than conscious *“textual clues”* and thus are the screenwriter’s primary tool, because *“emotion always wins in cinema”*. The purpose of these simultaneous or mirrored responses is to calibrate the audience to *“the register of his [the character’s] emotional engagement with things”*.

Coriat: Engagement is created through visceral and emotional resonances triggered by witnessing another human being experiencing even the smallest, apparently inconsequential moments in life, *“because you automatically project as an audience... what he’s thinking or... you leave that room for projection”*. Screen stories communicate their meaning to the viewer through non-explicit, non-literal means, *“It’s like you try to hide... [...] “Hide the story”. [...] a lot of information that’s in the subtext. So that’s the beauty of it I think, in terms of the difference between the other mediums”*. The viewer constructs the experience primarily through unconscious and emotional mechanisms.

Arriaga: *“If I want to move someone intellectually, I should write an essay. Not, not make a film.”*

Not fiction. Fiction is not for- You cannot... It cannot... It's not an intellectual process. Fiction is not an intellectual process." [...] *"[For the audience] It's a complete work of sensibility."* [...] *"the only way to get attached to the film is emotionally."*

Carriere: Viewer engagement is created primarily through provoking emotional experience in the viewer, *"You can make them cry, can make them fear, or laugh... every time you need to get a reaction from them"*. The viewer's response to the film is situated and embodied, *"it is alive, it is direct"*.

#5: Further engagement is triggered by inducing the viewer to anticipate satisfaction of a character's relatable individual desires. Viewers are aligned with character actions towards benefits or away from costs.

Beaufoy: This kind of resonance *"coerces"* the viewer to select a particular character as their emotional point-of-view on the narrative, *"He's in charge. He's saying 'come on down here I've got a job for you'."* [...] *It's very clear who's going to be pushing this story along."* This engagement may be amplified by focusing other characters' telic concerns around this POV character, *"it's a series of concentric rings. The people... he's at the centre of a group of people who are [...] interested in him"*. Engagement may also be amplified by frustrating the expected outcome of the POV character's goal-oriented actions.

Arriaga: *"I'm very influenced by the Greeks and Shakespeare [...] of how Shakespeare and the Greeks had very clear dramatic objectives. But, that doesn't mean that has to happen in every story."* [...] *"Sofia Coppola's characters... they don't have any fucking goals [laughs] They are just going up and down in life with no goal. And these are great, great films."* [...] *"It can be for some audiences they need that really dramatic goal. And for some stories."* But the viewer does not always have to agree with the character's goals, *"what I do is, is trying to create characters that have a, um, having... are going in one direction and they don't want to stop going in that direction" [laughs]*.

Coriat: *"It's just those people struggling. [...] You want to see the struggle."*

Carriere: The viewer's engagement and the meaning of the narrative are driven by the

character's actions, *"everything comes from the action"*, which inevitably involves telic concerns, *"creating the character in what he does"*.

#6: Initial engagement is enhanced by withholding declarative / autobiographical information about the character.

Beaufoy: *"You start with a mystery..."* and *"You want it to unfold... in a way that is... is the... in the same way that relationships unfold... which is over a period of time."*

Arriaga: *"in daily life, we use extremely sophisticated structures. We never go linear, ever in our lives." [...] "when you have a fractured narrative like 21 Grams, your logic is killed [...] It's like, 'What is going on?' And where they don't know what's going on, they begin to build a story of their own. So they're getting, they get engaged." [...] "I think that audience has surrendered and the only way to get attached to the film is emotionally."*

Coriat: The viewer's apprehension of narrative film relies on unconscious resonances and raw emotional and physiological responses rather than explicit propositional interpretations, *"It's not about... what works is not the explanation [...] what's interesting... is what it relates to unconsciously"*. *"I think for me script writing is more like music"*.

Carriere: *"Chekhov ... took the right choice... everything comes from the action. What you do... [...] It's the action. Character doesn't mean anything. The Psychology of the character is absurd. Because you can on the paper decide that she's introverted, that she thinks about her father who died, and it doesn't bring anything to the comedy, to the acting. The action yes."*

#7: Engagement is deepened by coercing the viewer to adopt the social perspective of the character.

Beaufoy: Social emotions are elicited in the viewer by introducing problematic social contexts. And this engagement may be extended to other characters who share that social perspective, *"if the people in the film [...] have a group ideal or a group ethic or a group ambition, a group empathy is created."*

Coriat: A central purpose of screen narrative is to provide a venue for the viewer to wrestle with such moral ambiguities. To struggle with - and not always resolve - competing social imperatives, *“It’s just those people struggling. You struggle morally. It’s like when you make decisions you’re not always making the right decision. You want to see the struggle.”*

Arriaga: *“The word in Spanish, ‘entertaining’, the root comes from in-in, out of yourself. To be a little bit out of yourself [...] an experience of being different. Of watching something that I am not. Of experiencing emotions that I don’t have.” [...] “It becomes something that transforms your way of seeing life.” [...] “[Jack in 21 Grams] is a guy, who runs over a family, he escapes and, uh, even there you have some understanding of him in that film.”*

#8: In order for the viewer to empathise and engage with the character, it is not necessary for the character to assume a preferable moral position to other available characters in the narrative.

Carriere: *“Of course we must establish a relation but this sort of moral superiority...” “What’s the moral superiority of [...] Macbeth?”*

Beaufoy: This perspective is not reliant on moral / ethical absolutes – the viewer does not have to like the character. *that’s always a real battle in developing scripts, because you know it’s the film studio’s... the film developer’s... trope that you have to have a likeable central character.” [...] “It’s such a dull thing to do. But they’re so scared. They’re scared of exactly what I’m saying... is that you don’t emotionally engage with the character. But that’s a very different thing from not liking them.... from not being likeable. It doesn’t mean to say that you don’t empathise with them. It’s not that sophisticated a differentiation. But it’s quite hard to explain to certain studios.”*

Arriaga: *“I think that you have to be emotionally engaged but I disagree with people that say that you must have likeable characters.” [...] “If you go through my films, I have written the most disgusting kind of people. ... I’m trying to do the most despising characters you can imagine and in the end, understand them.” [...] “Because what I’m trying to portray is not... is the contradiction in the*

human soul. [...] What I'm obsessed with is, is playing the contradictions."

Coriat: A character does not need to be likeable in order for the viewer to engage empathetically with them, *"No. It's the opposite."* *"this character is not likeable. She's not likeable. [...] And at the same time you just... you feel for her"*. Viewers are most engaged by characters in screen narratives who are morally ambiguous or problematic, *"in real life they're lost and so they see it on the screen they think "Okay I'm not completely fucked up it happens to a lot of people to have these feelings" that might be complicated feelings. [...] I think people would [...] on an unconscious level they would relate to that"*. A central purpose of screen narrative is to provide a venue for the viewer to wrestle with such moral ambiguities. To struggle with - and not always resolve - competing social imperatives, *"It's just those people struggling. You struggle morally. It's like when you make decisions you're not always making the right decision. You want to see the struggle."*

#9: The screenwriter's understanding of his work is partly explicit and partly tacit.

Carriere: *"you will find that the unconscious will help with the writing", "It's the only way for the writer to say more than what he thinks he could say...", "The author doesn't know. [...] He doesn't know what he wrote, so don't ask him", "he cannot analyse himself what he is writing"*. The screenwriter's work is also situated and enactive, evolving in a cycle of real or imagined responses between screenwriter and viewer, *"Always to think you are not alone. That we are working for an audience."*

Beaufoy: The screenwriter's practice is a mix of intuitive tacit knowledge, and explicit technical know-how, *"It's a very, very instinctive thing for me. [...] Combined with an increasing [...] structural awareness of how to do that efficiently in terms of craft"*.

Arriaga: *"It's not calculated. For me, it's intuition. It's a feeling."* [...] *"This is something I didn't have, uh, intellectualised when I was writing. Then after reviewing, I say, 'Ah. Okay. I'm always finishing the scene with a character who I want to carry the point-of-view'."* [...] *"But there's no way of intellectualising even your own experience. [laughs] As much experience as you have, it doesn't mean anything."* [...] *"I myself, I feel trapped by strange forces. There are some things, some themes,*

some subjects I want to stop writing about them and I write them and they come again and again.” [...] “so in here the intellect has nothing, absolutely nothing to do.” [...] “what I like about writing is that the unconscious part of myself begins bubbling up... and creating the story.” [...] “when I begin writing a story I have a very bad idea of what it’s about. I basically don’t write any kind of outlines at all.” [...]

Coriat: The act of screenwriting is an unavoidable balance of non-conscious intuitions, *“kind of an instinctual, emotional thing”, “I think there’s a lot of unconscious processes going on”,* and conscious craft, *“I have to do it like... [...] unconscious and instinctive, you know, that’s how I work. Then of course I apply some intellect afterwards”.*

#10: Many non-screenwriters assume they understand how engagement works in screenwriting, when in fact they do not.

Coriat: Many readers who are not filmmakers find it difficult to extrapolate from the page the full effect that a moment will have on screen, *“It’s hard to read scripts. It’s really hard I think.”* The unconscious resonances that the medium relies on do not yield easily to succinct, unambiguous verbal description, *“because of the medium of film that you can have somebody saying something and then in the way that it’s shot or in the way the actor does the body language completely contradicting what they say... or you can have a lot of information that’s in the subtext”.*

Beaufoy: Studio executives insist on applying prescriptive notions of how viewer engagement is created in screenplays, *“that’s always a real battle in developing scripts, because you know it’s the film studio’s... the film developer’s... trope that you have to have a likeable central character. It’s such a dull thing to do.” [...] “It’s not that sophisticated a differentiation. But it’s quite hard to explain to certain studios.”* Manual writers are also unhelpfully prescriptive, *“I’m always terrified by those American screenwriting manuals and things, because they always appear to know exactly how it works. And I never know exactly how it works.”*

Carriere: *The theory of screenwriting has been published by people who never worked in that form. It’s sad but true. [...] “Theory is easy. [...] Practice is difficult.”*

Arriaga: *"I, don't believe in those, uh, three-act seminars, you know. But they are like, 'You have in page 25, you have been blah, blah, blah' and in page 50, or 60, whatever, you have to have this because if not..." [...] "Those stories I wrote, I write, don't fit into that." This problem is encountered with academic observers also, "Yeah, it's funny because, um, um, my kids they are studying at college... and for some reason they have to study my films. And the interpretations that the professors give... the academics... the academic guys do about my work has nothing to do with [laughs] what I was thinking when I was writing it." [...] "what many theorists and academics do is they, they have a theory and then they will push it into your work. [...] And, and then they see influences that I didn't really have."*

#11: In order for the viewer to empathise and engage with the character, it is not necessary for the character to be focalized through greater screen time.

Carriere: *"If you count the minutes the character must spend on stage, then you're lost. That doesn't mean anything. A good writer plays with time".*

Arriaga: *"It has nothing to do with screen time, it has to do with point-of-view. Who is gonna carry the story and why? It's that simple." [...] "audiences need to grab to something to experience the move of the story and basically they grab to the point-of-view. More than the screen time. More than close-ups." Ensemble and non-linear narratives rather than diminishing engagement can create an enhanced engagement, "with no clue of when is the present, when is the past, when is the future and three stories so I had the third of the time" the screenwriter can draw the viewer "to be invested in those characters" by "playing the contradictions". This works by placing increased demands on the viewer's cognitive construction activities "where they don't know what's going on, they begin to build a story of their own. So they're getting, they get engaged." And in the absence of a coherent, conceptual framework, the viewer relies more on visceral and emotional clues and connections, "that the audience has surrendered and the only way to get attached to the film is emotionally."*

Coriat: Ensembles, rather than diminishing focalisation because screen time is shared, actually serve to create a kind of enhanced focalisation through this process of

reflection and resonance, *“because to me it enriches this one character if you go away. Because it’s a different perception”*. *“...you can juxtapose and get meaning out of all the juxtaposition”*.

Beaufoy: Ensembles, rather than diminishing focalisation, create a enhanced focalisation: *“I think there’s a collective empathy that comes into play. [...] if the people in the film [...] have a group ideal or a group ethic or a group ambition, a group empathy is created from the audience.”*

Scrutinising this set of conceptions shared by expert screenwriters reveals that they fall into three core categories. While there is inevitably some overlap, and the boundaries are blurred in places, there are three distinct sets of conceptions of, and actions towards, viewer engagement with character in narrative film. The first set of conceptions orbit around the notion that viewer engagement is intentionally orchestrated by the screenwriter in order to ensure effective apprehension of the narrative. The second set of conceptions are clustered around the notion that empathetic engagement is ephemeral and contingent on context. The third set of conceptions cluster around the notion that empathetic engagement is primarily visceral, emotional and intuitive, rather than conscious or rational. On the following page these categories of conception and action are graphically illustrated in the ‘outcome space’.

OUTCOME SPACE

Expert screenwriters' core categories of conception and action regarding viewer engagement with character in narrative film:

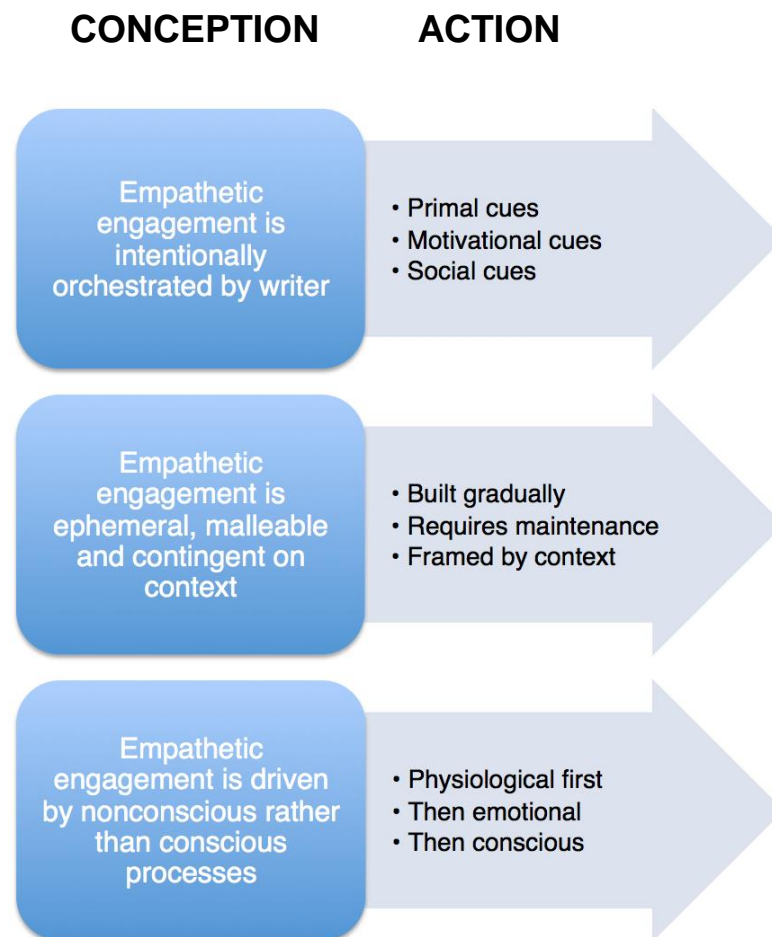


Figure 1: Outcome Space

SUMMARY OF FINDINGS

According to the screenwriters interviewed, it is essential that the viewer engages emotionally with the experiences of a particular character in order to properly apprehend the narrative. In their view, significance is not purely (or even predominantly) an intellectual phenomenon. They see narrative significance as being imparted and received substantially through non-conscious, emotional and physically enacted means. Expert screenwriters conceive of their job as orchestrating emotional,

subtextual cues to provoke the viewer to engage empathetically with the character. The expert screenwriters' model of viewer empathy is comprised of three categories of fellow-feeling responses, all of which qualify as empathy:

Physical / Visceral empathy. This initial kind of engagement is created through provoking the viewer to experience visceral and physiological responses simultaneously with the character. This kind of resonance is predominantly non-conscious.

Motivational empathy. This secondary kind of engagement is triggered by inducing the viewer to anticipate satisfaction of a character's relatable individual desires. Viewers are aligned with character actions towards benefits or away from costs. This kind of resonance is amplified by frustrating the expected outcome of those goal-oriented actions. This kind of engagement is also created through predominantly non-conscious, subtextual cues.

Social empathy. This third kind of engagement is created by coercing the viewer to adopt the social perspective of the character. This engagement is *not* reliant on moral / ethical absolutes, but is typically achieved by 'framing' the character in a relatable position within a problematic social transaction. This kind of resonance involves explicitly conscious evaluation of social context and potential courses of action.

Each of these types of engagement create and rely upon emotional responses in the viewer. In the first type, engagement is reliant upon mirroring or simultaneous activation of emotions provoked by physiological stimuli. In the second type, engagement is reliant upon emotions generated by predictions and prediction errors arising from aligning with character's motivated desires. In the third type, engagement is reliant upon emotions generated by apprehension of the social context. In each type of engagement these emotional responses may arise from either conscious or non-conscious processing of the stimulus (i.e. from "*subtextual, or sometimes just textual clues*").

Expert screenwriters are aware that any narrative presents the viewer with multiple characters who are each possible 'points of engagement'. The expert

screenwriter coerces the viewer to ‘choose’ the appropriate character by using mechanisms from all three kinds of engagement. Approach through any of these may result in empathetic engagement. Expert screenwriters conceive of these forms of empathetic engagement as a continuum. None is considered superior to the others. However, all three phases are reliant to some degree on the initial physical / visceral empathy processes. Therefore, according to this model, the initial physical / visceral empathy processes are the only processes without which empathetic engagement is not possible.¹⁶

Expert screenwriters see the viewer’s empathetic engagement with character as being ephemeral and malleable - once established it is not constant, but may be modulated or even extinguished. Empathetic engagement may be switched or shared among characters. Empathy for one character may be transferred or extended to other characters who share concerns with that character. This switching is seen as enhancing, rather than diminishing viewer engagement and narrative impact. Expert screenwriters see the viewer’s engagement with character as primarily intuitive and emotional rather than conceptual and rational. In this way, all ‘choices’ regarding which character to engage with rely fundamentally on the automatic, involuntary processes and the narrative forms and devices that activate them. Each of the screenwriters interviewed indicated examples of specific narrative strategies employed in their work to provoke viewer engagement on each of these levels. I shall not discuss those specific strategies now. That is the focus of Chapter 7.

In the next chapter I survey models of viewer empathy proposed by cognitive film theorists. And I discuss the numerous and profound ways in which these models disagree with the expert screenwriters’ model.

Chapter Five

MIND, THE GAP

Cognitive film theorists' models of viewer empathy: A screenwriter's perspective

Cognitive film theorists, like expert screenwriters, take a constructivist approach to understanding viewer engagement. They proceed from the assumption that the viewer is actively engaged in ‘constructing’ the narrative and that this involves a complex interaction of numerous cognitive and affective processes within the mind of the viewer. Film theorist and philosopher Noël Carroll explains it this way:

the power of movies must be connected to some fairly generic features of human organisms to account for their power across class, cultural, and educational boundaries. The structures of perception and cognition are primary examples of fairly generic features of humans. Consequently, it seems that if we can suggest the ways in which movies are designed to engage and excite cognitive and perceptual structures, we will have our best initial approximation of their generic power
(Carroll 1988, p212)

Carroll is explicitly advocating a naturalistic approach to understanding how we understand film. David Bordwell, in his foreword to Joseph & Barbara Anderson’s book, *Moving image theory: ecological considerations*, endorses this approach and argues that it “deserves the name *ecological*” (Anderson & Anderson 2005, foreword pXI). According to Joseph Anderson (2005, p4) this “ecological approach to film theory” is characteristic of cognitive film theorists, whose aim is to investigate “Exactly what are [the viewer’s] capacities for gaining information [and] precisely how do the makers of motion pictures exploit them”. In addressing these questions, cognitive film theorists

draw on a diversity of disciplines, including film theory and narrative theory, as well as the cognitive sciences of psychology, evolutionary psychology and of course cognitive neuroscience.

However, most cognitive film theorists restrict their investigation almost exclusively to the role of explicit (i.e. conscious) cognition. This restriction is at odds with an ecological approach, which embraces non-conscious cognition (Bargh 2006). As a consequence, cognitive film theorists' models of empathy diverge significantly from those proposed by leading neuroscientists. This presents something of a conundrum. Why, if these theorists base their approach on the findings of cognitive neuroscience, would they not embrace the model of empathetic processing these same neuroscientists propose? Is the neuroscientists' model deficient? Or have cognitive film theorists perhaps taken a misstep?

In this chapter I explore a selection of cognitive film theorists' models of viewer engagement with character in narrative film. The theorists whose work I will be discussing in most depth are Noël Carroll, Torben Grodal, Murray Smith and Greg M. Smith. I have chosen these theorists because they are representative of the range of opinions in the literature regarding which cognitive processes are crucial in the creation of viewer engagement. I compare the models proposed by each of these theorists, and scrutinise the arguments they muster in their support. I will also briefly discuss other theorists, such as Plantinga (2009) and Currie (1995), where their theories diverge from or clarify the models of viewer empathy discussed here. As I proceed I will note where their models agree and disagree with the expert screenwriters' implicit model described in the previous chapter. I will also briefly compare them to models proposed by cognitive neuroscience, in an attempt to locate either the neuroscientists' deficit or the film theorists' misstep.

COGNITIVE FILM THEORIST MODELS OF VIEWER EMPATHY:

Noël Carroll

Noël Carroll is one of the pioneering thinkers in cognitive film theory. In his book *Film, Emotion, and Genre* (2003) he presents an argument to justify why the cognitive film theorist should restrict his focus to conscious cognitions. I shall examine Carroll's argument in some depth, as it has significant ramifications for the subsequent direction of cognitive film theory.

Carroll opens his argument by stating that "it is crucial for a theoretical understanding of film that we attempt to analyse its relation to the emotions. But in order to do that we first need a clearer sense of what constitutes an emotion proper" (Carroll 2003, p62). This seems a reasonable position from which to begin. However, hidden within it is an *a priori* assumption - that there is such a thing as an "emotion proper" and that, by extension, some other emotions are in some way 'not proper'. No warrant is offered for this assumption. Carroll begins by declaring that he rejects the "reductivist conception of the emotions ... that they are nothing more than bodily feelings". In arguing for this view, Carroll does not critique any of the numerous contemporary neuroscientists, philosophers or psychologists who advocate the view he opposes. This is a significant oversight. In the decade prior to Carroll's book, Damasio (1994, 1999), Le Doux (1996), de Gelder et al (1999), Eckman (1999) and Frijda, Manstead & Bem (2000) Dennett (1996), Lakoff & Johnson (1999) and Jackendoff (2002) all published arguments that emotion may be understood as a biologically realized phenomenon. Instead of addressing the arguments of these significant contemporary thinkers, Carroll sets up a straw man to dismantle - a weak version of the c1890 James-Lange theory.¹⁷ Carroll effortlessly dismisses his century-old opposition, and claims this as proof that, "Emotions cannot simply be bodily feelings, since sheer bodily feelings lack intentionality" (Carroll 2003, p64). Given that James predates neuro-imaging and modern psychology, and that even the most ardent advocates of embodied mind (Damasio 1994, 1999) critique James' theory, one feels

that Carroll's argument, if it is to be convincing, is obliged to tackle more recent and substantial opponents.

Instead Carroll offers a philosophical thought experiment to support his view. He invites us to imagine a woman in whom the precise physiological state of anger is artificially induced by a drug. Carroll argues that we would not consider her state to be real anger because there is no object for the anger to be directed at, "You can't be angry unless there is someone or something that serves as the object of your anger. Emotional states are directed" (p63). From this he infers that for a state to be classified as an "emotion proper", conscious cognition of the stimulus ("either beliefs or belief like states such as thoughts and imaginings") must precede and "must be the cause of the inner consternation" (Carroll 2003, pp. 63-4). Carroll concludes:

Thus, the subject of our science-fiction experiment is not in an emotional state. For her disturbed visceral state is not directed, nor does it have an object. Therefore, the view that emotions are simply bodily states cum some phenomenological qualia is wrong.

Carroll's intention appears to be to identify a deficit in neuroscientists' model of emotion as a biologically realised phenomenon. His forthright claim that their view is "wrong" is commendable for its boldness. However, there are two problems with Carroll's argument. First, it is not consistent with the scientific evidence. And second, it is logically flawed.

Let's deal with the second objection first. From his negative premise 'we would *not* classify an artificially drug induced state as a proper emotion', his affirmative conclusion 'therefore all proper emotions *must have* a conscious object' does not follow. It is never valid to draw an affirmative conclusion from a negative premise. Breaking down Carroll's argument into its formal parts exposes his error:

- i) No proper emotion is an artificially induced state
- ii) And no artificially induced state has a conscious object
- iii) Therefore all proper emotions have a conscious object

This argument takes the form:

No A is a B	(Negative Premise 1)
No B has a C	(Negative Premise 2)
Therefore all A's have a C	(Affirmative Conclusion)

This is the formal fallacy known as an 'illicit negative' (Bennett 2014). The only conclusion that can be logically drawn in this structure is that some things which are not A's do not have a C. Thus, even if both of Carroll's premises are true (which is itself disputable), the only valid conclusion he can draw is that 'some things that are not proper emotions do not have a conscious object'. If we keep Carroll's argument structure and replace the terms, his faulty logic becomes obvious:

No turtle is a ballroom dancer	(Negative Premise 1)
And no ballroom dancer has a jetpack	(Negative Premise 2)
Therefore all turtles have a jetpack	(Affirmative Conclusion)

As you can see, even if both premises are true, you cannot draw a positive conclusion from a negative premise and expect it to be logical. Therefore, on the basis of Carroll's argument, we cannot accept his conclusion that 'all proper emotions have a conscious object'. However, we must exercise caution not to fall prey to the 'fallacy fallacy'. That is to say, just because the argument Carroll uses is logically flawed, it doesn't necessarily mean that his hypothesis is false. We must consider the evidence for and against Carroll's claim.

Let us first consider the problem, as he invites us to, from the philosophical perspective of his thought experiment. And let us assume, for the sake of argument, that we accept his initial premise that the average observer would not consider an artificially drug induced emotion to be a real emotion. Are there plausible reasons *other than the lack of a conscious object* why we might not consider an artificially drug induced emotion to be a real emotion? Applying Occam's razor, (looking for the most

parsimonious explanation consistent with the available data) suggests that it may be simply our awareness of the artificiality of the stimulus that leads us to judge the woman's occurrent emotion as artificial. We can test this possibility by imagining a couple of variations on Carroll's thought experiment. First, let's imagine that *only half of the observers* are aware that a drug has been administered to the woman, while the other half are not. Would all observers still equally judge the woman's state to be not an 'emotion proper'? It seems unlikely. On what basis could the unaware observers make this distinction? The key factor, indeed the only factor, that allows an observer to categorise her as 'not in an emotional state' is awareness that the stimulus is artificial.

Next, let's imagine that the woman herself is *aware* that the drug is being administered and that *it is the cause* of her agitated state. The woman would now have a *cause* and an *object* for her anger. This would satisfy Carroll's stipulation that an "emotion proper" must be attended by conscious cognition of its cause, and must be directed at an object. Would we be comfortable saying that now the woman's state is an 'emotion proper', whereas before it had been a 'mere physiological response'? I suspect not. Because we remain aware that her state is the result of an artificial stimulus. Thus the distinction we are making in Carroll's thought experiment is not a distinction between proper emotions and not-proper emotions, but rather between proper stimuli and not-proper stimuli.

So let us remove the distraction of artificial stimuli altogether.¹⁸ Let's set aside Carroll's thought experiment, and directly consider his assertion that "emotions proper" must be the result of conscious cognition. The question is at heart a scientific one, not a philosophical one. And Carroll himself wishes that, "what can be claimed for science may be claimed eventually for film theory" (Carroll 1996, p59). So let's test Carroll's assertion against the scientific evidence. Is there credible empirical evidence that an 'emotion proper' may exist in the absence of conscious cognition of an object? The work of neuroscientists provides a range of compelling examples. In Chapter 6 I discuss in these in detail. A brief précis will suffice to make the present point. In 1999 Beatrice de Gelder and colleagues studied GY, a patient with blindsight (a condition in which the eyes are intact but the visual cortex is damaged, resulting in the inability to

consciously process any visual stimulus). De Gelder found that when GY was presented with an emotional visual stimulus (short videos and still pictures), he responded with the appropriate physiological response and was able to name the emotion he felt, despite having no conscious cognition of the stimulus being presented (de Gelder et al 1999). Carroll may counter that a normal viewer does not suffer from blindsight. This objection is addressed by another study. In 2000 Elizabeth Phelps measured normal subjects' affective response to subliminally presented images of threatening faces and found that these subjects too demonstrated the physiological and phenomenological response of fear, despite having no conscious awareness of the stimulus (Phelps et al 2000). And in yet another study, neuroscientist Antonio Damasio conditioned a patient with anterograde amnesia to feel adverse emotion to one of the experimenters. (Patients with anterograde amnesia are cognitively normal, apart from an inability to form new memories.) The patient continued to feel this emotional aversion for some months, despite the fact that he had no memory - and thus no conscious cognition - of the cause of his emotional response. Damasio (1999, p47) concludes that, "We do not need to be conscious of the inducer of an emotion and often are not". These clinical studies provide evidence falsifying Carroll's hypothesis. Emotion may exist in the absence of conscious cognition of an object.

Let us now step out of the lab and into our everyday world. And imagine that as we do, a truck backfires loudly behind us. What are we to make of our response? A sudden burst of adrenaline, increased heart rate, dilated pupils, heightened alertness to danger, goosebumps, increased skin conductance, physical preparedness for flight and all the physiological components of fear - all triggered before our conscious mind is able to locate the cause. Conscious cognition is present in this case, and the "inner consternation" is attributed to an object. But only *after* the physiological response. Carroll concedes as much, acknowledging that the person in this situation is likely to exclaim, "that really frightened me". Unable to deny that this is an emotion, Carroll disqualifies it from consideration by claiming (in a textbook example of the 'no-true-Scotsman move') that it "is not paradigmatic of garden-variety emotional states" (Carroll 2003 p64). What evidence does he offer that it is not paradigmatic? Only the

circular argument that the “cognitive state must be the cause of the inner consternation”. This is unconvincing.

Let us quickly examine one well-known quirk of “garden-variety emotional states” that has unhappy ramifications for Carroll’s insistence that the “cognitive state must be the cause” of the emotion. In clinical psychology it is considered commonplace that subjects may experience an emotional disturbance and attribute it to an object that is not the actual cause of the state. This phenomenon is called misattribution. Smith and Neumann note that “emotions can be misattributed (linked to an incorrect cause) ... the more automatic processes that generate the emotion are distinct from the more thoughtful processes involved in causal search and emotional labeling” (Smith & Neumann 2005, p307). Likewise, Zanna and Cooper (1974) demonstrated that individuals may “misattribute the actual cause of the increased negative emotion ... to something else that seems plausible” (Frijda et al 2000, p196). This has been confirmed in numerous studies, including one by Clore, in which he manipulated subjects to misattribute both positive and negative affects, concluding that, “the proximal cue for many kinds of affective judgements is the information provided by one’s feelings as one considers the object of judgement” (Clore 2013, p136). In plain language, what these psychologists are saying is that we commonly misattribute the cause of our emotions. A particular stimulus triggers an affective state in us, and we mistakenly identify some other stimulus as the cause - focusing on it as the object of our emotion.

This common fact of garden-variety emotional states presents an enormous problem for Carroll. His definition does not allow for misattribution. While he does allow that a person may hold mistaken beliefs, he insists that the mistaken belief itself “must be the cause” of the emotion. But in the case of misattribution, the mistaken belief is *caused by* the emotion, not the other way around. So in Carroll’s view, any emotional state that is misattributed can not be considered an “emotion proper”. This is highly problematic, particularly in light of the frequency with which emotions are misattributed. Carroll’s definition of an “emotion proper” requires us to judge whether

any instance of an emotional state is attributed correctly. How are we to achieve this? Carroll's definition is impossible to police.

So how should we evaluate Carroll's argument? Bordwell (in Anderson & Anderson 2005, foreword pX) claims that cognitive film theory "takes rational inquiry, of which science is our most successful exemplar, as the most promising way to explain" the working of narrative film. If we accept this aspiration as genuine, then Carroll's argument - with its unwarranted assumptions, straw men, faulty logic, disregard for readily available scientific evidence, circular arguments and no-true-Scotsman moves - falls rather short of the benchmark that cognitive film theory has set for itself. It is, by generally accepted standards, a poor argument. On the weight of evidence, it would seem more reasonable to conclude that Carroll has made a misstep than that the view adopted by cognitive neuroscience is "wrong". Are we able to identify the cause of this misstep? Is it Carroll's alone? Or is it characteristic of cognitive film theory as a whole?

The answer, I believe, may be found in the start of Carroll's argument. Carroll sets out to make a distinction between a proper emotion and a mere physiological state. But, as we have seen, each of his contentions about how that distinction should be made is falsifiable by clinical evidence. The two are empirically indistinguishable. How meaningful then is the label? How useful? And why does Carroll feel he needs it? This is the crux of the matter. Carroll (2003, p62) claims he is not trying to dismiss cognitively impenetrable, autonomic responses but merely to "bracket consideration of them for the time being". But on what basis does he believe it is valid to pre-emptively bracket some of the evidence? And why does he choose to bracket the non-conscious emotions rather than the conscious emotions? The fact that he proceeds to do so without a clear warrant, and in the face of compelling evidence to the contrary, points towards the assumption that underpins his misstep.

When Carroll (2003, p62) asks "what constitutes an emotion proper?" he is asking a complex question. Not in the everyday sense. But in the sense of the informal logical error - the 'Fallacy of the Complex Question'. This error occurs when a

question is asked which requires two separate answers, but one of the answers is assumed. The classic illustrative example is the question “Have you stopped beating your wife?”, which asks about the stopping, but assumes the beating as a given.

Carroll is asking a ‘Complex Question’ with three contingent parts:

- i) Is there an inherent, meaningful division between types of emotions?
- ii) If so, is one type more important (“proper”) than the other?
- iii) If so, how can we define and quarantine the more important (“proper”) type?

But Carroll takes the answers to the first two parts for granted. He asks about the defining, but assumes the division and the value hierarchy as given. Without due warrant or evidence he assumes that there is a meaningful division between conscious and non-conscious emotions¹⁹, and that conscious emotions are more important (“proper”) than non-conscious emotions.

This assumption has a name. Intentionalist property dualism. This a philosophical stance which holds that mind is distinct from body, and that our relation to the world is inherently reliant on conscious construals and not just embodied, physiological responses. Carroll is of course entitled to hold any philosophical position he chooses. But he is not entitled to assume that this philosophical stance is a given truth - or allow it to selectively predetermine what evidence will be considered. Such an approach is inconsistent with cognitive film theory’s pursuit of a “rational style of inquiry of which science is our most successful exemplar”. It is, rather, doctrinal thinking. By this first step of assuming (in the face of substantial evidence to the contrary) that conscious emotions are separable from and superior to non-conscious emotions, he begins his investigation of narrative film by fundamentally misrepresenting the mechanism which he seeks to place at its centre.

This misstep is not Carroll’s alone. On its basis, Carroll sets the agenda for which kinds of cognitive and perceptual processes are the proper focus of study by cognitive film theorists. While many critique his architecture, few dig below his foundations. For example, Plantinga (2009 pp. 57-8) while allowing a place for non-conscious “affects” assumes them to be subordinate to consciously conceptualised “emotions proper” and therefore incidental to the film theorists’ task of understanding

how we understand film. This insistence that conscious, explicitly cognitive responses should be separated from, and elevated above, nonconscious, cognitively impenetrable responses is endemic among the cognitive film theory community.

In previous chapters I discussed how this view conflicts with expert screenwriters' interpretation of the viewer's emotional response to narrative film. It also diverges sharply from the model of emotional activation offered by current cognitive neuroscience. In contrast to Carroll, leading neuroscientists contend that emotion is a physiological action program - a cascade of responses including "external motions; visceral changes in the heart, lungs, gut, and skin; and endocrine changes" that serve a specific survival purpose (Damasio 2010, p123). Neuroscientists are unambiguous on the question of whether 'emotions proper' require conscious appraisal. They do not.

the representations which induce emotions and lead to subsequent feelings need not be attended, regardless of whether they signify something external to the organism or something recalled internally. Representations of either the exterior or the interior can occur underneath conscious survey and still induce emotional responses.

(Damasio 1999, p48)

This is not to say that conscious construals play no part in the process. But neuroscientists offer abundant clinical evidence that our intellectual capacity to consciously represent and evaluate is not separate from our primal capacity to experience affective states - it is fundamentally constructed from it. As Damasio writes in his book, *Descartes' Error* (1994, p128), "Nature appears to have built the apparatus of rationality not just on top of the apparatus of biological regulation, but also *from* it and *with* it." This view equates to a philosophical stance of materialist monism, which holds that "mental properties - in particular intentionality and phenomenal consciousness - are not basic properties. They are realized in non-mental [i.e. physiological] properties" (Levine 2001, p20).

And therein lies the heart of our present conundrum. Intentionalist dualism and materialist monism are not compatible. They cannot co-exist within the same theory. This is inconvenient for cognitive film theorists, who embrace the former, while relying on a branch of science that entails the latter. This conundrum offers a valuable area for future investigation.²⁰ In the meantime, the uncomfortable dislocation remains. And cognitive film theorists are forced to make some awkward academic moves to dance back and forth across the gap.

COGNITIVE FILM THEORIST MODELS OF VIEWER EMPATHY:

Torben Grodal

Torben Grodal is an author and Professor of Film and Media Studies. His doctoral dissertation was published as the book, *“Moving Pictures: A new theory of film genres, feelings and cognition”* (Grodal 1997). He expanded upon this book in *Embodied Visions* (2009), in which he introduced his “PECMA flow model” of the viewer’s cognitive processing. I first came across Grodal’s work in a collection of essays on Cognitive Film theory entitled *“Passionate Views: Film, Cognition and Emotion”*, edited by Carl Plantinga and Greg M. Smith (1999), in which his essay *“Emotions, Cognitions and Narrative Patterns in Films”* outlines some of the discoveries of cognitive science and their implications for the study of film spectatorship. Intrigued and inspired by his approach I read his book, in which he lucidly and dispassionately uses these findings of cognitive science to demolish the psychoanalytic foundations of deterministic contemporary film theory.

Grodal’s thesis is that “identification with and simulation of the cognitive, motivational-affective, and enactive processes of the protagonist are central activities in film-viewing” and that, as a consequence, genres of visual fiction are “strongly determined by their relation to a mental function” (Grodal 1997, pp. 280-1). It is an ambitious, wide-reaching theory, culminating in a typology of eight ‘basic genres’, each the product of a particular cognitive process. To support it, he draws upon a cross-

disciplinary investigation encompassing “film theory, first and foremost; and general aesthetics, narrative theory, neuroscience, physiology, and cognitive science” – though, lamentably, not filmmakers (Grodal 1997, p3). Grodal’s work lays a strong foundation for anyone seeking to pursue a cognitive constructivist approach to film spectatorship. He provides a close argument that “cognitive and neurological research ... provides evidence for a third mediating position” between Realism and Formalism, which have hitherto been the two main theories of representation (Grodal 1997, p21). He draws on philosophy and cognitive science to problematise terms like “illusion” and “lie” favoured by many contemporary film theorists as descriptions of fiction, and examines “the family of phenomena to which fiction belongs” (comparing it rather charmingly at one point to the play attacking of puppies) and provides a compelling argument that such “symbolic acts are often part of our coping procedures” (Grodal 1997, pp. 25-6).

Grodal describes his model of empathy in *Moving Pictures* (1997) but, disappointingly, does not discuss it further in *Embodied Visions* (2009) – despite the inclusion of a promisingly titled chapter on Character Simulation and Emotion in the latter book.²¹ Grodal’s model of empathy divides viewer engagement with character into two distinct processes, which he labels “Cognitive Identification” and “Empathetic Identification”. “Cognitive Identification”, according to Grodal, is the ability to intuitively and imaginatively project oneself into another’s position, in order to understand what they are perceiving and experiencing – a phenomenon indistinguishable from ‘Theory of Mind’. Grodal lays out well-documented evidence from the cognitive sciences for the existence of this phenomenon. He then proposes a distinction between this phase of processing and full blown “empathetic identification” which he defines as “a viewer activation of affects and emotions in identification with the interests of a fictive being”. It is crucial to note that Grodal (1997, p93) conceives of these as two typologically distinct processes; “two types of mental operations performed by the viewer”. He argues that the catalyst that moves the spectator from performing the first type of mental operation of “cognitive identification” to performing the second type of mental operation of “empathetic identification” is the spectator’s understanding of a character’s motivation and intention.

This model is problematic in two ways. Firstly, positioning Theory of Mind identification as the primary process - the first step - in creating empathy is insupportably vague because ToM is not a single, discrete cognitive process, but rather, a raft of processes carried out by a wide range of brain areas and requiring processing on multiple levels of cognition:

The body of research in this area claims variously that ToM might be processed in superior temporal areas, temporal pole, the amygdala, temporal-parietal junction (TPJ), medial frontal cortex, orbitofrontal cortex (OFC), and/or frontal pole ... One reason that such a variety of brain areas have emerged as important for ToM in different research studies could be that these different areas may be subserving different aspects of ToM.

(Stone 2006, p115)

If ToM is the result of different types of perception being processed in different ways at different places and different times in the brain, then the phenomenon as a whole can not, in any meaningful sense, be considered the primary process. Far more precision is required. Which aspects of ToM are processed first? Which aspects must be processed in order to facilitate the processing of later aspects? If such aspects are isolatable, they may be viable candidates for the primary process in creating empathy. ToM as a whole is not.

The second problem with Grodal's model is that the two phases he claims as separate and distinct "types of mental operation" are inextricably intertwined. Grodal himself acknowledges that basic "cognitive identification" (mental operation #1) inherently includes an "ability to...feel simple motives... and to understand uncomplicated plans, goals and acts" (Grodal 1997, p92). So it is difficult to see how recognition of character motivation and intention could also function as the trigger that moves the viewer from this mental operation to full blown "empathetic identification" (mental operation #2). It is likewise unclear how the viewer's understanding of the "perception and experience" of the character (mental operation #1) can occur in isolation from the viewer's "activation of affects and emotions in

identification with” the character (mental operation #2). Surely the character’s “experience” is comprised of “affects and emotions”. How then is the viewer’s “understanding” of this “experience” engendered if not by simulating the occurrent physiological and affective states of the character - that is to say through “activation of affects and emotions in identification with” the character? This inconvenient overlap in Grodal’s model raises the question of whether “cognitive identification” and “empathetic identification” can be considered as distinct “types of mental operations” at all. Even more inconveniently, neuroscientist Antonio Damasio (whom Grodal cites regularly throughout his books) provides extensive evidence that activation of affects and emotions precedes, and indeed is a prerequisite for, the subject’s understanding of the object’s experience (Damasio 1994). This is the precise reverse of Grodal’s model.

Grodal (1997, pp. 94-5) illustrates his model, “In order to see the way in which cognitive identification, empathetic identification and motivation interrelate”, by offering his analysis of “a brief sequence from Hitchcock’s film *Psycho*”. The sequence Grodal discusses is the one following the famous shower scene in which the (to that point) protagonist Marion Crane is murdered. In the sequence in question, Norman Bates (played by Anthony Perkins) desperately cleans up the evidence of the murder and disposes of the body. Norman mops blood from the floor, wipes down the bath and toilet, wraps Marion’s body in the shower curtain, and places it in the trunk of her car - which he drives into a nearby swamp. Grodal contends that in this sequence empathy is switched from Marion to Norman. Grodal briefly synopsis the plot of the sequence, then claims a “typical reaction of the viewer” to the sequence - “the viewer worries during the short halt in the sinking and experiences a feeling of relief when the car starts to sink again” - though he provides no evidence to substantiate this claim. Grodal takes this claimed “typical reaction” as proof that the viewer has empathetically identified with Norman. He then claims that it is the sustained focalisation of Norman in the sequence, in the absence of “other points of identification” that “forces” us to adopt his emotions which we have construed from his motivated actions:

The viewer has cognitively identified himself with the young man over a longer period of time, and has, during this period, been ‘forced’ to ‘actualize’ the

emotions which were presupposed in order to give coherence and meaning to his acts ('I must wash off the smear of blood', 'I must dispose of the body and the car', and so forth).

(Grodal 1997, p95)

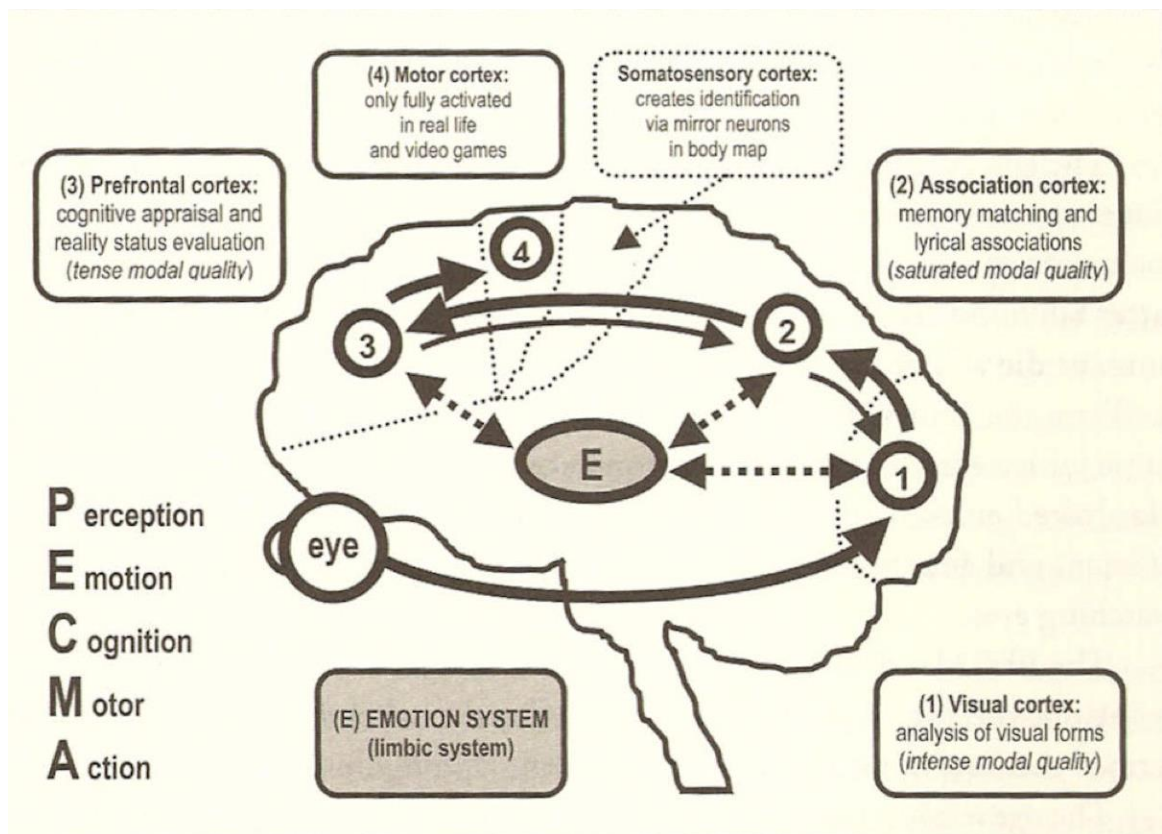
In this way, Grodal tells us, the viewer is moved from a position of "cognitive identification" to a position of "empathetic identification". This is the full extent of Grodal's analysis. If we accept this sequence as a definitive example of "the way in which cognitive identification, empathetic identification and motivation interrelate" then, according to Grodal's model, in order for "cognitive identification" to develop into full blown "empathetic identification" it is necessary only that the viewer understand the "motives and plans" of the character.

Such a model raises several questions. Is it not possible to empathise with a character even if we do not understand their motives and plans? (We apparently do so with Jamal in the opening moments of *Slumdog Millionaire*.) Conversely, is it not possible to comprehend a character's motives and plans, and yet not empathise with them? In viewing the film *Downfall* (2004), for example, one is presumably able to understand Adolf Hitler's motives and plans to exterminate the Jewish people and attain world dominance without assuming a position of empathetic identification with him. Indeed, it is standard (even obligatory) in canonical narrative for the audience to be given a clear understanding of the antagonist's motives and plans. Frequently, as in *The Dark Knight* (2008), the plans and motives of the villain are established prior to those of the hero. According to Grodal's model, in these instances the viewer's empathetic engagement ought to be directed towards the villain rather than the hero. Grodal attempts to evade this problem by insisting that in these cases we don't engage with the villain because focalisation is too "short and fragmented". But this is not borne out by the evidence. In the case of *The Dark Knight*, for example, the character of the Joker (played by Heath Ledger) is on screen for a sequence of several minutes duration, roughly equivalent to the duration of the sequence from *Psycho* that Grodal claims is sufficient to create engagement with the character of Norman. Grodal's "short and fragmented" focalisation loophole also raises a further problem - it predicts

that there must be a minimum duration for which focalisation needs to be sustained before engagement with character is created. But his model provides no mechanism to account for this. None of the mechanisms specified in Grodal's model - neither acceptance of the character as an agentive being, nor recognition of the character's motivation and intention, nor understanding of their experience - require more than a few seconds for a normal human mind to process. Clearly something is amiss with Grodal's model.

Grodal attempts to address this issue (why an understanding of motive might move the viewer to empathise with the unsavoury Norman, but not with the unsavoury Adolf) by inserting a proviso that "no other clear points of identification are articulated" (Grodal 1997, p95). But this raises a further question: When presented with several 'clear points of identification' each of whom have recognisable motivations and intentions, how does the viewer select one among them? Grodal's model offers no mechanism that might explain this. This is a significant gap in Grodal's model and points to an area in which more detailed research is required. Other theorists propose theories that offer to fill that gap. Murray Smith is one. We shall consider his theory in the next section. But first it is necessary to say a little more about Grodal's second book, *Embodied Visions* (2009).

In this later book Grodal introduces his "PECMA flow model" of cognitive processing of narrative film. This model describes the viewer's processing of the screen narrative as governed by brain mechanisms, proceeding through the processes of Perception, Emotion, Cognition & Motor Action. This model promises a more biological and less dualistic interpretation of the viewer's experience. And in many ways it offers an account of film spectatorship that is significantly more aligned with the evidence of neuroscience. However, the theory, and Grodal's application of it, are not without issues. The diagram provided by Grodal of the PECMA flow (p147), together with his summary of the model in the chapter on bioculturalism (p272), highlight some of the problems with this theory.



(The PECMA Flow Model: Grodal 2009, p147)

As indicated in the diagram, Grodal restricts his consideration of perception to raw visual percepts. But not all perception is visual. Neuroscience studies identify many other perceptual phenomena (internal as well as external) that may contribute to constructing the viewer's relationship to character. And while his diagram situates emotion as a recursive hub of all the other processes, his anagram (PECMA) fixes it in second position in the flow – and his summary in the chapter on bioculturalism seems to indicate a belief that at this stage of processing, only “lyrical” associative emotions are in play (Grodal 2009, p272). His model then moves to frontal cortex cognition. And only after that, at the end of the process, does it proceed to subliminal activation of motor action and motivational system. However, the evidence from neuroscience, as we shall see in some detail in the next chapter of this thesis, points to a model in which such subliminal motor action and motivational system activation *precedes* explicit frontal cortex evaluation (LeDoux 1996; Damasio 2010; Van Overwalle & Baetens 2009, Van Elk et al 2010, Fadiga et al 1995). This suggests a model that would more

accurately be called a “PEMAC flow” (for Perception, Emotion, Motor Action, Cognition).²² Shuffling the order of recruitment of brain mechanisms around allows Grodal to insert explicit cognition into the process earlier - thereby promoting the mind and demoting the body.

Regardless of the order in which brain mechanisms are recruited, Grodal fails to apply his PECMA flow theory to the processing of viewer engagement with character. In his chapter on Character Simulation and Emotion, (pp 181 - 204) he argues at some length that viewer simulation of character experience is crucial to the effective apprehension of the narrative. And he argues that viewers “attach” to particular characters, and that this attachment entails more intense (even exclusive) simulation. But he offers no explanation of how his PECMA model accounts for this attachment, its added intensity, or its exclusivity. His only discussion touching on this crucial subject is a brief section on salience, in which he notes that close ups, big screens and high stakes may aid salience, and that increased salience may enhance simulation (p201). These considerations are, at best, peripheral to the question of how viewers attach to characters, and are not established as inherent to the “PECMA flow” theory.

In the absence of any such explanation, the reader is left to rely on Grodal’s earlier work for his account of how viewers engage with characters in narrative film. Further indication that Grodal has not revised his position is provided by the fact that he cites Murray Smith’s model of viewer engagement without qualification: “Murray Smith (1995) has shown how our relation to film characters may be described by terms such as *recognition*, *alignment*, and *allegiance*. In addition to this I will examine some of the elements that influence our degree of immersion” (Grodal 2009, p201). As we shall see when we consider Murray Smith’s model in the next section of this chapter, Grodal’s PECMA flow points to a model of empathetic engagement that disagrees substantially with aspects of Murray Smith’s model. But Grodal doesn’t acknowledge this disagreement. So it would appear that, on the question of how viewers engage with characters in narrative film, Grodal fails to go where his own model points.

COGNITIVE FILM THEORIST MODELS OF VIEWER EMPATHY:

Murray Smith

Murray Smith is coeditor (with Richard Allen) of *Film Theory and Philosophy* (1997) and *Contemporary Hollywood Cinema* (1998) (with Stephen Neale) and author of *Engaging Characters: Fiction, Emotion and the Cinema* (1995). In this book, Murray Smith (to avoid confusion with Greg M. Smith, whose work I also discuss, I shall refer to him throughout as Murray Smith) offers a detailed theory which positions emotional engagement with characters as central to the process of constructing meaning from film narrative.

Murray Smith proposes a model of empathetic engagement that breaks into three distinct phases: recognition, alignment and allegiance. The first phase, “recognition”, like Grodal’s “cognitive identification”, is essentially a reiteration of Theory of Mind. The second phase, “alignment”, refers to the viewer’s adoption of telic, intentional concerns of the character. The third phase, “allegiance” consist of the viewer’s evaluation of the character as morally preferable. Like Grodal’s, it is a detailed model, and Murray Smith provides a close argument in support of each phase. But, also like Grodal’s, the model is not without issues.

According to Murray Smith’s model, the first phase of viewer engagement with character, “recognition”, is some form of Theory of Mind acceptance of the character as a thinking, feeling, intentional agent. As noted in the critique of Grodal’s model, Theory of Mind is an umbrella term covering a wide range of cognitive processes carried out at different latencies by different brain areas, so nominating it as the primary cognitive process is unhelpfully general. It is almost inevitable that it will overlap with cognitive functions that the theorist claims as central to later phases of empathetic engagement. This is the case with Murray Smith’s model.

Murray Smith (1995, p142) claims the second phase of viewer engagement “alignment” is “produced by two interlocking character functions - spatio-temporal attachment and subjective access.” The former (spatio-temporal attachment) refers to the measure of screen time and screen space afforded to a particular character. The latter (subjective access) he tells us, “is the function that represents characters as entities that desire, believe, feel, think and so forth” (Smith 1995, p143). This latter sounds very much like a definition of Theory of Mind. But in order for his first phase “recognition” to be accomplished, the Theory of Mind functions that “represent characters as entities that desire, believe, feel, think and so forth” must already have been carried out in the viewer’s mind (Gordon 1996). Thus the distinction between phases in Murray Smith’s model is unhelpfully blurred. There are several other issues with the second “alignment” phase of Murray Smith’s model.

Murray Smith tells us that the “alignment” phase consists of “spatio-temporal attachment and subjective access”. “Spatio-temporal attachment” refers simply to pictorial focalisation. And, judging from his examples - including a detailed analysis of Hitchcock’s *The Man Who Knew Too Much* (1956) - it seems that what Murray Smith has in mind when referring to “subjective access” is textual features such as POV shots that provoke the viewer to simulate the character’s mental states (Smith 1995, p86). If this is the case, then both functions of Murray Smith’s “alignment” phase - “spatio-temporal attachment and subjective access” - may be understood as aspects of focalisation. There are several problems with this aspect of Murray Smith’s model. Firstly, as noted in the analysis of Grodal’s model, such focalisation is frequently applied to the antagonist prior to the introduction of the protagonist (e.g. *The Dark Knight*) without “aligning” viewers to the antagonist. And secondly, Murray Smith (1995, p85) argues elsewhere that, “in sympathizing with the protagonist I do not simulate or mimic her occurrent mental state”.²³ This contradicts his claim that “alignment” relies on “subjective access”. There is no meaningful way that we can be said to have “subjective access” to another’s mental states without in some manner simulating these states and experiencing them as our own. Absent of simulation, the most we can be said to have is an ‘objective construal’ of the other’s mental states. This

is not at all the same thing as “subjective access”. Murray Smith’s model both requires and denies simulation.

Murray Smith’s model also differs from Grodal’s in that it attempts to address the question of how, when presented with several ‘clear points of identification’, the viewer selects one among them. This is the purview of the third and ultimate phase, which he calls “allegiance”. Murray Smith identifies “moral structure” as the primary consideration in creating “allegiance”. He contends that:

to become allied with a character, the spectator must evaluate the character as representing a morally desirable (or at least preferable) set of traits, in relation to other characters within the fiction. On the basis of this evaluation, the spectator adopts an attitude of sympathy ... toward the character
(Smith 1995, p188)

While moral alignment between viewer and character arguably plays some role in moderating empathy, it is difficult to support the claim that the creation of empathy is fundamentally reliant on the character being evaluated as morally superior to other characters in the narrative.²⁴ The example already cited from *Psycho* would seem to provide evidence against this notion - the viewer is unlikely to evaluate Norman Bates, who is presented by the narrative as a rather creepy young man, probably a peeping tom, intent on covering up the murder of a young woman, as “representing a morally desirable set of traits”. Norman is certainly not the most “morally desirable” character available “within the fiction” - it is reasonable to assume that Marion’s hard working and self-denying boyfriend would be placed higher on the moral hierarchies of most normative viewers. Other examples of narratives that feature morally compromised but highly empathetic characters abound, from Gaz in Simon Beaufoy’s *The Full Monty* (1997) and Paul in Guillermo Arriaga’s *21 Grams* (2003), to Melvin Udall in *As Good As it Gets* (1997) and Ada in Jane’ Campion’s *The Piano* (1993). Indeed, somewhat perversely, it could be argued that morally superior characters are at times less empathetic - we need look no further than the amoral but lovable Homer Simpson and his irritating goody-two-shoes neighbour Ned Flanders in *The Simpsons* (1989-2014).²⁵

Arguably the most problematic aspect of Murray Smith's model of empathy is that he insists on an *a posteriori* moral judgment as a prerequisite to emotion. According to the "allegiance" phase of Murray Smith's model we do not react emotionally with the character - rather we react to the character's reaction, on the basis of how we situate that character in a moral hierarchy:

in sympathizing with the protagonist I do not simulate or mimic her occurrent mental state. Rather, I understand the protagonist and her context, make a ... judgement of the character, and respond emotionally in a manner appropriate ... to the evaluation
(Smith 1995, pp. 85-6)

For Murray Smith, in order for empathy to occur, the spectator is required to feel no spontaneous affect, but rather to simply analyse and categorise the character's experience. This comes very close to being a description of autism. This is highly problematic. Autism is by definition an absence of empathy (Baron-Cohen 1999).²⁶ Sufferers of Autism Spectrum Disorder [ASD] have a deficit in their ability to mirror others internal states, and thus are impaired in their ability to experience spontaneous affect in response to others (Dapretto et al 2006; Baron-Cohen 1999). Many high functioning ASD sufferers compensate for this impairment by undertaking the process described by Murray Smith - which Baron-Cohen (1999) labels "systematizing". They build a database of semantic knowledge about emotional and social behavior, which they use to make conscious construals in order to understand other people and their contexts (Attwood 2006). The ASD sufferer will then, as Murray Smith puts it, "respond emotionally in a manner appropriate ... to the evaluation". The process Murray Smith describes is not the process through which a normative individual responds empathetically to another's state. Murray Smith attempts to sidestep the problem by insisting that the nature of the viewer's engagement with the character is not empathy, but rather sympathy. For Murray Smith, the viewer experiences *feeling for* the character, rather than *feeling with* the character. Adopting this distinction has its advantages and disadvantages. The advantage is that it allows the theorist room to

insert conscious construals as a primary mechanism in the cognitive processing through which the viewer engages with character. Its disadvantage is that it requires willfully ignoring a truckload of relevant neuroscientific evidence, including but not limited to studies by Masserman (1964), Gallese (2003), Singer et al (2004, 2006), and Adolphs (2003). I shan't go into that evidence here - there is simply too much of it. That will have to wait until Chapter 6. But it appears that Murray Smith, like Carroll, makes a misstep motivated by a pre-existing preference for a philosophical stance of intentionalist dualism.

Murray Smith's model of viewer engagement with character (be it sympathy or empathy) is flawed. Demarcation between phases in his model is confused, with aspects of Theory of Mind and focalisation occupying multiple positions in his hierarchy. He argues both for and against subjective access. The mechanisms he proposes as central to viewer engagement - focalisation, telic concerns and moral preferability - are subject to too many exceptions to be convincing. The viewer may engage with a character without understanding their telic concerns, and conversely, may understand the character's telic concerns without engaging. Focalisation through shot size and screen time does not, in itself, create viewer engagement. A preferable position within a moral hierarchy does not guarantee engagement with character. And conversely, an undesirable moral position does not prevent viewer engagement with character. If these mechanisms cannot be supported as primary factors in creating viewer engagement then what else might? Theorist Greg M. Smith offers a different theory.

COGNITIVE FILM THEORIST MODELS OF VIEWER EMPATHY:

Greg M. Smith

Greg M. Smith is co-editor of *Passionate Views* (Plantinga & Smith 1999), in which he published an essay entitled "*Local Emotions, Global Moods, and Film Structure*", as well as author of the book, "*Film Structure and the Emotion System*" (2003). In both

essay and book, Smith makes a compelling case for the existence and function of what he terms “mood cues” in narrative film. Smith argues that pervasive emotional moods over-ride telic (goal driven) concerns in the creation of audience identification:

Even a highly goal-oriented and plot-heavy film such as *Raiders Of the Lost Ark* needs emotion markers (highly co-ordinated bursts of emotion cuing that do not advance the plot) ... the need for structured appeals to the emotions exceeds the functional information that is organized by narrative goals and actions.

(Smith 1999, p120)

To illustrate his model of empathy, Smith (2003, p80) offers an interpretation of the same sequence from *Psycho* as analysed by Grodal.²⁷ Smith’s analysis is that the initial identification with Marion is aided by a long, unbroken shot of her early in the film and that “This viscerally involving camera movement following the character moving through space is an important stylistic marker of her centrality to the narrative”. Smith claims the device is only used in *Psycho* when the identification switches - first to Norman and then later to Arbogast, and cites this as evidence that “the mood cue approach suggests that early moments in a film alert us to crucial patterns in shaping our emotional response”.

The example is unsatisfying in several regards. Smith offers little indication of what the particular “mood cues” in the sequence are, or how they contribute to “shaping our emotional response” at all, let alone in a manner that “exceeds the functional information that is organised by narrative goals”. The primary mechanism he identifies here is (once again) simply sustained pictorial focalisation. Focalisation alone can not legitimately be considered a “mood cue” as it does not in itself invoke any specific affect in the audience, and thus can not be claimed as a “structured appeal to the emotions” (the definition of “mood cues” according to Smith). Also, broader analysis of the film does not support Smith’s claim that this pattern of sustained focalisation is employed recurrently throughout the film to reattach empathy with each new protagonist. No such sustained focalisation is afforded to the character of the

detective Arbogast. He shares his scenes with other characters who are accorded at least equal screen time and shot size. His only solo moment is a brief suspense scene as he enters the Bates house immediately before being murdered. After his disappearance, Marion's sister Lillian becomes the protagonist despite being afforded no sustained isolated focalisation whatsoever - she shares the screen with Marion's boyfriend and with Norman.

Smith's theory is also difficult to apply coherently to film narratives in which the central character's emotional state does not match the "mood" of the piece. In his essay, "Local Emotions, Global Moods, and Film Structure", (Plantinga & Smith 1999, pp. 114-5) Smith positions moods as "orienting states that cause us to interpret stimuli in a particular emotional fashion", claiming that this orientation is reliant on maintenance of "congruent emotion". His model offers no clue as to how the viewer might reliably "interpret stimuli" in a narrative in which the pervasive "orienting state" is repeatedly contradicted by 'non-congruent emotion' in the protagonist. Yet such non-congruent emotion is a common marker of protagonists in narrative film. The brave, cheerful little hero plugging on in the face of enormous misery and suffering that we witness in Benigni's *Life is Beautiful* (1997). The innocent, optimistic child oblivious to the darkness and depredation surrounding him, as witnessed in *The Boy in The Striped Pyjamas* (2008). The cool action hero cracking wise in the midst of a high-octane action sequence in which all the "mood cues" are focused on creating the affect of frantic desperation, as we see in *Die Hard* (1988) and its numerous sequels. These misalignments between protagonist's emotional state and narrative mood are a source of great emotional power, and the site of significant meaning. Hal Ashby's delightful satire *Being There* (1979) would be meaningless if his hero, Chance, was emotionally attuned to the mood of the world around him. But according Smith's model, in which "mood and emotion sustain each other" such emotional misalignments should be ineffectual or even incomprehensible.

While Smith's "mood cue" theory has some merit in as much as it acknowledges the role of unconscious, cognitively impenetrable stimuli, and in particular the way in which priming may be employed by filmmakers to create an

emotional context within film narrative, his claim that such “mood cues” are the prime-mover in shaping our empathetic engagement does not appear to withstand interrogation.

COGNITIVE FILM THEORIST MODELS OF VIEWER EMPATHY:

Other voices

Cognitive film theory is not a single doctrine, but rather a loose affiliation of commentators who share some fundamental conceptions about the nature of film spectatorship, and parameters within which the experience of viewing film may be discussed. As Rushton & Bettinson (2010) write:

Cognitive film theory comprises a cluster of piecemeal inquiries whose contribution to film theory is registered in a variety of different ways - by mid-level arguments set forth about individual phenomena; more encompassing theses ... and the falsifying or qualification of existing theories

I have focused on the theorists above because each proposes a distinct model of the process through which the viewer is drawn into a position of engagement with a character in narrative film. Other theorists offer their own nuanced views on aspects of this process, without substantially departing from the fundamental tenets of these models. In this section I briefly note some of these nuances.

Gregory Currie (1995) argues for a model that includes the viewer’s simulation of the character as an essential part of the process. Currie criticizes Cartesianism and psychologising in cognitive film theory, and urges it to move its models towards an acceptance of non-conscious processes, including simulation. To this extent his approach is more closely aligned with those of expert screenwriters and current cognitive neuroscientists. But it seems that he cannot commit wholeheartedly to a model of cognitive processing that does not privilege the rational executive. Currie’s discussion of simulation is limited almost entirely to simulation of “the process of

acquiring beliefs” (p147). This is a cognitively explicit form of simulation, which, while relevant, overlooks the viewer’s more prevalent and influential non-conscious simulation of the character’s somatic and affective states (Damasio 1994). Currie, to his credit, does argue that simulation explains our ability to “empathize with fiction characters”, and declares that it is only “when we are able to feel as the character feels that fictions of character take hold of us” (p153). Regrettably, though, Currie does not pursue the question of what processes enable us to “feel as the character feels”. Instead he blurs his definition of empathy when he offers, as an incidental example, our ability to “pity Anna Karenina” (p153). Such pity is, according to the definition offered by the Oxford dictionary²⁸ and employed by current cognitive neuroscience, sympathy, not empathy - feeling for the character on the basis of our evaluation of their situation, rather than feeling “as the character feels”.

Carl Plantinga in his book *Moving Viewers* (2009) distinguishes his position from that of Noël Carroll by allowing a place for non-conscious “affects”. But his model of cognition remains overwhelmingly computational-representational, with connectionist, embodied processes being relegated to a supporting role, while the spotlight remains firmly on emotions that result from conscious evaluations and concerns. Like Carroll, he distinguishes emotions from mere affects, defining emotion as affects that involve “a higher degree of cognitive processing and are intentional states” (p57). As noted in my discussion of Carroll’s model, this definition does not accord with the definitions proposed by neuroscientists such as Damasio (1994, 1999) and LeDoux (1996) who see emotions as largely automated survival response programs, which do not require cognitively explicit processing. Like Carroll, Plantinga argues for his position by dismissing a ‘straw man’ version of the opposing view, leveling the accusation that “those who think of emotions as automatic “affect programs” rather than mental states tend to choose their examples carefully and write about simple affects, such as the startle response, that most closely fit their theories” (p59). This criticism conveniently overlooks numerous publications predating Plantinga’s book, by authors such as Damasio (1994, 1999) , LeDoux (1996), Ekman (1999), Jackendoff (2002), Plutchik (2002) and Montague (2006), which lay out in precise detail the physiological bases not just of “simple affects such as the startle response” but of all emotions, both

basic and social, and of consciousness itself, providing substantial clinical evidence for every step of the process - in some cases down to the precise neural and endocrine pathways involved. The neuroscience literature offers ready evidence that automatic, involuntary, non-conscious emotional activations extend far beyond “the startle response”. Non-conscious perceptions that trigger automatic affect programs include interoception (perception of the homeostatic status of the internal milieu), nociception (perception of pain) and ‘air hunger’, perceptions of space and terrain (including awareness of support and “falling off areas”), perceptions of figure/ground distinction, centre of moment (which affords perception of directional movement) and looming objects, as well as recognition of animacy, agency, intention of motor actions, social intention, prediction and prediction-error, in-group / out group evaluations, evaluation of attractiveness and trustworthiness of faces, evaluations of fairness, and even of facial emotion and emotional body language (Craig 2003; Meeren, van Heijnsbergen & de Gelder 2005; Adolphs 2003, Preston et al 2007; van Elk et al 2010; Calder et al 2000, Winston et al 2002; Zebrowitz et al 2009). This list is not exhaustive, but offers ample evidence that there is more to non-conscious perception and activation than just “simple affects such as the startle response”.

In contrast, Plantinga is selective in his citation of studies “that most closely fit” his theory. Like Grodal, he gives undue credence to Schachter & Singer (1962), citing it as evidence that affects are undifferentiated until labeled as a result of conscious appraisal. This conclusion is not supported by the study, which has been widely critiqued for its flaws. In this 1962 psychology study, Stanley Schachter and Jerome Singer experimentally injected subjects with epinephrine, and studied how they used cues from their environment to ‘label’ the arousal they felt as different emotions. Plantinga (2009, p55) and Grodal (1997, p97) infer from this that all “emotions and affects” are “unspecific” and rely on “cognitive analysis of the context” before the viewer is able to label them as specific emotions. There are three substantial problems with this assumption:

The first is that the subjects in the experiment were exposed to more than just artificial chemical arousal. They were also exposed to a real-world stimulus. A research

assistant was planted in the group and instructed to provoke the subjects with deliberately amusing or deliberately annoying behavior. The results of the study state that the placebo group, who were given no drug, also reported feeling amused or angry at this stooge, though less so than the subjects given adrenalin. Thus the study demonstrates only that an appropriate emotional response may be artificially enhanced by drugs. It does not demonstrate that a generalised physiological affect will be arbitrarily labeled as an emotion as a result of conscious cognition. It certainly doesn't demonstrate that all emotion is undifferentiated affect that is labeled *ex post facto*, as Grodal and Plantinga imply.

The second problem is that the neuro-chemical transmitters released upon experiencing any particular emotion are more specific than a crude shot of adrenalin, a stimulant not even included among the 23 neuropeptides identified as directly responsible for governing emotions (Panksepp 1998). As a consequence, the chemical signatures of real affects are significantly more specific and differentiated, and thus not amenable to reinterpretation through 'labeling'.

The third problem is that this theory makes predictions which do not withstand scrutiny. For example, it predicts that newborn babies, who have not yet developed any schemata through which to conduct a "cognitive analysis of the context" must therefore be capable of feeling only one, generalised, type of affect. This prediction is not supported by studies of emotions in newborns, e.g. those of Paul Ekman (1999), which identify that newborn babies are capable of expressing no less than eleven distinct emotional states.

Schachter and Singer's study does not support the interpretation that Plantinga and Grodal wish. Nor does it deserve the prominence they afford it. In a credible, contemporary analysis of emotion processing, this psychological study from over 50 years ago should be considered (if at all) only in the context of more recent studies backed with neurological evidence, such as those published by LeDoux, Damasio, Singer and Ekman. This is not the only out-of-date source Plantinga draws on. He also quotes psychologist Frederick H. Lund's assertion that,

Fear, horror, disgust, repulsion, aversion, dislike, annoyance, anger, sadness, sorrow, despair, hopelessness, pity, sympathy ... are not descriptive of so many internal or organic states. They are descriptive of objective situations and of accepted modes of handling and dealing with these.

(Lund 1939 cited in Plantinga 2009, p82)

Lund wrote this in 1939. More recent publications provide a very different view of emotion. For example, LeDoux (1996), Calder et al (2000), Adolphs (2003), Ekman (1999) and Panksepp (1998) provide substantial biological evidence that different emotions utilise different hormones and neurotransmitters, and are processed by different sets of brain mechanisms. If we accept the findings of current neuroscience, we must accept that the various emotional states named are in fact “descriptive of so many internal or organic states”.

As a result of the credence he lends to these less than optimal sources, Plantinga overestimates the degree to which cognitive construals shape emotional response, claiming that emotions are “heavily influenced by cultural context and social convention”. He provides evidence only that manifestations (as distinct from experience) of emotion may to some degree be suppressed. He offers no evidence that the fundamental nature of the emotion itself may be determined or altered. Plantinga can legitimately claim that emotional response may be somewhat inhibited by cultural context and social convention. But not that it may be “heavily influenced”. He cannot legitimately claim, as he does, that “The kind of emotion experienced ... depends not on the situation but on the appraisal of the perceiver” (Plantinga 2009, p55). There is no cultural context or social convention, for example, in which a nearby explosion will cause a normal brain to release oxytocin and dopamine rather than adrenaline and cortisol. Nevertheless Plantinga, like Carroll, claims that emotions cannot be understood as physiological phenomena, and insists that, “Emotional responses, whether they occur in or out of the movie theater, are not merely physical, but also mental” (Plantinga 2009 pp. 55-56).

This raises an unavoidable question. What is this “mental” response comprised of, if it is not itself “physical”? Plantinga does not specify. He furnishes no evidence that ‘mental responses’ exist in a different form to ‘physical responses’. Conversely, neuroscientists such as Damasio, LeDoux, Adolphs, Craig, Singer, Frith, de Gelder and Van Overwalle (to cite just a handful) provide reams of peer-reviewed studies supporting their view that the mental processes to which Plantinga refers are neurally realised physiological processes. The evidence from neuroscience points only one way - our mental processes *are* biological processes (albeit incompletely understood ones). As neuroscientist Daniel Bor (2012, pp. 6-7) writes:

If there are instances when consciousness radically alters, but brain activity is unchanged, then we can start talking about independence of brain and mind – *but not until*. As it is, all brain-scanning experiments to date have shown that even the subtlest of changes in consciousness are clearly marked by alterations in brain activity. The alternative perspective, then, that consciousness is physical, brain-based process, is eminently more plausible than the belief that consciousness is independent of the physical world.

Many contemporary philosophers have incorporated this evidence into their models of mind, for example John Searle’s (2002) “biological naturalism”. Plantinga is of course entitled to argue that this view is incorrect. But in order to do so persuasively, he is obliged to either falsify the empirical evidence produced by neuroscience, or provide a credible alternative account that is equally consistent with the available evidence. The evidence cannot simply be ignored. This is one of the challenges of cross-disciplinary theorising - once you bust out of your academic silo, you are rather obliged to acknowledge what the other fellow has stock-piled in his. But Plantinga, like Carroll and Smith, appears to allow his preference for an intentionalist property dualist view of mind to determine what evidence will be considered.

Like Murray Smith, Plantinga eschews the term “empathy”, claiming that it is an unnecessary term that has no specific meaning. He argues that it is not descriptive, is used interchangeably with the word ‘sympathy’ by laymen, psychologists and

dictionaries, and simply creates confusion. This argument is difficult to accept. Laymen misuse many technical terms. This is not usually considered sufficient reason for academics and specialists to cease using these terms. Most individual psychologists do not use the terms sympathy and empathy interchangeably - rather there is disagreement between different psychologists on the precise boundaries and definitions of the two phenomena. Such disagreement is common in discussions of many phenomena in many fields, and is not a justification for conflating the two terms. And, as discussed earlier, the Oxford Dictionary makes a clear distinction between the definitions of the two words. The Merriam-Webster does likewise, specifying that empathy is “*vicariously experiencing the feelings, thoughts, and experience of another*”. On the whole, Plantinga’s argument for dispensing with the word empathy is unconvincing. The fact that he continues to use the word throughout his book, and to distinguish it from sympathy, does not strengthen his case.

Plantinga contends that that the viewer’s engagement with a character must be considered “sympathetic” because the viewer is aware that the experience is someone else’s. He argues that, “my response is never purely and solely empathetic, for the reason that I perceive the situation from my particular perspective rather than ‘from the inside’” (Plantinga 2009, p72). Plantinga uses the same reasoning to minimise the importance of affective mirroring in shaping the viewer’s response. He reasons that because the viewer is able to distinguish their emotion from the character’s emotion, it cannot be the result of affective mirroring. Therefore, he concludes, it must be the result of conscious construals. His argument relies on the assumption that we are unable to distinguish between directly experienced states and mirrored states. This assumption is false. Fortunately. The failure to distinguish between our own states and the mirrored states of others would be a catastrophic obstacle to our ability to function effectively in everyday life. Thankfully we are able to make this distinction.

We do, as a matter of biological fact, internally simulate the occurrent physiological and emotional states of others (di Pellegrino 1992; Gallese 2003; Singer 2004). This is not the same as feeling our own feeling about a situation. Evolution has, unsurprisingly, provided us with cognitive mechanisms for distinguishing the two

operations (Decety & Sommerville 2003). The neuroscience literature provides clear evidence that particular brain areas, such as the ventromedial prefrontal cortex, dorsomedial prefrontal cortex and temporo-parietal junction are differentially activated by perception of our own and others' emotions (Schulte-Rüther et al 2007). We are able to directly mirror another's experience (without losing our boundaries of self) and we are also able to consciously 'mentalize' another person's experience, and as a result to feel a quite different emotion (Frith & Frith 2003). And thus we are able to both empathise and sympathise. The two phenomena are distinct but interrelated, and are instantiated by distinct but interrelated neural mechanisms, the workings of which have been well documented (Masserman 1964; di Pellegrino et al 1992; Singer 2004, 2006; Van Overwalle 2009; Adolphs 2003; Preston & de Waal 2002). I present evidence for this in the next chapter.

COGNITIVE FILM THEORIST MODELS OF VIEWER EMPATHY:

Conclusions

While there is significant overlap between cognitive film theorists' models of viewer engagement with character, there are also significant differences. Most theorists support the notion that there is some form of 'full blown' empathetic identification, which is preceded by some version of explicit Theory of Mind recognition.²⁹ When their models fail to account for a particular instance of empathetic engagement in film narrative, the temptation to reach for the panacea of focalisation seems to be common. Several theorists argue for the importance of a privileged position in the moral hierarchy as a prerequisite for engagement. Several theorists argue that recognition of the character's telic concerns is essential to creating 'empathy proper'. Substantial objections and exceptions can be found to each of these contentions, and as a result, none of the resultant models are wholly convincing.

Woven throughout these models is also a common thread of intentionalist property dualism. This manifests in a broad agreement that explicit cognition is

required to elevate ‘mere affects’ to the status of ‘emotions proper’, and that the latter are in some way inherently different from and superior to, the former.³⁰ As a result there is a common belief that consciously cognized emotions are more crucial to the construction of viewer empathy with character. Consequently several theorists argue that engagement is sympathetic rather than empathetic. These views do not accord with the views held by expert screenwriters. They are also not compatible with the findings of current cognitive neuroscience, and thus must be called into question.

Nevertheless, a significant proportion of the groundwork laid by these theorists - not least in identifying relevant theories and studies of the cognitive sciences - is invaluable to others researching in the field, and many of the cognitive processes they identify unquestionably have a part to play in establishing and maintaining viewer empathy. But there is still much work to be done, and much new knowledge to be contributed. Some intriguing and important questions have been raised, and remain unanswered. Of particular relevance to this research project is the question that recurrently shows through the gaps in the models of empathy promoted by the theorists discussed herein: How does a viewer choose between one character and another when several potential ‘strong points of identification’ are presented by the narrative? In the chapters that follow I endeavour to supply a satisfactory answer.

Chapter Six

INSIDE THE RUSSIAN DOLL

The cognitive neuroscience of empathy: A screenwriter's perspective

Film theorists do not generate theories in a vacuum. The distinguishing feature of cognitive film theory is that it is constructed upon the findings of the cognitive sciences, particularly cognitive neuroscience (Anderson & Anderson 2006; Rushton & Bettinson 2010). Any researcher seeking to evaluate cognitivist models of viewer empathy is thus obliged to review current research in cognitive neuroscience.

In this chapter I introduce the Perception-Action Model of empathetic processing advanced by current cognitive neuroscience (Preston and de Waal 2002). Through close consideration of the distinct phases of cognitive processing that make up the Perception-Action Model, I demonstrate that the screenwriters' implicit model assumes a similarly progressive, cumulative process. I survey neuroscience studies of the neural mechanisms employed, and note how these mechanisms underpin narrative strategies used by expert screenwriters (as identified in Chapters 3 and 4). Conversely, I note significant areas of disagreement between these studies and the models of viewer empathy proposed by cognitive film theorists (as outlined in Chapter 5).

BACKGROUND: When ToM met PAM

The cognitive neuroscience of empathy is not a single, monolithic project. It is, rather, a constellation of diverse, overlapping sites of research. Nor is there one universally agreed model of empathy arising from this tapestry (Adolphs 2003).

Historically, this division has fed into two main approaches to theorising and modeling empathy: Simulation Theory and Theory Theory (Gopnik 2003; Hatfield, Cacioppo, & Rapson 1993). Simulation Theory proposes that a subject is able to comprehend the emotional states and behaviors of others through simulating the other's state internally. Theory Theory, in contrast, proposes that individuals understand the psychological and emotional states of others only by reference to an explicit 'Theory of Mind' [ToM] developed by the individual to predict and explain the states and behaviors of others. According to Theory Theory, individuals:

develop abstract, coherent, systems of entities and rules, particularly causal entities and rules. That is, they develop theories. These theories enable [individuals] to make predictions about new evidence, to interpret evidence, and to explain evidence
(Gopnik 2003, p240)

Theory Theory predicts that unless the individual utilises such an explicit "coherent system of... rules" by which they "interpret" and "explain evidence", they will be incapable of experiencing empathetic engagement with another (Churchland 1991; Gopnik 1993). Thus the Theory Theory model of empathy is inherently more cognitive and effortful than the Simulation Theory model. Broadly, Simulation Theory is considered a biological approach, and has been embraced by researchers in that field, while Theory Theory is considered a psychological approach and has found more support among researchers within that field. Most cognitive film theorists adopt a Theory Theory approach to understanding the viewer's engagement with character.

There is, however, a third, more inclusive approach to modeling empathy that is supported by many neuroscientists: the Perception-Action Model [PAM]. The Perception-Action Model proposes that perception and action share common mechanisms of representation in the brain (Preston and de Waal 2002; Preston 2007). These common mechanisms are phylogenetically ancient and initially evolved to serve survival needs more basic than altruistic behaviors. In higher primates and humans (because of their need to facilitate social interdependence in order to ensure survival)

these mechanisms have adapted to support the complex network of pro-social cognitive processes that we call empathy. These empathy-inducing cognitive processes - even at their most sophisticated - remain intrinsically reliant on the basic perception-action organization of the nervous system. Thus our 'higher' (cognitively explicit) processes are best understood as an extension of our 'lower' (automatic, embodied) processes rather than as a separate module. The Perception-Action Model does not refute the 'Simulation Theory' or the 'Theory Theory' models. Its aim is to reconcile them by subsuming them within a more inclusive definition of empathetic processing. The Perception-Action Model sees empathy as a continuum of interdependence responses, ranging from motor actions to cognitively effortful helping behavior. As Preston and de Waal write:

In order to unify the various perspectives, empathy needs to be construed broadly to include all processes that rely on the perception-action mechanism. ... phenomena like emotional contagion, cognitive empathy, guilt, and helping (Preston & de Waal 2002, p4)

Recent neuroscience research provides substantial support for such an inclusive model of empathy (Adolphs 2003; Craig 2009; Singer et al 2004a, 2004b; Van Overwalle & Baetens 2009; de Gelder 2006; Gallese 2003). Thus the Perception-Action Model is an appropriate benchmark against which to assess expert screenwriters' and cognitive film theorists' models of viewer empathy. In this chapter I describe the phases of processing proposed by the Perception-Action Model. And I survey neuroscience studies that specify the cognitive mechanisms involved in each phase. As I proceed, I note how these mechanisms support the forms and devices employed by expert screenwriters to create viewer empathy with characters in narrative film. And I note where these neuroscience studies refute cognitive film theorists' models of viewer empathy.

Phases of processing

Drop a pebble in a pond. When the pebble hits the surface of the pond, ripples are generated at the point of impact. The initial ripples are fast and strong. But as they radiate outwards, broadcasting their impetus more widely, their speed and power diminishes. When a stimulus impacts the mind, an analogous process occurs. The first processes activated are those at the ‘point of impact’ - the mechanisms of the perceptual systems. They trigger ‘ripples’ of autonomic activation that radiate out to other areas of the brain, diminishing in speed and power as they spread. The outermost ‘ripples’ of conscious cognition - like those in the pond - occur later, move more slowly, and cannot exist without the displacement of the first ripples. The Perception-Action Model offers a “Russian Doll” analogy (Figure 2) that illustrates, in a slightly more static form, this nested relationship between processing at lower and higher levels of cognition.

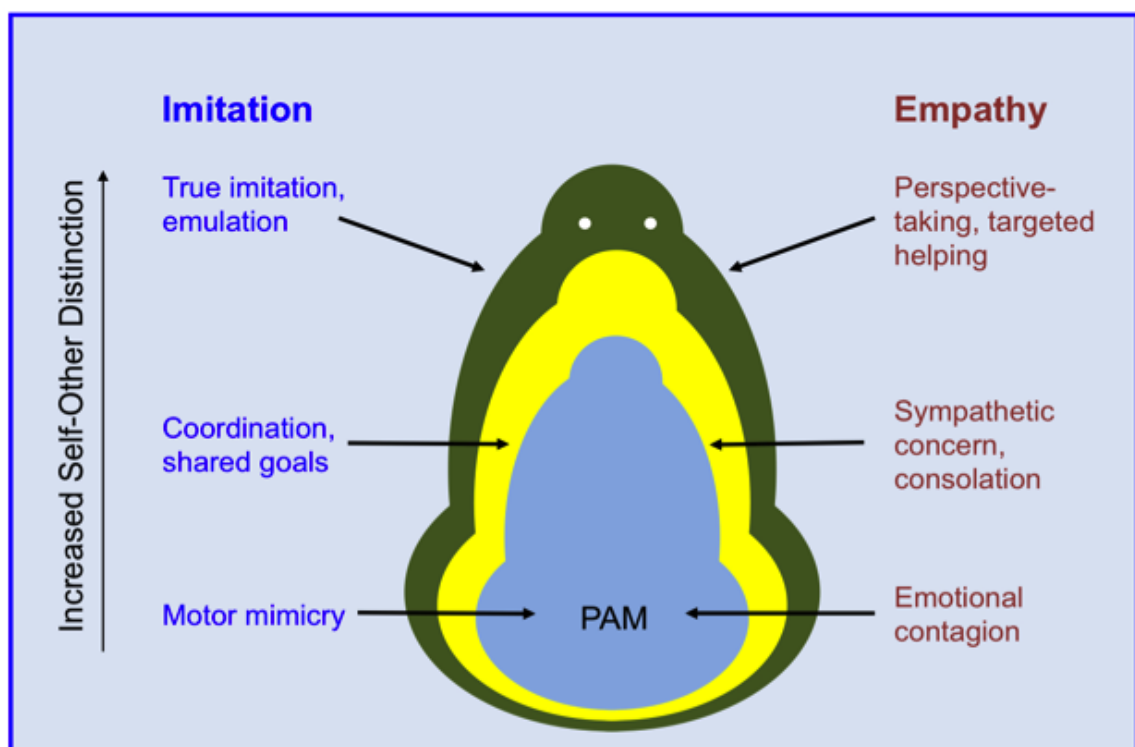


Figure 2: Russian Doll model of empathetic processing (de Waal 2008, p288)

Cognitive neuroscientists have shown that automatic, cognitively impenetrable processes are activated earlier and carried out faster than cognitively penetrable processes (Adolphs 2003; LeDoux 1996; Damasio 2010; de Gelder 2006; Van Overwalle & Baetens 2009). It is also well established that higher cognitive processes - even the most conscious, effortful and 'rational' - rest upon, and recursively recruit these automatic, cognitively impenetrable processes (Barsalou et al 2003; Niedenthal & Maringer 2009; Adolphs 2003; Damasio 1996; Craig 2009). For this reason PAM sees these short latency, automatic processes as the ground zero of empathy, and argues that all empathy processing, no matter how recursive or subject to effortful reappraisal, is fundamentally reliant on their activation (Preston et al 2007). Cognitive neuroscientist Ralph Adolphs argues for a similar model of social cognition:

neuroscience might offer a reconciliation between biological and psychological approaches to social behaviour in the realization that its neural regulation reflects both innate, automatic and COGNITIVELY IMPENETRABLE mechanisms, as well as acquired, contextual and volitional aspects that include SELF-REGULATION
(Adolphs 2003, p165)

To illustrate, Adolphs offers a chart that graphically represents the multiple tracks of information processing and brain structures involved (Figure 2). Adolphs' chart breaks down into four roughly parallel pairs of processes:

Perception of course and detailed features of phenomena.

Evaluation of agency and intention of phenomena.

Activation of basic emotions and schemata by phenomena.

Recognition of social valence of phenomena & response.

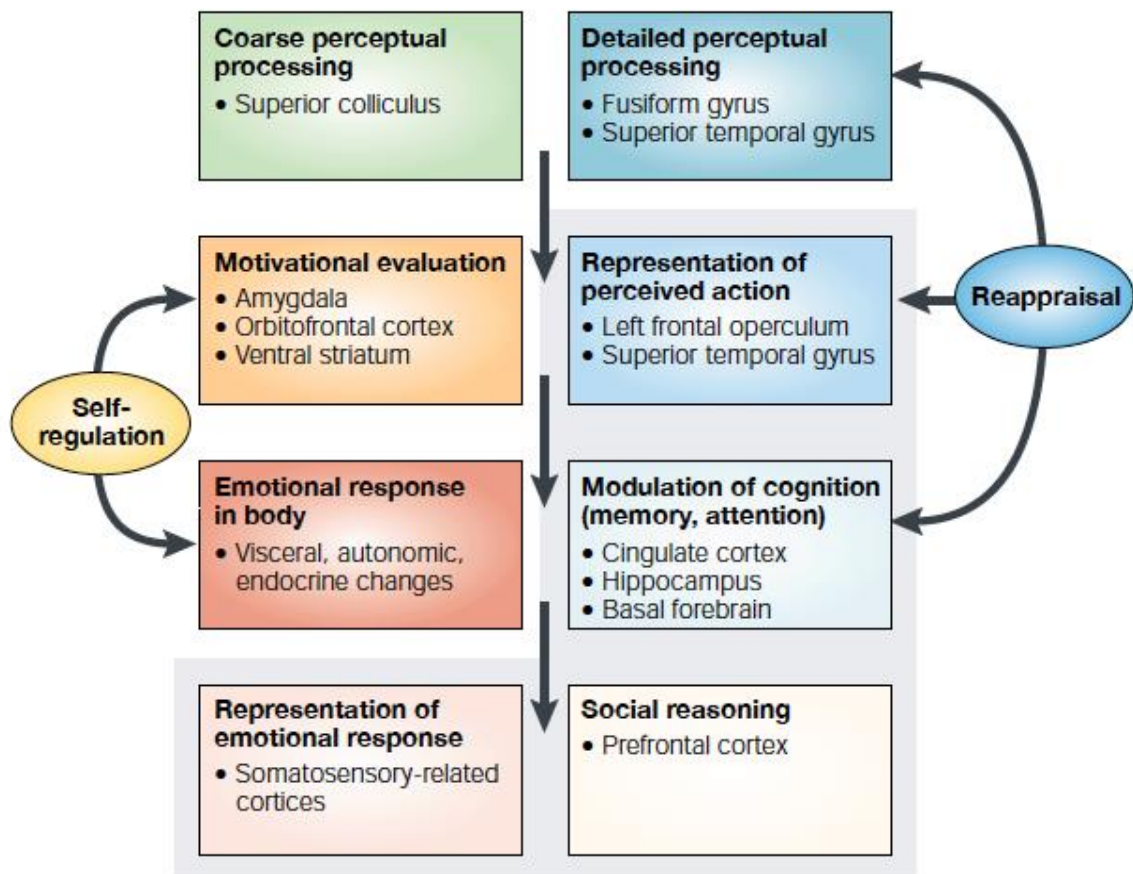


Figure 3: Neural processing of social cognition (Adolphs 2003, p165)

As Adolphs (2003, p167) is at pains to point out, “the flow of social information defies any simple scheme for at least two reasons: it is multidirectional and it is recursive”. That is, a single brain structure may be recruited to serve several different processes at different stages of the flow. Also, processing routes differ depending on situation, so “tracks of information processing ... can be variously recruited depending on the circumstances”. Some processing routes are entirely automatic, while others become more cognitively penetrable as they proceed, allowing for reappraisal and self-regulation.³¹

Adolphs’ chart graphically illustrates two crucial facts. The first fact is that empathy does not happen in one place in the brain, at one isolable instant, or through one discrete process. Different brain systems are recruited depending on context. Systems branch and loop back on each other. And at times systems compete, racing each other to produce a result. The second fact is that processing does not become

explicitly conscious until the final phase. Indeed, processing does not even become cognitively penetrable (i.e. available for reappraisal) until the midst of the second phase. Adolphs nominates fourteen brain areas crucial to processing social cognition. Of these, twelve do their work with no need for conscious input. Only the final two are tied to explicit, conscious cognition. This model is consistent with the implicit model of viewer empathy in the tacit knowledge of expert screenwriters, which sees empathetic responses as arising primarily from nonconscious cues. But it is significantly at odds with the models of viewer engagement proposed by cognitive film theorists, which insist that conscious construals must precede, and therefore determine, affective and empathetic responses.

Many neuroscientists propose similar models. In her article *“Towards the neurobiology of emotional body language”*, Beatrice de Gelder proposes a model for the neural processing of body language. It is comprised of “a dynamic interaction between impulsive (reflex-like) and deliberate reflective (cortically controlled) behaviour” (de Gelder 2006, p248). Vittorio Gallese (2003) proposes a model he calls the “shared manifold” of empathy, which is based on the same premise - a recursive and cumulative progression of processes beginning with the involuntary, autonomic nervous system and escalating to include the cognitively explicit processes of the cortical areas. Paul MacLean’s (1990) “triune brain” model proposed a similar progression of cognitive processing carried out by distinct systems of neural mechanisms, with evolutionarily older systems recruited earlier. While MacLean’s system is now generally considered inaccurate and overly reductive, many of his ideas have been refined by subsequent researchers, and some of his terminology has become standard in the field (Newman & Harris 2009). Frank Van Overwalle distinguishes between three discrete types of neural processing of the actions of others, which are carried out by different brain mechanisms. First, purely physical actions that are part of a familiar motor repertoire are processed by the mirror system and the motor cortex. Then unfamiliar motor actions are processed by a network led by the temporal parietal junction. And, finally, if an action is found to have a social intention, processing is then passed on to the medial prefrontal cortex (Van Overwalle & Baetens 2009).

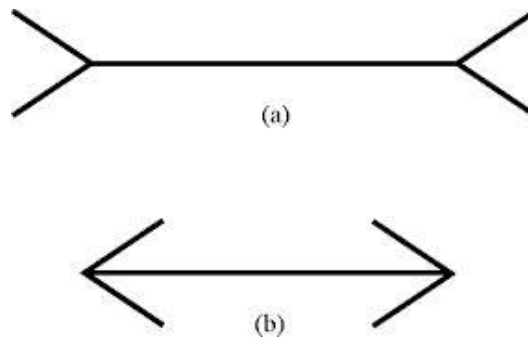
These models have a direct bearing on the central question of this research project. Like Adolph's model, they characterize neural processing of empathy as diffuse, recursive, and context-contingent. This correlates with the view of embodied, situated cognition advocated by Noë (2009) and Lakoff & Johnson (1999). These models also specify that multiple brain mechanisms may be recruited simultaneously, and compete to process a phenomenon. This correlates with the theories of Dynamical Systems and Relaxation Systems of cognition (Preston & Hofelich 2012; Hotton and Yoshimi 2011; Rumelhart & McClelland 1987). In short, these neuroscientists' models depict the creation of empathy as a context-contingent accrual of rapid, automatic, nonconscious responses - which may or may not ultimately result in conscious recognition. All of this correlates with the expert screenwriters' model of viewer empathy with character.

Cognitive film theorists also support this model. In principle, at least. In his foreword to Anderson & Anderson (2005, pX), Bordwell writes: "a great deal of what is conveyed in a movie is conveyed "naturally" – through those perceptual-cognitive-affective universals that are part of our biological inheritance". Bordwell goes on to explicitly state that cognitive film theorists embrace an approach that, "deserves the name *ecological*". Yet despite this, cognitive film theorists remain biased towards a 'psychological' approach. The difference is significant. Rather than seeing empathetic engagement as an adaptive behavior arising from nonconscious biological mechanisms, they view it as the psychological product of cognitively explicit appraisal of the states and intentions of others. Cognitive film theorists such as Carroll, Grodal and Plantinga pay lip service to the ecological view of cognition, but balk at pursuing it to the inevitable conclusion reached by cognitive neuroscientists such as Preston, Adolphs and Damasio. Instead, they insert a cut-off point beyond which they refuse to venture - they will consider cognition as ecological, but accept only explicit, conscious cognition as true cognition. In doing so, they blinker themselves from considering the full ramifications of the ecological view of cognition, and falter from the path of the scientists by whom they claim to be led. In the light of the evidence compiled by Damasio (2010), LeDoux (1996), Craig (2009), Preston & de Waal (2002), de Gelder

(2006), Montague (2006), Singer et al (2004), Van Overwalle & Baetens (2009) and a host of other neuroscientists, this stance is increasingly difficult to maintain.

Expert screenwriters, on the other hand, embrace nonconscious cognitive processes as inevitable and desirable contributors to the creation and the reception of narrative fiction film. Expert screenwriters intentionally use specific narrative forms and devices that harness nonconscious cognitive mechanisms to create and direct empathy. Precisely how they do so, we shall explore in depth in Chapter 7. In the following sections of this chapter I examine each of the four phases of Adolphs' model (perception, evaluation, activation and recognition)³² and explore studies of the neural mechanisms involved. As I proceed, I offer a screenwriter's perspective on their relevance to establishing and maintaining empathy with characters in narrative film.

PERCEPTION



Which horizontal line is longer, (a) or (b)?

Of course it is neither. Both lines are of equal length. This is the Müller-Lyer illusion. Your false belief that one line is longer is explicitly cognitive. Conscious. But the reason you hold it is perceptual. Non-conscious. You can easily correct your conscious belief by measuring the lines (go ahead, don't take my word for it). But even after you do, you will continue to see line (a) as longer. Because you cannot correct

your automatic, involuntary perceptual mechanism. It will continue to over-ride your conscious cognitive mechanism. This state of affairs is not restricted to optical illusions. It's just business as usual for human cognition. A legacy of our evolution. Non-conscious processes are cognitively impenetrable. We cannot influence them by our conscious will.

Much has been written about perception and film spectatorship. Little of it has been concerned with what contribution immediate, automatic, cognitively impenetrable perception might make to the establishment of viewer empathy with a character. That is the aspect of perception I explore in this section.

There are a number of theories of human perception, and the nature of perceptual processing is hotly debated. The debate hinges around the degree to which perception is automatic or effortful, and the degree to which perceptions require explicit “representations” to be stored and manipulated in the brain. Theorists are generally in agreement that *some* perceptual processes are automatic and cognitively impenetrable, and that some require explicit representations. However, there is markedly less agreement on how many and which processes. Ecological theorists (Gibson 1969) argue that all perception is “direct” and that no stored “representations” are necessary. Connectionists (Turvey et al 1981) argue that representations are necessary, but that they are instantiated neural networks rather than stored explicit ‘snapshots’. Traditional symbol-processing theorists (Fodor & Pylyshyn 1988) argue that explicit symbolic representations must be stored and manipulated for perception to be processed. (Film theory has, on the whole, preferred the explicit symbol-processing view, and its concomitant interpretation of human cognition as computational.)

In distinction to these warring theories, the Perception-Action Model assumes a heterarchical model that embraces and reconciles elements of ecological models, connectionist models and symbol-processing models. Much of the disagreement between these models concerns the demarcation of which neural processes should be included in a definition of ‘perception’ and which should be excluded. By

characterising cognitive processing as a progressive spectrum, PAM dissolves much of the debate (Preston and de Waal 2002). Thus the term “Perception”, as applied by the Perception-Action Model, refers to automatic, involuntary perceptual processes. These processes are pre-conscious. They precede, and provide the raw information for, conscious thought. This is the kind of perception I discuss in this section. More explicit processes that constitute ‘awareness’ of these basic percepts are considered in subsequent phases of the model.

According to the Perception-Action Model, cognitive processing of perceptions - even cognitively impenetrable, course processing at very short latencies - exerts an influence on factors that are highly significant in shaping a subject’s empathetic response to an object. Neuroscientists agree that the more primitive structures in our brains (i.e. phylogenetically older neural modules) activate their processes with shorter latency and greater automaticity than more recently evolved brain structures (Damasio 2010). Important perceptions processed by our evolutionarily primitive brain structures include interoception (perception of the homeostatic status of the internal milieu), nociception (perception of pain) and ‘air hunger’, perceptions of space and terrain (including awareness of support and “falling off areas”), and perceptions of figure/ground distinction, centre of moment (which affords perception of directional movement) and looming objects. Perception at this level also governs recognition of animacy, agency, and intention of motor actions. It governs course recognition of race and familiarity of faces, and even of facial emotion and emotional body language (Craig 2009; Meeren, van Heijnsbergen & de Gelder 2005; Adolphs 2003). Automatic perceptions supply a wealth of salient information about self, environment and others that provides a foundation for directing empathy. In this section I consider some of these automatically processed perceptions in more detail. I discuss evidence that perceptual processing at this level is necessary to create empathetic engagement. And evidence that it is also sufficient.

When is a Theory not a Theory?

The human brain has evolved specialized modules for perceiving specific phenomena that are important to the survival of the organism. It has long been accepted, for example, that the visual cortex contains discrete, dedicated modules that automatically process colour, edges, angles and various kinds of movement (Stirling 2000). More recently, studies have found similar dedicated neural modules for automatically processing aspects of perception that were previously thought to require conscious appraisal. For example, areas around the Superior Temporal Gyrus are involved in perceiving biological motion. According to de Gelder (2006, p243) specific neurons in this region are dedicated to processing discrete elements of that information - including emotion in faces and body postures:

there are findings from single-cell recordings that also show a degree of specialization for either face or neutral body images in the superior temporal sulcus (STS). Functional MRI studies in humans indicate that a region near the middle occipital gyrus (known as the extrastriate body area, EBA) responds selectively to bodies but shows little response to isolated faces.

Such neural specialisation enables us to recognise and interpret biological motion and faces at latencies as short as 100ms (Meeren, van Heijnsbergen, & de Gelder, 2005). Course categorisation of face features such as gender and race can take place equally rapidly (Adolphs 2003). Because these perceptual routes are automatic, they are not subject to conscious self-regulation in real time.

Cognitive film theorists' models of viewer empathy insist that the process of empathetic engagement begins with some form of Theory of Mind activation, through which the viewer recognises the character as a being with agency and intentions. I do not wish to dispute this. But their conventional understanding of the term 'Theory of Mind' assumes this recognition to be cognitively explicit (Grodal 1997; Smith 1995; Plantinga 2009). However, studies such as de Gelder's (2006), Van Overwalle & Baeten's (2010) and Frith & Frith's (2003) demonstrate that this assumption is misplaced. Apprehension of agency and intention may be processed automatically and non-consciously by mechanisms of the perceptual system. It seems that some 'Theory

of Mind' abilities require no 'theory' at all. Studies into autism spectrum disorders confirm this - ASD sufferers frequently exhibit above average ability to explicitly theorise, but impaired ability to empathise. Their neural deficit is not in the cortical apparatus responsible for rational appraisal. It is located upstream in the perceptual mechanisms of the fusiform face area and the amygdala (Baron Cohen 1999). When is a theory not a theory? When it is a Theory of Mind. Perhaps this cognitive ability would be more accurately named '*Perception of Mind*'.

Studies provide evidence that many so-called 'Theory of Mind' abilities are the result of rapid, unconscious perceptions that access the emotional systems of the brain directly, using primitive 'short cuts' that bypass conscious appraisal (LeDoux 1996). In one study, Phelps et al. (2000) showed subjects briefly glimpsed images of faces of different races, and found that short latency, coarse activation of the amygdala activated racial stereotypes of which the subjects themselves had no conscious awareness. Similar findings have been made by other researchers regarding trustworthiness (Winston et al 2002) and attractiveness (Zebrowitz et al 2009). These studies demonstrate that activation of the amygdala even by very short latency stimuli is able to elicit social judgement for which the subject was unable to provide a considered reason. According to Adolphs, "Amygdala activation is seen early, regardless of the conscious perception of the stimulus ... and regardless of attention allocation" (Adolphs 2003, p168). The human face is not the only salient object whose emotional valence is processed in this rapid, automatic and non-conscious fashion. De Gelder found that processing of whole body language is carried out in a similar way, with similar impact on the subject, but "with stronger and more direct connections with motor structures" (de Gelder 2006, p247). Perception of body position or movement, even in the absence of detailed analysis of the stimulus, can activate strong emotional responses of attraction and aversion, including but not limited to defensive reflexes, such as freezing, recoiling or startling. These primitive responses are adaptive survival mechanisms that trigger strong cascades of visceral and affective sensation (LeDoux 1996; Damasio 2010).

These studies demonstrate that we are evolved to respond rapidly and involuntarily to perceptions of a range of stimuli - including other people - before we have time to consciously evaluate them. These involuntary responses lay the foundations for what will become, later in processing, our cognitively explicit evaluations. They influence our sense of what is salient (i.e. important) in our environment. They direct our attention to places, things and people. They prime our emotional responses, including but not limited to our sense of fear, trust and attraction regarding others. As we shall see in this chapter, even when we engage in conscious re-appraisal, this re-appraisal itself relies largely on recursively reactivating the same brain system that provided the initial response (Damasio & Damasio 1996; Preston et al 2007). This is how we experience and understand our world. It is also how we experience and understand narrative film.

Empathy as homeostatic resonance

How does this rapid, automatic processing of stimuli serve to provoke empathy in the viewer of a narrative film? Neuroscientists define empathy as somatic and affective resonance. That is, vicariously experiencing the physiological or emotional state of another being. This definition applies regardless of whether that state is conscious or unconscious. In his book, *Self Comes to Mind*, Antonio Damasio writes:

our own body states and the significance they have acquired for us can be transferred to the simulated body states of others, at which point we can attribute a comparable significance to the simulation. The range of phenomena denoted by the word empathy owes a lot to this arrangement (Damasio 2010, p104)

Damasio names the sharing of 'body states' as the foundation of empathy. He is also clear on the progression of the process - first comes the body state, and later the attribution of a significance to it. According to Damasio, consciousness begins with raw percepts collected by the organism and collated into an unconscious, embodied

unity he calls the “proto-self”. The proto-self is constructed of basic percepts including interoception, proprioception, nociception and unconscious monitoring of humoral signals within the body and brain. Damasio (1999, p154) defines it thus: “The proto self is a coherent collection of neural patterns which map, moment by moment, the state of the physical structure of the organism ... We are not conscious of the proto-self”. It is crucial to understand that this is not mere conjecture. Each of Damasio’s contentions are based on thorough measurement of the physiological and neurological responses involved.

According to his model, the next neural step is the monitoring of changes wrought upon the organism by objects in the (external or internal) environment. These changes include autonomic and reflex responses, and many basic emotions. He calls this second step “core consciousness”, and notes that even this step does not equate to explicit consciousness. He illustrates with the example of being startled by a rapidly approaching car:

Having a car zooming toward you does cause an emotion called fear, whether you want it or not, and does change many things in the state of your organism – the gut, the heart, and the skin respond quickly, among many others ... retinal images change rapidly as a result of the approaching object, but for them to remain in focus, there must be adjustments in the muscles that control the lens and the pupil; the muscle that control the position of the eyeball; and the muscles that control the head, the neck and the trunk. Finally, there are signals deriving from emotional response [which] include changes in the smooth musculature of viscera
(Damasio 1999, p154)

Damasio notes emphatically that all of these processes are activated involuntarily and automatically, and that “consciousness comes later” (Damasio 1999, pp. 146-7). Damasio provides extensive clinical evidence to demonstrate that cognitively explicit cognition relies fundamentally on this unconscious construction of self and environment. He concludes that without it the human mind is unable to form a conscious self in the usual sense. “Deprived of the foundational aspects of the proto-

self, the organism can no longer represent the critical substrate for knowing ... the entire mechanism of consciousness should collapse” (Damasio 1999, p254). Damasio’s colleague Arthur Craig (2009) goes so far as to say that empathy, in all its forms, essentially amounts to different levels of “homeostatic resonance”. The realization that empathy has its roots in homeostasis has important implications for our understanding of how viewers of narrative film align empathetically with characters.

Interoception

Neural mechanisms that monitor homeostasis also play a crucial role in creating empathetic alignment. Primary among these is the Anterior Insula Cortex. In his paper *How do you feel - now?* (2009) Craig reviews studies of the role of the Anterior Insula Cortex [AIC] in creating the sense of an autobiographical ‘self’ in the mind. Craig’s review is comprehensive, and discusses many aspects of the role of the AIC. He identifies a raft of processes reliant on that brain structure, and illuminates its role in creating empathetic engagement. The AIC originally evolved as a dedicated region for monitoring olfactory perception. Later it was co-opted by evolution to monitor all internal aspects of homeostasis:

The insula evolved later for cortical processing of homeostatic sensory activity in the individual animal ... and in mammalian evolution the insula grew as limbic behavioural activity became aligned more with autonomic activity than with olfactory activity
(Craig 2009, p62)

This perception of the internal milieu is called “interoception” (feeling within). Maintaining homeostasis at this level is crucial to the survival of the organism - the human animal can only survive within a very narrow band of environmental parameters. Consequently signals from the interoceptive monitor of the Anterior Insular Cortex are given high priority and value. They are powerful activators of our emotion and motivation systems. As Damasio (2010, p118) writes, the insula is an

important substrate for “every conceivable kind of feeling”. In particular, probably because of its origins in managing perception of smell and taste, the insula is the primary locus for the experience of disgust, “one of the oldest emotions in the repertoire” (Damasio 2010, p117). Thus interoception is highly integrated with emotion. In addition, as Craig points out, the AIC is also crucially involved in engendering our sense of self. This view correlates closely with Damasio’s view that consciousness is built on the foundation of the primal feelings of the “proto-self”. According to Damasio, “The importance of the interoceptive system for the understanding of the conscious mind cannot be emphasized enough” (Damasio 2010, p193). The upshot of all this is that any interoceptive stimulus will be perceived as a subjective, personal experience, with intense emotional qualia.

How is this relevant to my thesis? The aim of this research is to identify, in the tacit knowledge base of expert screenwriters, specific forms and devices that are used to create and modulate viewer empathy with characters in narrative film. In interoceptive stimuli, Craig identifies a specific set of phenomena that human beings are hard-wired to feel as affectively intense and personally salient. This gives rise to a definite prediction: if a narrative film supplies a stimulus that activates the viewer’s interoceptive system, and depicts the simultaneous activation of the character’s interoceptive system, then the viewer will experience somatic and affective resonance with the character. In a word, empathy. Furthermore, because of the unique double role of the anterior insular cortex - in both monitoring interoception and generating a sense of autobiographical self - this shared experience will feel personally salient, and emotionally intense.

This arrangement requires no high level cognitive processing. No appraisal of social or personal schemata. No comprehension of explicitly symbolic representations. It is automatic, immediate and cognitively impenetrable. Because the perceptions that activate this mechanism do so automatically and involuntarily (like the Müller-Lyer illusion) they cannot be consciously moderated. In Chapter 3, the expert screenwriters interviewed revealed just such a narrative device in their work. In Chapter 7 I explore a variety of examples from narrative film in which different types of interoception

(including disgust, pain and air hunger) are activated simultaneously in character and viewer to create empathetic (somatic and affective) alignment.

EVALUATION

Visual fiction is viewed in a conscious state ... the emotions and cognitions must be explained in relation to conscious mental states and processes ... it is improbable that the way phenomena appear in consciousness is just an illusion caused by certain quite different non-conscious agents and mechanisms (Grodal 1997, p6)

When considering the origins of viewer empathy, cognitive film theorists including Grodal (1997), Bordwell (1985), Carroll (2003), Smith (1995) and Plantinga (2009) have focused on effortful, conscious evaluation and neglected the contribution of automatic, unconscious evaluation. This is an unfortunate misstep with far reaching implications³³. As the philosopher Wittgenstein observed, an unchallenged initial assumption such as this can pollute an entire line of reasoning:

The first step is the one that altogether escapes notice. We talk of processes and states and leave their nature undecided ... The decisive movement in the conjuring trick has been made, and it was the very one that we thought most innocent (Wittgenstein 1953, §308)

In theorising empathy, the first misstep of cognitive film theorists that “altogether escapes notice” is their *a priori* assumption that an entire category of processes and states need not be considered. The assumption may be ‘innocent’ enough. But it is certainly ‘decisive’, as it removes such processes from the debate and from any resultant model of empathy. The layperson may be forgiven for thinking the term ‘evaluation’ refers exclusively to effortful cognitive appraisal. Cognitive neuroscience however uses the term to encompass a range of cognitive processes, many of which

are automatic and unconscious. In fact, the overwhelming majority of the neural mechanisms contributing to social cognition operate non-consciously - as Adolphs' (2003) chart vividly illustrates. Thus, before they even commence their investigation, cognitive film theorists have blinkered themselves to the greater part of the process they wish to understand.

In this section I survey some of the cognitive mechanisms of evaluation that the Perception-Action Model sees as crucial to the experience of empathy. Throughout I offer observations on the ramifications of these findings for screenwriting practice.

What monkeys can teach us about screenwriting

Animals are incapable of explicit cognitive reasoning. Yet they are capable of evaluating fundamental traits like animacy, agency, intention, and even emotional states (Hurley 2008). They are also capable of empathy. This is vividly demonstrated in the now famous experiment conducted by Masserman et al (1964). Rhesus monkeys were trained to access food by pulling on either of two chains. One chain delivered twice the amount of food, which the monkeys quickly learned to prefer. However, when the experimenters changed the set up so that pulling this preferred chain caused a monkey in an adjacent cage to receive a painful electrical shock, the monkeys stopped pulling the more rewarding chain, preferring the other chain even though it delivered only half the amount of food.³⁴ Rhesus monkeys are not endowed with brain structures that enable moral reasoning. So how did Masserman's monkeys evaluate the experience of the shocked monkey as distress? And how did they decide to act altruistically - to take less food in order to decrease the other monkey's distress? The answers to these questions have direct ramifications for our understanding of how empathy is instantiated in viewers of narrative film.

Let us, as a kind of thought experiment, apply the theories of empathy proposed by cognitive film theorists, and see how they hold up as an explanation of the behavior

of Masserman's monkeys. The film theorists surveyed in Chapter 5 contend that four principal requirements govern empathetic engagement:

Focalisation: the distressed monkey must be the *primary focus of the observer* prior to the distressing event.

Moral Superiority: the distressed monkey must be *evaluated as having a preferable moral status* to other available monkeys.

Telic Concern: the distressed monkey must be *pursuing a tangible goal* that the other monkeys recognise.

Mood Cues: the *prevailing emotional ambience* must be consistent with the state of distress in order for the other monkeys to be primed to respond appropriately.

There is no evidence to suggest that any of these 'requirements' are met by the conditions of Masserman's experiment. Focalisation: There is no indication in descriptions of the experiment that monkeys 'focalised' (i.e. paid more attention to) the unknown monkey than to the monkeys in their own cage. Moral Superiority: Rhesus monkeys are not endowed with brain structures that enable moral reasoning, so this cannot have been a factor. The monkey's limited reasoning capacity also rules out the possibility that the monkeys' response was a *sympathetic* 'feeling for' the distressed monkey based on a conscious evaluation of her situation, rather than an *empathetic* 'feeling with'. Telic Concern: Accounts of the study offer no indication that the distressed monkey was engaged in any goal-oriented activity. Mood Cues: Preconditioning of mood was not one of the conditions of the experiment. Indeed the study reports the emotional state of the monkeys shifted markedly as a result of the distressing event (Masserman et al 1964). Masserman's simple experiment demonstrates that the requirements for empathy proposed by the cognitive film theorists are not requirements at all. When weighed against the evidence, the proposed requirements appear to be at best irrelevant, and at worst, absurd. One should not be too harsh in judgement though. Neuroscientists, ethologists and psychologists struggled for almost three decades to frame a plausible explanation for how the monkeys in Masserman's experiment were able to empathise with the distressed monkey. The most widely accepted supposition was that the monkeys' altruism must have been a conditioned response, learned from prior experience. The real answer,

discovered quite by chance in a later experiment, is much more interesting, and offers the beginnings of an understanding of how viewers come to empathise with characters in narrative film.

It was only as recently as 1992 that neuroscientists at the University of Parma (di Pellegrino et al 1992) discovered a type of premotor neuron in macaque monkeys that fired both when an individual monkey performed an action, and when it witnessed the action being performed by another. These neurons were later dubbed “mirror neurons” (Rizzolatti et al 1996). Their discovery provided an explanation for the behavior of the monkeys in Masserman’s experiment. The monkeys were able to evaluate the experience of the shocked monkey as distress because when they observed the physical movements, facial gestures and vocalisations of the distressed monkey, their mirror neurons fired, activating in their own brains a representation of the physical experience of distress. Activation of mirror neurons begins a cascade of other neural activations including activation of limbic areas governing emotion (Gallese 2003). In this way, internally simulating the physical state of another leads to internally simulating their emotional state. The observing monkeys felt the distressed monkey’s pain.³⁵ In response they acted altruistically (choosing the less rewarding food chain) to avoid causing her further distress, thereby avoiding experiencing distress themselves (to which they are innately aversive). What is particularly salient in light of our present discussion is that they managed to do all of this despite their inability to reason conceptually about the situation.

Humans, of course, unlike monkeys, are equipped with the capacity for cognitively effortful appraisal. We cannot simply assume that humans process empathic resonance in the same way that monkeys do. We need to consider the evidence. Subsequent studies identified similar neurons in the premotor area of the human brain (Iacoboni et al 1999; Buccino et al 2001; Grezes et al 2003; Gallese, Keysers & Rizzolatti 2004). Neuroscientist Vittorio Gallese found that humans also rely on their mirror systems to understand and respond appropriately to the internal states of others:

in our brain, there are neural mechanisms (mirror mechanisms) that allow us to directly understand the meaning of the actions and emotions of others by internally replicating ('simulating') them without any explicit reflective mediation. Conceptual reasoning is not necessary for this understanding. (Gallese, Keysers & Rizzolatti 2004, p396)

But is this involuntary resonating of others' emotions merely a useful adjunct to some more fundamental understanding derived from our higher cognitive processes? Or is it itself our fundamental mode of understanding? The matter was hotly contested for some time. The view of an innate, non-conceptual understanding of the actions and occurrent states of others was a significant departure from earlier, more cognitively effortful, views, such as that proposed by Fodor & Pylyshyn (1988) which involved the viewer converting the raw perceptual data into conceptual information for processing and interpretation by (unspecified) higher brain regions. Nevertheless, there are several indications that involuntary resonating of others' states is our fundamental neural mechanism for understanding them.

One indicator is the comparative age (in evolutionary terms) of the brain modules involved. It is widely accepted among evolutionary psychologists that phylogenetically older brain systems typically represent the more fundamental cognitive processes. That is, when cognitively processing any stimuli, the more primitive brain regions involved will be recruited earlier than the more recently evolved brain regions. The mirror system is an older mechanism than the human prefrontal cortex. It is a mechanism that human primates share with lower primates, which indicates it has been part of our evolutionary legacy for at least six million years. Compare this to the (comparatively brief) one hundred thousand years we have had the use of our enhanced prefrontal cortex (Harari 2014). This suggests that the mirror system's role in processing social cognition precedes and underpins that played by more phylogenetically recent brain systems that govern higher cognition (Preston et al 2007). This was confirmed in an experiment conducted in 2004 by Tania Singer et al. The experimenters recruited young couples, and subjected each of them to a painful electrical shock - witnessed by their partner. The neural responses of both were

measured using fMRI. The researchers found that (apart from the actual pain receptors) the same brain areas were activated in the witnessing partners as in the partner experiencing the painful stimulus. In this way the witness experienced “the subjective unpleasantness that the other person feels” only minus “a detailed sensory-discriminative representation of the noxious stimulus”. The researchers concluded that this mirroring is “necessary for our ability to mentalize, that is, to understand the thoughts, beliefs, and intentions of others” (Singer et al 2004, p1161).

This is compelling evidence that understanding of others states is constructed upon a foundation of non-conscious neural processes beginning with the mirror system. However, correlation does not prove cause. Just because these processes occur, and subsequently understanding occurs, it does not necessarily mean that these processes are the *cause* of the understanding. Adolphs (2003, p166) cautions that lesion studies are essential in order to “elucidate a causal role for a given structure in a neural system (that is, to confirm that its role is essential)”. When a particular brain mechanism is lesioned (damaged), its functioning is impaired or absent. Thus any function attributed to that mechanism should also be impaired or absent. Adolphs and others have conducted studies of patients with lesions in relevant brain areas. Their findings confirm that affective resonance (i.e. mirroring of emotions) is our fundamental mechanism for understanding the emotional states of others. When the neural mechanism for *experiencing* an emotion is damaged, *understanding* of that emotion is commensurately impaired.

Calder et al studied a patient who suffered lesions of the left insula. As a result of this brain deficit, he experienced diminished disgust to tastes, odors and visual stimuli. As consequence, despite being otherwise cognitively unimpaired, he was unable to recognise the emotion of disgust in the faces or voices of others (Calder et al 2000). These findings were confirmed by Adolphs et al in a study of another patient with insula damage who, similarly, was unable to recognize expressions of disgust, even though he could recognize other emotions normally. To test this ‘disgust blindness’, the researchers,

acted out a dramatic display of disgust in front of the patient. These included eating, and then regurgitating and spitting out of food, accompanied by retching sounds and facial expressions of disgust ... B. remained entirely unable to recognize disgust, instead indicating that the food was 'delicious' (Gallese, Keysers & Rizzolatti 2004, p400)

Prior to their brain trauma, these patients understood the emotion of disgust normally. Their loss of understanding was not the result of forgetting some explicit semantic information (their semantic memory was unaffected). Nor was it due to damage to some central conceptualising brain area (they understood all other emotions and concepts normally). Their inability to understand the state of disgust was due solely to their inability to mirror the emotion in question (Gallese, Keysers & Rizzolatti 2004).³⁶ What these lesion studies demonstrate is that, like Masserman's monkeys, we are able to understand the internal states of others because we are able to mirror them and feel them for ourselves. Conscious understanding of others' affective states arises after, and only as a result of, feeling the mirrored state. Remove the ability to mirror and feel the others' state, and conscious understanding evaporates. This is confirmed by a study in which Pitcher et al (2008) used transcranial magnetic stimulation (TMS) to temporarily block the occipital face area (rOFA) and right somatosensory cortex in cognitively normal subjects, who were then given a task to identify emotional facial expressions in photographs. The subjects were able to match faces, but unable to discriminate emotional expressions (Winkielman, McIntosh & Oberman 2009). Further confirmation is provided by studies of individuals with Autism Spectrum Disorder, which indicate that their characteristic deficits in empathy result, at least in part, from deficits in the neural areas required for mirroring others' states (Dapretto et al 2006).

The findings of these experiments have great significance for this research project. As noted earlier, a common claim among cognitive film theorists is that the first, foundational phase of empathetic processing is the application of some form of Theory of Mind. But both Adolphs' and Calder's patients demonstrated an intact ToM. That is, they were able to normally recognise other people as thinking, feeling,

intentional entities, and were able to accurately identify others' intentions and beliefs. Yet they were unable to resonate (i.e. empathise with) another's experience of disgust. Their deficit was not a deficit of ToM. Their deficit was upstream, within the limbic system. These lesion studies demonstrate forcefully that if mirroring of the raw emotional percept is absent, even with ToM intact, empathy is not possible. Emotional resonance is independent of ToM. This interpretation is supported by a range of neuroscientists:

Theory of mind is often seen as equivalent to metarepresentation, the ability to represent representations, as in "He thinks that his car is in the garage"... [but] ...inferring another person's emotional state does not require representing someone else's representations. For this reason ... inferring emotional states should not be considered theory of mind
(Stone 2006, p106)

Other lesion studies demonstrate the converse - that understanding of emotion can occur in the absence of conscious processing. De Gelder et al (1999) conducted studies on patients with complete loss of vision in one hemifield due to lesions on the visual processing areas of the cortex. The patients' eyes functioned normally, but because the brain area that processes visual stimuli was damaged, they were unable to convert the visual stimulus into a conscious representation - and were thus effectively blind in one eye. The experimenters presented images of emotional expressions and body language to the patient's blind eye. Despite the fact that the patients had no conscious awareness of any stimulus being presented in their lesioned visual field, the researchers found that they nevertheless experienced emotional resonance and were able to accurately identify the emotion they experienced.³⁷ The phenomenon is called "affective blindsight" and has been confirmed by other researchers (Hamm et al 2003, Ffytche & Zeki 2011, Jolij & Lamme 2005).

These studies indicate that the viewer's perception and evaluation of phenomena in a narrative film are driven primarily by short latency, cognitively impenetrable neural processing. The factors that instantiate the viewer's experience of

empathy with a character overwhelmingly *precede* the viewer's cognitively effortful appraisal. Indeed, as the case of Patient B. suggests, if automatic, unconscious evaluation is absent, then cognitively effortful appraisal may be impossible. Without empathetic emotional activation, we may be unable to comprehend even a simple narrative.³⁸ Again, this is supported by studies of Autism Spectrum Disorder, which confirm that even high-functioning individuals with ASD (who by definition experience a deficit in the ability to empathise) characteristically display “a deficit in the comprehension and creation of narrative” (Davis et al 2006, p101).

The above studies do not just illustrate that affective processes *may* be activated without conscious understanding. They illustrate forcefully that for conscious understanding to occur, these non-conscious affective processes *must occur*. We do not feel because we understand. We understand because we feel. This view accords with the implicit model of viewer empathy in the tacit knowledge of expert screenwriters, which, according to Arriaga, sees engagement with character and comprehension of narrative as “a complete work of intuition ... a complete work of sensibility”. Yet film theorists do not agree. So we are forced to make a choice. When Carroll (2003, pp. 63-4) insists that explicit cognitive belief must always precede emotion, and that the “cognitive state must be the cause of the inner consternation”, we can accept this only if we reject de Gelder's findings. And when Bordwell (1985, p30) writes, “I am assuming that a spectator's comprehension of the film's narrative is theoretically separable from his or her emotional response”, we can accept this only if we reject Adolphs and Calder's findings. And when Grodal (1997, p6) writes that, “it is improbable that the way phenomena appear in consciousness is ... caused by ... non-conscious agents and mechanisms”, we can accept this only if we are willing to reject Gallese, Damasio, LeDoux, de Gelder, Adolphs, Calder and Singer's findings. On these matters, we cannot simultaneously accept the film theorists' account and the neuroscientists' account. This has profound implications for the practice and the theory of screenwriting.

Motor programs

Nonconscious evaluation of actions and occurrent states does not end with mirror neurons. When observing an emotion - as we saw in the case of Patient B. - various brain areas may be activated to mirror a wide range of observed emotional states (Gallese, Keysers & Rizzolatti 2004). Likewise, when observing an action, the observer's premotor cortex is also activated. The premotor cortex contains representations of the entire body. When we observe an action, the area that represents the body part performing the action is activated - even if the observer remains motionless. This brain area does not just house a general representation of the body-part. It also stores representations of a repertoire of specific movements for that body-part. These are known as 'motor programs'. Studies show that witnessing intentional movement such as manipulating objects is "accompanied by the implicit co-activation of specific motor programs" in the brain of the subject (van Elk et al 2010). These motor programs represent semantic knowledge of how to interact with the environment in which the subject is embedded. This semantic knowledge is derived from experience and provides a network of neural associations that may be triggered by witnessing any given action, allowing the subject to predict the likely intentions and outcomes of the action witnessed (Hurley 2008).

An EEG study by Van Elk et al found that motor-related brain areas respond with more facility to actions recognised as "semantically correct" (that is, actions that resonate with existing stored representations of action) than with "semantically incorrect" actions. The experimenters also observed that execution of a semantically incorrect action "requires the active inhibition of input to somatosensory-motor related areas" (van Elk et al 2010, p10). This means that when we perform an action, for example, when we pick up a coffee cup, our motor system resonates the most familiar motor repertoire - bringing the cup to the mouth. If we are instructed instead to bring the coffee cup to our ear, our "semantically correct" motor repertoire has to be inhibited, and a new motor repertoire activated. This applies also when we witness others performing the action. At a neural level we automatically discriminate between familiar, relatable actions, and unfamiliar, unrelatable actions.

Calvo-Merino (2009) demonstrated that a subject's sensorimotor areas are activated more strongly when the movements witnessed are part of their own "motor repertoire" - that is, when they are familiar movements - than when the movements are unfamiliar. Her study measured the motor response of ballet dancers and capoeira dancers to observing their own, and each other's, type of dancing. Resonance in the motor system increased significantly when the dancers observed their own type of dancing. Other studies demonstrate that actions are resonated not only in the brain, but also in the muscles of the observer. The nerves of the body-part involved in the observed action are activated in the observer - even though actual physical movement is inhibited. Experiments show that:

when we observe another individual acting we strongly 'resonate' with his or her action. In other words, our motor system simulates under threshold the observed action in a strictly congruent fashion. The involved muscles are the same as those used in the observed action and their activation is temporally strictly coupled with the dynamics of the observed action.

(Fadiga, Craighero & Olivier 2005, p213)

Most of us have experienced an awareness of this phenomenon when viewing sporting contests. When the match is in the balance and a player shoots for goal the spectator may feel his body twitch involuntarily, as though he were making the play himself. This common phenomenon is the result of muscle-nerve activation escalating above threshold levels. While this involuntary twitch may be the only time the phenomenon is noticed by the spectator, it is not the only time in the match that his body mirrors the action of the players - he has been 'playing along' at an imperceptible level all along. This same 'below threshold' activation of the motor system and muscle nerves occurs throughout the viewing of a film narrative. The above studies indicate that the more strongly the viewer is empathetically aligned with a character, the stronger the activation of this system will be... and the more closely they will 'shadow' the character's every move (van Elk 2010; Sommerville & Decety 2006). This shadowing is substantially responsible for our understanding of characters actions and intentions. And it predisposes the viewer to respond in emotional alignment with the character,

mirroring their emotional body language and facial expressions, including consciously imperceptible ‘micro expressions’ (Ekman 1982). This in turn predisposes the viewer to more closely shadow the character’s motor movements. And so it goes in a recursive loop. In this way, creating somatic or affective resonance between viewer and character even at an apparently incidental level may begin a process of ‘bootstrapping’, in which more complex processes are triggered by the prior activation of simple processes. This process of bootstrapping is consistently employed by expert screenwriters, and unacknowledged by cognitive film theorists.

In-group / out-group

Familiarity of motor repertoire is not the only unconscious evaluation that increases somatic and affective resonance in a subject. The familiarity of the person being observed is also a factor. Studies show greater activation of the mirror system in subjects observing conspecifics and kin. In any population, members perceived by a subject as “in-group” will elicit higher affective resonance than “out-group” members. This in-group / out-group evaluation is predominantly automatic and not reliant on higher cognitive functions (Harris & Fiske 2006; Ito & Urland 2003). The social relevance of an observed action also contributes to determining empathetic response. This evaluation, too, is processed pre-consciously. One study measured mirror system activation when subjects viewed film of people engaged in social interaction and compared it to activation when the film depicted people who were equally active but not engaged with others. The researchers found that mirror system activation increased markedly when subjects were observing social interaction (Oberman, Pineda & Ramachandran 2007). One ramification for screenwriting of this finding is that depicting a character engaged in an activity with a social dimension will trigger more mirror system activation, and consequently more affective resonance, than depicting the same character engaged in an activity absent of a social dimension.

Beyond the mirror

While mirroring is highly effective at rapidly evaluating immediate task goals, this kind of mirroring is not the only way our brains evaluate the goals and intentions of observed actions. We also employ a ‘mentalizing system’ when observing behaviors that require inferences to be made about the intentions or beliefs of the actor. Mentalizing is a cognitive skill possessed only by humans and (in a lesser degree of sophistication) the higher primates. Apes are able to mentalize sufficiently to infer the intention of an actor attempting a task unsuccessfully. For example, after watching a person unsuccessfully attempting to use a garden rake, prongs down, to pull in a treat, chimpanzees will turn the rake over and use the flat edge (Nagell, Olguin & Tomasello 1993). Human infants typically develop this facility by 15 to 18 months (Hurley 2008). However it is widely reported that children don’t develop sufficient mentalizing ability to pass the “false belief test” (the benchmark test of Theory of Mind) until around four years. Call and Tomasello (2008) found that chimpanzees are never able to pass the false belief test. Despite this there is evidence, as we have seen, that primates are able to feel empathy and display altruistic behavior (Masserman et al 1964). Studies by Zahn-Waxler et al (1992) also indicate that infants develop empathetic emotional resonance and prosocial altruistic behaviors as early as 12 months - far in advance of their ability to pass the false belief test that indicates a complete Theory of Mind. This is further evidence that, contrary to the claims of some cognitive film theorists, Theory of Mind (at least in an explicit ‘Theory Theory’ sense) cannot be considered the first, foundational process in the creation of empathy. Nevertheless, the mentalizing system does have a crucial role to play in the creation and modulation of empathy.

The mentalizing system recruits different brain areas to the mirror system. Van Overwalle (2009) provides evidence from a meta-review of over 200 studies to show that the mirroring system is used to evaluate semantically correct actions that are part of the perceiver’s familiar motor repertoire. When an unfamiliar / semantically incorrect movement is perceived, processing is ‘handed on’ to the Temporal Parietal Junction [TPJ]. If the movement has a perceived social context, it is passed on to the prefrontal cortex for processing. If it has no social valence, it is processed by the TPJ

with input from the motivational and emotional systems. So for example, in the scenario discussed earlier, in which we observe person pick up a coffee cup and move it to their ear (semantically incorrect motor action) rather than to their mouth (semantically correct motor action), at the point at which the observer's semantic knowledge fails to accurately evaluate the task, the subject's mentalizing system will be engaged - taking over from the mirror system. This move from mirroring to mentalizing marks the point at which the processes of evaluation become more explicitly cognitive and effortful. According to Van Overwalle (2009) the mirror and mentalizing systems are discrete and complementary - they are rarely activated simultaneously. However he does propose that "mirror neurons provide rapid and intuitive input to the mentalizing system" (Van Overwalle 2009, p567).

This phenomenon, too, has ramifications for screenwriting practice. It predicts that depicting a character engaged in a familiar action (semantically correct motor action) will trigger automatic mirroring in the viewer and thus enhance engagement, while depicting the same character engaged in an unfamiliar action (semantically incorrect motor action) will inhibit mirroring and thus diminish engagement. This is counterintuitive. Many inexperienced screenwriters believe that they need to create novel (i.e. unfamiliar) activities for their characters in order to make them more interesting - with the expectation that this will make them more engaging. However, while this strategy may enhance the viewer's intellectual curiosity, it will substantially diminish their affective resonance - the foundation of empathy. In Chapter 7 we will see that expert screenwriters tacitly understand this prediction - as counter-intuitive as it is - and routinely utilise semantically incorrect motor actions to create a sense of alienation from antagonist characters.

Van Overwalle (2009) identifies the temporal parietal junction [TPJ] as the brain area that bridges between the mirror and mentalizing systems. He proposes that the TPJ processes semantically incorrect actions whose goal is *not explicitly socially directed*, while the prefrontal cortex is recruited to process actions whose goals *are explicitly socially directed*. This is confirmed by Bara et al's fMRI study of brain activation in subjects responding to a brief illustrated narrative. The study found that when subjects

were processing any explicitly socially directed action in the narratives, their prefrontal cortex was recruited. This recruitment was observed regardless of whether the individual towards whom the social action was directed was present or absent from the situation. What the subjects were evaluating was not the action itself, but the *social intention* of the actor. Furthermore, the researchers found that the “prefrontal cortex is only recruited in understanding social intentions” (Bara et al 2011, p1).

The evidence considered thus far indicates that we process phenomena in three relatively discrete categories. First, we process purely physical phenomena. These are phenomena that have primal / homeostatic valence, but require no conscious self-regarding or other-regarding valence. Phenomena in this category are processed rapidly, involuntarily and unconsciously by mechanisms in the brainstem, perceptual system and mirror system. Second, we process self-referential phenomena. These are phenomena that require some mentalizing ability, and have personal motivational valence, but no social valence. Phenomena in this second category are processed by brain mechanisms that bridge our unconscious and conscious mental systems, including the TPJ and ACC. (We have seen only a glimpse of them so far, but will explore the fully in the next section of this chapter). And in the third and final category, we process social phenomena. These are phenomena that possess other-regarding valence. This third category of phenomena relies fundamentally (but not exclusively) on the prefrontal cortex for processing. We have also seen evidence that each of these categories of phenomena activate emotional responses.

This picture of social cognition correlates strongly with the implicit model of viewer empathy in the tacit knowledge of expert screenwriters. The expert screenwriter ‘categories of conception’ identified in Chapter 4 of this study also fall into three distinct, and analogous, phases. First: physical / visceral alignment. Second: motivational alignment. Third: social alignment. On the other hand, the model of social cognition that emerges from neuroscience studies disagrees with cognitive film theorists’ models on several fundamental issues. Contrary to the cognitive film theorists surveyed for this thesis, the research demonstrates that automatic, cognitively impenetrable processes play a crucial role in laying the foundations for our experience

of empathy. And not just our ability to affectively resonate others' states, but also our ability to understand others' actions, intentions and experiences.

ACTIVATION

In this section I explore how perceptions and evaluations lead to emotional responses that activate the organism. A useful way to begin is by considering the purpose of emotions. What functions do emotions serve? Neuroscientist Antonio Damasio (1999, p54) writes that the function of emotions is twofold. The primary function of emotions is to produce a specific survival behavior in reaction to a particular type of stimulus, "In an animal, for instance, the reaction may be to run or to become immobile or to beat the hell out of the enemy or to engage in pleasurable behavior". The second function of emotions is to prepare the organism physiologically to carry out this behavioral routine:

For example, providing increased blood flow to arteries in the legs so that muscles receive extra oxygen and glucose, in the case of flight reaction, or changing heart and breathing rhythms, in the case of freezing on the spot ... In short, for certain classes of dangerous or clearly valuable stimuli in the internal or external environment, evolution has assembled a matching answer in the form of emotion.

(Damasio 1999, p55)

In this view, emotions are a biological phenomenon. They are adaptive behavioral response programs, whose evolutionary benefit is clear. This view is supported by substantial biological and behavioral evidence. Damasio distinguishes "emotions" from conscious awareness of the emotional state, which he calls "feelings". Thus adherents of this view may sensibly say "I feel the emotion of anger". In contrast, most cognitive film theorists view emotion as a psychological phenomenon. They call the physiological manifestation an "affect", and see it as non-specific arousal. In this view, an "affect" only becomes an "emotion" when it is attributed to a cause,

and labeled accordingly. Thus adherents of this view may sensibly say, “I feel a physiological arousal which I construe to be caused by such-and-such, and therefore determine to be anger”. This view is contradicted by substantial biological and behavioral evidence.

For example, in his book *“The emotional brain: the mysterious underpinnings of emotional life”* (1996) neuroscientist Joseph LeDoux describes the neural mechanism by which perception is able to lead directly to emotional activation and behavioral response without the need for conscious recognition. In a series of experiments, LeDoux studied mice conditioned to fear a particular stimulus. By selectively impairing different mechanisms in the mouse brain, LeDoux was able to trace the precise neural pathways activated in response to the stimulus. He found that the perception was processed via two distinct pathways. One pathway is ancient, coarse and rapid, and connects the auditory perceptual mechanism directly to the amygdala via the hypothalamus, bypassing conscious representation in the cortex. (The amygdala plays a crucial role in the generation of several emotions, including fear.) The signal sent to the amygdala via this pathway lacks detailed information, but is processed rapidly and leads to an automatic fear response. The survival benefit of such a mechanism, which generates the fastest possible ‘fight or flight’ response, is obvious. The second pathway is phylogenetically more recently evolved, finer in information detail, and slower in execution. It connects the auditory mechanism to the amygdala, but this time via the cortex, where the perception is available for appraisal. The signal then flows on to the amygdala and back again in a recursive loop of reappraisal. The advantages of this mechanism are that it allows the organism to modify its response on the basis of learning from past experience. LeDoux’s experiments demonstrate unequivocally that while the source of an emotional disturbance may become known, this knowledge is not necessary to the activation of an emotion. This is a biological fact. And it has immediate and profound implications for understanding how we understand film. When Noël Carroll claims that the viewer’s explicit cognition of the stimulus must precede and be the cause of their emotional response he is simply mistaken. Emotionally salient stimuli are processed through multiple pathways. The faster of these operates non-consciously.

Emotions are activated through multiple signaling systems. To activate the appropriate change of physiological state in response to a particular stimulus, the body uses two separate but interdependent signaling systems, “humoral signals (chemical messages conveyed via the bloodstream) and neural signals (electrochemical signals conveyed via nerve pathways)” (Damasio 1999, p80). Humoral signaling relies on hormones, such as testosterone, adrenaline, insulin and estrogen. Neural signals rely on neurotransmitters - chemical molecules that convey signals between neurons - such as serotonin, cortisol and oxytocin (Damasio 1999, LeDoux 1996).

One of the most important signalers at this stage of processing is the neurotransmitter dopamine. Dopamine plays a role in governing the human experiences of motivation, desire, anticipation and reward (Hollerman & Schultz 1998; Montague 2006). Behaviorists divide human behaviors into appetitive and aversive behaviors; we take action because we are driven to move either towards pleasures or away from discomforts (Bozarth 1994). The human experience of wanting, and the positive and negative affect that arise from our desires being satisfied or disappointed, are driven largely by the fluctuations of dopamine in the brain. According to neuroscientist Read Montague, all our appetites and motivations come down, on a neurological level, to the presence or absence of dopamine, “You’re probably 99.9% unaware of dopamine release. But you’re probably 99.9% driven by the information and emotions it conveys” (Zweig 2007, p69).

In order to help us learn - to reliably predict patterns based on experience - our dopamine neurons are not simply reactive. They are also predictive. Wolfram Schultz, a neuroscientist and leading researcher of the dopamine system, conducted groundbreaking research with monkeys revealing that “prediction neurons” fire when we experience a stimulus that we recognise as preceding a reward. If the reward arrives, we gain an extra surge of dopamine, which we experience as the pleasure of attainment. If the reward fails to arrive, our dopamine neurons decrease firing (Hollerman & Schultz 1998). As a result we experience a negative affect. This is known as the “reward-prediction error signal” (Montague 2006). Schultz’s studies indicate that

unpredictable events activate dopamine neurons at around *three to four times* the intensity of predicted events. This intensity of experience applies to unexpected rewards as well as unexpected negative experiences (Hollerman & Schultz 1998).

The brain area that governs this process is the Anterior Cingulate Cortex [ACC]. The ACC sits at the inside front edge of the longitudinal fissure - the deep chasm that runs from the front to the back inside the brain. It is evolutionarily older than the cortex, and is “welded to the limbic structures beneath by thick neural connections” (Carter & Frith 2010, p100). The ACC houses Von Economo Neurons (also known as “spindle neurons”), a special kind of neuron that connects the limbic system to the cortex. These long, slender neurons reach further and transmit electronic signals faster than any other neuron. The ACC acts as a relay between the limbic system and the cortex, and converts their different kinds of information - visceral, emotional, and social - into an intentional will to act. Von Economo neurons then transmit the resulting emotional and motivational signals rapidly throughout the brain (Allman et al 2001; Carter & Frith 2010).³⁹ Through this process the ACC plays a crucial role in human motivation and planning.

The ACC is also closely connected to the thalamus, which directs conscious attention. Thus any stimulus that triggers the ACC will instantly demand our attention. The ACC is also connected to the hypothalamus, to which it sends somatic signals that prepare the body to respond - for example by increasing heart rate and production of adrenaline, dilating pupils, activating sweat glands etc. (Damasio 1999). Remember that prediction error signals in the ACC are particularly intense - activating dopamine neurons at around *three to four times* the intensity of predicted events. This means that unexpected outcomes grab and hold our attention, generate instant visceral, emotional and somatic activation, and trigger motivated desire to resolve the error. When you experience an unexpected outcome (in life or in narrative) you feel it in your gut and in your body. Your attention becomes focused on identifying the elements of the environment responsible. And your desire to recover the desired outcome is amplified.

This has substantial ramifications for screenwriting. Cognitive film theorists generally agree that telic (goal oriented) concerns of the character are important to establishing viewer engagement (Grodal 1997; Smith 1995). However, their accounts do not adequately represent the complexity and specificity indicated in the neuroscientific literature. Theorists focus almost exclusively on characters' major telic concerns and overlook the crucial role played by seemingly insignificant minor goals. Expert screenwriters, on the other hand, consistently utilise such minor goals to align character and viewer expectation and desire. The expert screenwriter achieves this by providing the character with a minor goal - which may be something as incidental as getting candy from a vending machine. This provides three key triggers for the viewer's brain - a relatable motivation, a familiar motor repertoire action and a tangible predicted outcome. A desire and expectation is created within both character and viewer that the character will attain an unremarkable (and therefore cognitively unchallenged) outcome. The viewer's prediction neurons fire. He experiences anticipatory dopamine release. His mirror system is also activated, mirroring the familiar (semantically correct) physical action taken by the character in pursuit of the goal. But when the screenwriter *unexpectedly* withholds the predicted outcome, both viewer and character experience prediction-error signal. As demonstrated above, this triggers an instant and cognitively impenetrable spike of visceral, emotional and somatic stimulation. This response is shared by character and viewer. Viscerally, emotionally, somatically, attentionally and motivationally, they are aligned. In this manner the expert screenwriter creates somatic and affective resonance - the neuroscientific definition of empathy.

This narrative strategy is utilised with great consistency by expert screenwriters. (Examples will be discussed in Chapter 7). It is frequently employed in the initial phases of a film narrative, as a method of 'bootstrapping' viewer alignment with character. Because the process does not invite higher order cognitive processing it proceeds unchallenged by the viewer. Thus it allows the screenwriter, through a largely unnoticed and apparently innocent process, to create the beginnings of an emotional lockstep between character and viewer without having to negotiate the viewer's more discerning (or prejudicial) explicit cognitive evaluations of social and ethical

considerations. This strategy is crucial to expert screenwriters, who share a consistent desire to people their narratives with difficult, flawed and morally ambiguous characters. By ‘bootstrapping’ viewer alignment with character at the base level of visceral and somatic resonance without the interference of conscious cognition, the screenwriter is able to engage the viewer with characters whom the viewer’s conscious prejudices may otherwise lead them to reject. Despite its ubiquity in the practice of expert screenwriters, none of the cognitive film theorists surveyed for this thesis identify this fundamental narrative strategy for contributing to viewer alignment with character. This is just one example of an opportunity to “specify the objective devices and forms that elicit a spectator’s activity” (Bordwell 1985, p48) that has been missed by film theorists’ failure to consider the practice of expert screenwriters as a primary source of knowledge.

Longer-term telic concerns are also a factor in establishing empathetic alignment between viewer and character. Most cognitive film theorists express this view. However, if our aim is, as Bordwell (1985, p48) writes, “to specify the objective devices and forms that elicit a spectator’s activity”, then we cannot be content to simply repeat the bland bromide that “teleological models of the subject are fundamental to narrative” (Grodal 1997, p117) and leave it at that. We are obliged to offer an account of why this is so and to identify the specific ‘devices and forms’ through which longer-term goals are exploited to ‘elicit a spectator’s activity’. To do this we need to consider the mechanisms governing long-term goals and our interpretation of their significance in narrative. Once again, cognitive neuroscience can help us understand the narrative strategies consistently employed by expert screenwriters.

Long-term goals are governed by the same dopaminergic motivational system that governs short-term goals. Consequently, in order to understand their function in narrative we must take into account the contribution of the humoral, visceral and emotional signals through which this system generates and sustains these goals. Film theorists, when considering the contribution of long-term telic concerns, commonly make the error of seeing them as purely cognitive constructs. While long-term goals do

have an explicitly cognitive dimension, depicting them solely in these terms provides a poor explanation of their power. Thinking of the viewer's apprehension of the character's desires as a primarily intellectual activity leads to a diluted account of what is occurring in the interaction between viewer and narrative. To truly appreciate the importance of long-term goals to viewer engagement and comprehension, we must take into account their *affective* components. Specifically, we must consider the visceral and emotional power of prediction and prediction error within the dopaminergic motivational system.

Psychological studies demonstrate the importance of prediction error in narrative comprehension. In one such study, Bower et al exposed subjects to variations on a script, and then measured their recall. They found that the narrative elements most readily recalled by participants were obstacles and errors that directly impeded the character's intentions, "when normal expectations were not immediately fulfilled" (58% recollection). These moments of unexpected outcome were perceived as more salient than random, irrelevant interruptions, which resulted in only 32% recollection. From this, researchers concluded that "it is the interruptions in a schema that make a story worth telling, and it is these that are most attended to and recalled" (Smyth et al 1987, p190). Schank and Abelson (1977) also explored this phenomenon and concluded that "memory is dynamic and failure-driven. It is when something goes wrong in our predictions that we must modify our memories so that they will be more likely to cope in the future" (Smyth et al 1987, p191). So it is not simply the existence of telic concerns *per se*, but rather the intersection of telic concerns with prediction error that generates engagement and determines meaning. Indeed, Brewer and Lichtenstein demonstrated that subjects who were presented with narratives absent of obstacles did not even categorise them as stories (Brewer and Lichtenstein 1981, cited in Smyth et al 1987, p189). Expert screenwriters conceive of film narrative in similar terms. For the expert screenwriter, unexpected complications and obstacles that frustrate character goals are not mere colour and movement - but rather fundamental building blocks in constructing meaning.

SUMMARY

In previous sections of this chapter I outlined how nonconscious neural processes create foundational empathetic engagement via mirroring and/or co-activating the somatic and affective states of others. In this section I outlined the mechanisms through which the dopaminergic motivational system governs the human experience of desires and predictions, including the unique role of the ACC and Von Economo neurons in bridging between visceral / affective subcortical areas and conscious / rational cortical brain areas. I also explored evidence for the significance of prediction error signals in shaping attention, motivation and affective response. Throughout, I outlined how these processes lay the platform for our experience of narrative. In the next, final, section of this chapter I explore the mechanisms governing conscious social cognition and the role these processes play in creating empathetic engagement.

RECOGNITION

“South of Worcester, Massachusetts, near the Connecticut border, there is a small lake with the wonderful Mohican name of Chargoggagoggmanchaugg-auggagoggchaubunagungamaugg. In English, it means “You fish your side, I fish my side, nobody fishes the middle: no trouble.” We may assume that the early lakeshore residents of this mellifluously named body of water were not enemies. They also knew something about managing human affairs.”
(Barash 2003, p21)

The management of human affairs is a complex business, even at the neural level. In this chapter we have seen that human beings have an innate capacity and tendency to mirror the homeostatic and affective states of their fellows. We have also seen that human beings are possessed of a motivational system that imbues them with a strong inclination to move towards pleasures and away from discomforts. The question remains, how does an organism possessing these arguably contradictory traits

manage to strike a balance between them? What is the mechanism that prevents us from becoming either a rapacious glutton or a selfless pushover? How do we get from “nature red in tooth and claw” to Lake Chargoggagoggmanchauggauggagoggchaubungamaugg? And how does this inform the way a viewer engages with a character in narrative film?

The key to unlocking this conundrum is revealed in an experiment conducted by Tania Singer and colleagues in 2006. The researchers engaged volunteers to play an economic game against opponents who were instructed to play either fairly or unfairly. The researchers then used fMRI to measure the brain activity of the players as they witnessed their opponents receive a painful electric shock. As expected, when the players witnessed opponents who had played fairly being subjected to this pain, the players “exhibited empathy-related activation in pain-related brain areas”. However, when witnessing the same painful stimulus being applied to opponents who had played *unfairly*, “these empathy-related responses were significantly reduced ... accompanied by increased activation in reward-related areas, correlated with an expressed desire for revenge” (Singer et al 2006, p466). That is, not only did the players feel less empathy for their unfair opponents, they actually felt enjoyment at their suffering. The researchers concluded that empathic responses are modulated by assessment of others’ social behavior. Specifically, that “we have empathy for those who cooperate and a desire to punish those who defect” (Frith & Singer 2008, p3880).

This finding, confirmed by numerous other studies, has massive ramifications for our understanding of how and why viewers ‘choose’ which character in the narrative to engage with. It entails a number of important conceptions. Firstly, that recognition of social context can alter affective response. Secondly, that this *recognition* of social context is processed at the conscious, cortical level - by the medial prefrontal cortex (Van Overwalle 2009, Bara et al 2011). Thirdly, that while *recognition* of the social context relies on conscious cognition, the *evaluation* of its valence relies on non-conscious sub-cortical mechanisms. As Singer writes, “our decisions are guided by fast and largely unconscious intuitions as to what *feels* right” (Frith & Singer 2008, p3883). And finally, that these mechanisms have an innate, biological bias so that, “the long-

term interests of the group are given greater weight than the short term interests of the individual” (Frith & Singer 2008, p3880). In this section I consider each of these ideas in turn. I present evidence from key studies supporting each conception, and note how they inform our understanding of viewer empathy with character in narrative film.

I know I know

In a wide ranging metastudy, *“Social Cognition and the Brain”*, social neuroscientist Frank Van Overwalle (2009) surveyed over 200 fMRI studies of brain areas activated when subjects sought to understand others’ actions and goals. He found that simple actions and goals (e.g. ‘the man is pouring milk into a bowl’) could be recognised directly from observation of the biological action of the object, via engagement of the mirror system. However, when behavior was more complex or abstract, or entailed no biological motion (e.g. ‘the man is making a birthday cake for his wife’), then the mentalizing system was recruited. If enduring social significance is detected, the medial prefrontal cortex then takes over processing the phenomenon. The researchers found that in all instances of “enduring social judgments, the mPFC is almost uniquely engaged” (p847).

The medial prefrontal cortex is the brain region primarily responsible for our ability to metacognize - to be aware of our own thought processes and emotions, and thus adjust them. Van Overwalle and Baetens (2009) found that in over 200 studies exploring the brain areas activated when making inferences about the self, over 85% showed significant activation of the mPFC, and that “no other regions are systematically engaged in the representation, evaluation or description of the self” (p847). The study also implicated the mPFC in response conflict and inhibition, meaning it is involved in “inhibiting one’s own intention beliefs in favor of other people’s beliefs”. The mPFC enables us to compare our own beliefs against those of others, to recognise false beliefs (a crucial aspect of Theory of Mind) and to adjust our actions accordingly. It is our primary mechanism for social moderation.

When considered in isolation, it may appear that the medial prefrontal cortex must be the prime-mover in determining social engagement, and that therefore cognitive film theorists are justified in exclusively considering this kind of high-order, conscious processing as the basis for their theories of viewer empathy. However, in real world terms, we cannot consider the mPFC in isolation - for the simple reason that it does not, and cannot, operate in isolation. When assessing contexts, beliefs and actions, the mPFC relies on information from the affective and motivational systems to gauge the value of concepts it is comparing (Baumgartner et al 2011). Without emotion, as Antonio Damasio writes, “the edifice of reason cannot operate properly” (Damasio 1999, p42).

The measure of all things

While recognition and evaluation of social context are largely reliant on explicit, conscious cognition, they cannot proceed on the basis of conscious cognition alone. The reason for this is evolutionary. Human awareness of social context serves an adaptive purpose - it has evolved to enhance survival and reproductive success (Boyd 2009; Goleman 2006). To accomplish this end, it must provoke action. As Damasio (1999) points out, this is accomplished by activating motivation and affective systems. Thus even our most rarified social and ethical considerations are implemented by recursively recruiting our most base nonconscious processes (Amadio & Frith 2006). Damasio (2010, p292) calls this process “sociocultural homeostasis” because, like basic homeostasis, it is a survival mechanism whose purpose is detecting and redressing imbalances in the (social) environment. In their article “*The neural basis of human moral cognition*”, Moll et al support this view, writing that:

Moral cognition depends on elaborated cortical mechanisms for representing and retrieving event knowledge, semantic information and perceptual features. However, morality would be reduced to a meaningless concept if it were stripped from its motivational and emotional aspects. Limbic and paralimbic regions monitor bodily homeostasis and underlie elementary emotional or

motivational ‘states’ ... This integrative perspective contrasts with the commonly held view that ‘rational’ cognitive mechanisms control or compete with emotional ones.

(Moll et al 2005, p806)

Joseph LeDoux (1996, p284) concurs, and points out that “projections from the amygdala to the cortex are considerably greater than the projections from the cortex to the amygdala”. This means that in pure mechanical terms, the emotion system provides more input, and thus greater influence, to the conscious cortical processors than the cortical processors provide to the emotion system. LeDoux (pp. 284-5) also notes that “the amygdala also projects to some sensory processing areas from which it does not receive inputs” and that this one-way signaling serves to “influence attention, perception and memory”. Thus the emotion system influences what the conscious mind pays attention to, what phenomena it registers as salient in its environment, and what percepts are flagged as priorities for memory storage and retrieval. The notion of the conscious mind as a kind of Cartesian *res cogitans* existing somehow separate and elevated from the body and the emotions is an illusion. This view is supported by neuroscientist Antonio Damasio, who writes that:

we commonly fall into the trap of regarding our big brains and complex conscious minds as the originators of the attitudes, intentions, and strategies behind our sophisticated life management ... The reality, however, is that the conscious mind has merely made the basic life-management know-how, well, **knowable**

(Damasio 2010, p36)

Damasio argues that “emotion is integral to the process of reasoning and decision making” and proposes what he calls the somatic marker hypothesis as the mechanism through which this is carried out (Damasio 2010, p36). In brief, the somatic marker hypothesis claims that emotions are largely experienced as somatic (embodied) states, felt through changes in the viscera, skeletal muscles and internal milieu. When a person consciously evaluates a situation, they make speculative projections of the likely outcomes of each of their action options, based on their memory of analogous situations. These memories, when recalled, involuntarily trigger

an emotional memory, which, like the original emotion, is felt as a bodily state (a somatic marker). This somatic signal is then integrated into the consciousness by the orbitofrontal cortex. The emotional / motivational valence of these various possible states is then compared (in the ventromedial prefrontal cortex) and the most rewarding / least aversive candidate is identified as the preferred option. In this way we arrive at a 'rational', 'conscious' decision. Damasio has conducted numerous experiments and studies that confirm this hypothesis, including his famous and oft repeated Iowa Gambling Task (Damasio 1999; Damasio 2010; LeDoux 1996). But perhaps none is as illuminating or as poignant as his study of a patient known as Elliot, who, following the excision of a large section of his orbitofrontal cortex with the removal of a tumour, lost all emotional affect and, as a consequence, was rendered utterly incapable of making even the most basic decisions:

Although Elliot's IQ had stayed the same - he still tested in the 97th percentile - he now exhibited one psychological flaw: he was incapable of making a decision. The dysfunction made normal life impossible. Routine tasks that should take 10 minutes now required several hours. Elliot endlessly deliberated over irrelevant details, like whether to use a blue or black pen, what radio station to listen to, and where to park his car. When he chose where to eat lunch, Elliot carefully considered each restaurant's menu, seating plan, and lighting scheme, and then drove to each place to see how busy it was. But all this analysis was for naught: Elliot still couldn't decide where to eat. His indecision was pathological. (Lehrer 2009, p14)

None of this diminishes the importance of conscious, rational thought. Without our highly evolved prefrontal cortex, we would be incapable of knowing and moderating our emotions and our behaviors. We would be incapable of forming and maintaining the kind of extended, complex and exquisitely subtle networks of social cooperation that are unique to our species. We would not have law, literature, architecture, or sports. We would not have cities, or even basic agriculture. We would not have stories. And of course we would not have movies. But nor could we achieve any of these things just with the conscious computational power of the prefrontal

cortex alone. To achieve these miracles of conscious thought we need a brain capable of simultaneously operating two interconnected types of processing:

consciousness involves a limited-capacity serial processor that sits at the top of the cognitive hierarchy above a variety of special-purpose processors that are organised in parallel ... Serial processors create representations by manipulating symbols, and we are only conscious of information that is represented symbolically. Information processing by lower level parallel processors occurs subsymbolically, in codes that are not decipherable consciously ... This reasoning yields an explanation for why we are conscious of the outcome of mental computations but not of the computations themselves
(LeDoux 1996, p280)

We need both the conscious and the unconscious, both “the high road and the low road”, as Goleman (2006) calls them, “thinking, fast and slow”, in Kahneman’s (2011) words. We need both computational and connectionist cognitive processes to be operating in concert. And when they combine as they have evolved to do, we experience the full richness of human experience, in which the intellectual life and the emotional life enhance each other in a symbiotic union. Only then are we able to make it to Lake Chargoggagoggmanchauggauggagoggchaubunagungamaugg.

Social emotions

Throughout the early sections of this chapter I discussed the role of basic emotions, such as anger, fear and joy. There is, however, a category of more complex emotions that rely on social context and are experienced only by the primates. These are called the Social or Moral Emotions. Some of these emotions, which require counterfactual thinking and conscious recognition of social context, are exclusively the domain of the human animal. Primatologist Dario Maestripieri in his book, *“Games Primates Play: an undercover investigation of the evolution and economics of human relationships”*, outlines evidence that human moral judgement is a recent evolutionary adaptation:

complex new emotions evolved to support morality, such as shame (subjective penalty for norm violation), guilt, (subjective penalty for violation of expectations), pride (subjective payoff for norm adherence), moral outrage (anger that occurs when norm violations by others are experienced as if they were transgressions against the self), and contempt (long lasting condemnation of others who have transgressed norms or violated expectations) (Maestripieri 2012, p264)

Other observers, however, note that not all social emotions necessarily serve pro-social ends, for example jealousy (negative affect generated in response to a threatened or actual loss of a valued relationship due to the presence of a real or imagined rival), envy (negative affect toward another individual due to his or her possession of some desired object or attribute) and humiliation (negative affect resulting from being demeaned or excluded against one's will and expectations). These emotions are affective responses to recognition of one's own social loss, and/or the comparative social benefits enjoyed by others, and frequently result in violent, anti-social retaliation (de Steno, Valdesolo & Bartlett 2006; Goldman & Coleman n.d.). But regardless of whether they are pro or anti-social, what all these emotions have in common is that they are generated by the subject's awareness of the social context. And they are felt physically.

We saw the effect of social context on emotional response in Singer et al's experiment - when people see non-cooperators punished, their empathetic response is dampened and their reward systems are activated. Conversely, Rilling et al (2002) used fMRI to measure the brain activity of players in an iterated game of Prisoner's Dilemma and found that cooperation between players triggered "activation of brain regions - the nucleus accumbens, the caudate nucleus, ventromedial frontal / orbitofrontal cortex, and rostral anterior cingulate cortex - that are associated with the pleasurable sensations of 'Reward'" (Barash 2003, p155). Another study compared brain structures activated when people were subjected to a painful physical stimulus and when subjected to social exclusion. In this study, participants played a virtual ball

game, and researchers used fMRI scans to measure the brain activity of the players when they were excluded from the game. They found that “experiences of social pain - the painful feelings associated with social disconnection - rely on some of the same neurobiological substrates that underlie experiences of physical pain” (Eisenberger 2012, p421). These findings are supported by research by Jaak Panskepp (2003, p238), who found that, “the same neuro-chemicals that regulate physical pain also control the psychological pain of social loss”. The ubiquitous literary metaphors for emotional pain and discomfort - pricked with guilt, burnt by love, cut by a remark - are more than poetical fancy, they are an accurate description of how the neural networks of the sufferer register the social trauma. Rejection really does hurt. Which helps us understand why people subjected to social rejection frequently retaliate with the kind of physical violence more appropriate to a physical attack. It also suggests that problematic social situations may be strong triggers for empathetic engagement - assuming that the viewer is able to mirror the character’s social pain in the same way they mirror their physical pain.

Are we able to feel someone else’s social pain? Do we mirror social emotions in the same way that we mirror basic emotions and physiological sensations? Masten & Eisenberger explored this question, using fMRI to measure the neural activity of adolescent subjects as they witnessed other adolescents experiencing rejection. They found that the same pain areas were activated when *observing* rejection as when *experiencing* rejection (Masten et al 2010). This accords with Singer’s (2004a) earlier findings on witnesses’ empathy for physical pain, and confirms that the same mechanisms extend to empathy for emotional pain. Social exclusion and physical injury both hurt. They both activate the same neural circuits. And they are both affectively mirrored by witnesses. This finding is supported by studies exploring neural activation triggered by witnessing other emotions. In their study on empathising with regret, Canessa et al (2009, p1) found that even though regret is an emotion requiring high level cognition of “the counterfactual comparison between alternative outcomes” it nevertheless provoked a resonant affective response in witnesses.

As Damasio explains, emotions are the engine that drives action. Social emotions are the engine that drives social action. They are crucial to our survival as a species. Little wonder they are felt so powerfully and so compel our attention. They are additionally powerful because they are simultaneously conscious and unconscious. Derived from explicit cognition of our social environment - yet felt viscerally. Social emotions are like Janus looking in both directions at once - into our unconscious and our conscious lives. This is the paradox that makes social emotions so potent and resonant, both in life and in fiction. It should be unsurprising then, that social emotions are so frequently central to memorable and moving screen narratives. David Helfgott's tortured love for an abusive father, Michael Corleone's loyalty to his family and guilt at betraying of his wife, Sophie's choice to sacrifice her daughter and save her son, Harry Burns and Sally Albright's struggle to figure out whether lovers can ever be friends. We experience powerful and profound responses to these narrative situations because we are hardwired biologically to respond to social transactions in consistent ways. Many neuroscientists are concerned with exploring the neural mechanisms that govern our biologically innate tendencies during social transactions. Their findings illuminate the evolutionary basis of many of the forms and devices employed by expert screenwriters to create viewer empathy for characters in narrative film.

Game theory and viewer engagement

When researchers in neuroscience, psychology and economics explore social decision-making, they frequently do so through the use of 'economic games'. Indeed, so ubiquitous is this approach that since the late 1990's the entire field has been synthesised into an emerging discipline dubbed 'Neuroeconomics'. These economic games emerge from, and are interpreted through, Game Theory (Glimcher & Rustichini 2004; Kahneman & Tversky 1979).

Game theory is a theory of conflict. Fortunately, it also offers a powerful theory of cooperation, which we shall get to. But first, this hard truth: If mutual agreement were at the root of most interactions, there would be little for game

theoreticians to theorize about. As it is, there's quite a lot.
(Barash 2003, p20)

One could equally say that, 'If mutual agreement were at the root of most interactions, there would be little for screenwriters to write about'. Game theory and narrative film are both frameworks for exploring behavior in terms of conflict and cooperation. The psychology and neuroscience of Game Theory offers a lens through which we may more clearly see some of the fundamental operations of narrative film.

Game Theory originated from a 1944 paper by von Neumann and Morgenstern "*The Theory of Games and Economic Behavior*", which explored the hypothesis that "social events can best be described by models taken from suitable games of strategy. These games in turn are amenable to thorough mathematical analysis" (Davis 1983, foreword pX). While game theory uses mathematics to quantify its findings, the ideas it explores are not inherently mathematical (Osborne 2004). Game Theory is an approach to understanding decision-making in a social context. It explores how people decide when others' actions and outcomes need to be taken into account. Its aim is to explicate the heuristics through which "players, rather than focusing self-interestedly on their own payoff alone, seem to respond in terms related to social utility, showing concerns about fairness and the perceived intentions of other players" (Camerer 1997, p168). Thus game theory is concerned with the situated nature of human decision-making in the social context - acknowledging that, "while decision makers are trying to manipulate their environment, their environment is trying to manipulate them" (Davis 1983 p6). For this reason, game theory has direct relevance to narrative film, which is also deeply concerned with human decision-making in the social context. It is more than a passing coincidence that von Neumann & Morgenstern's (1944) seminal publication on the subject used as an illustration a dramatic narrative fiction - Arthur Conan Doyle's famous Sherlock Holmes thriller story, "*The Final Problem*" (Conan Doyle 1894).

The central consideration of game theory is whether a player will choose an action that considers the welfare of other players (cooperation) or that considers only their own welfare (defection)⁴⁰. Possible actions and outcomes for each player are

graphically represented on tables called game theory matrixes (Osborne 2004).

According to Capraro (2013), the economic games most frequently discussed by neuroscientists and used to explore the neural correlates of social behavior include:

The Ultimatum Game

The Prisoner's Dilemma

The Game of Public Goods

Let us briefly examine these games and their relevance to how we understand narrative film.

THE ULTIMATUM GAME

The Ultimatum Game is a distillation of situations entailing fair and unfair offers in which one player has sole power to determine the offer. The first player is given an amount of money, which they must share with the second player. They may choose to share as much or as little as they wish, and the second player's only option is 'take it or leave it'. If the second player accepts the offer, both players get to keep their split. If they reject the offer, neither player gets anything. The rational response from the second player is to accept any offer, as from a purely utilitarian perspective any profit is better than no profit (Davis 1983). However (to the dismay of the researchers who first ran this game in experimental conditions) players will typically reject offers they perceive to be unfair. This outcome has been verified in numerous repetitions of the experiment, "and not only in the affluent United States, but also in countries such as Indonesia, where the sum to be divided was \$100 and where offers of \$30 or less were frequently rejected, even though this was equivalent to two weeks wages" (Fisher 2008, p123). Researchers scanning the brains of players rejecting unfair offers during the Ultimatum Game concluded that "models of decision-making cannot afford to ignore emotion as a vital and dynamic component of our decisions and choices in the real world".

Studies using this game include the frequently cited study by (Zamir 2000) which quotes a student who played the game “rationally” and was dismayed when his lowball offers were rejected,

I did not earn any money because all the other players are stupid! How can you reject a positive amount of money and prefer to get zero? They just did not understand the game! You should have stopped the experiment and explained it to them...

(Zamir 2000, p6)

As Camerer points out, this student’s response “sounds autistic”. Autistic subjects’ deficit in understanding other people’s emotions and mental perspectives leads them to play economic games on a purely rational basis, typically with unsatisfactory results. He cites a study by Hill & Sally (2003) of autistic subjects playing the Ultimatum Game, in which the autistic players typically made lowball offers of 10% to 0% and were puzzled when the offers were rejected. This indicates that decisions of social utility are made on an emotional rather than rational basis. Sanfey et al (2003) confirmed this. Their study used fMRI to measure players’ neural response to unfair offers in the Ultimatum Game, and found that the deciding factor in the decision to accept or reject was the level of activation in the insula - the neural area governing disgust. As Camerer observes, “The fact that unfair offers activate insula means that a verbal statement like “I am so disgusted about being treated that way” is literal, not metaphorical - they really do feel disgusted” (Camerer 2005, p48). These studies indicate that when it comes to maintaining social harmony, sub-cortical emotional evaluations may be more crucial than rational calculation.

This has direct bearing on theories of how we understand film. Plantinga argues that a viewer’s understanding of a narrative is based on mental construals rather than emotions. Bordwell likewise argues that the viewer’s emotional response is separable from their comprehension. But these studies demonstrate that the players’ construal of “unfairness” in this game is not a purely “mental” construct. While the construal relies in part on a conscious awareness of an unequal mathematical division, the crucial

factor that translates “unequal” into “unfair” is a physiological / emotional response. Remove the physiological / emotional response and there is no mechanism for evaluation (Hillis 2014). We are left with a mind that is amoral and autistic. A mind that is incapable of distinguishing fair from unfair, and disgusting from delicious. A mind incapable of making decisions. That is not the mind of a normative human being. As much as we might philosophically prefer the notion of a the human mind as a rational executive, we shall make better progress in understanding the viewer’s experience of narrative film if we accept human minds as they actually are.

THE PRISONERS’ DILEMMA

The Prisoner’s Dilemma is a game that was formalised by A.W. Tucker, a professor at Princeton and associate of John Nash and John von Neumann. In Tucker’s original version of the game:

Two men, charged with a joint violation of law, are held separately by the police. Each is told that

- (1) if one confesses and the other does not, the former will be given a reward ... and the latter will be given a large fine ...
- (2) if both confess, each will be given a small fine ... At the same time each has good reason to believe that
- (3) if neither confesses, both will go clear.

(Tucker 1983, p228)

If both players cooperate with each other (either both confessing or both not confessing) they gain a better outcome than if they both defect. But a player not assured of the other player’s cooperation will always gain a better outcome by defecting. Thus the dilemma. The Prisoner’s Dilemma is frequently used by neuroscientists to explore the neural correlates of social decision making (Davis 1983). Most studies explore iterated games (repeated rounds) of Prisoner’s Dilemma, which

reveal long-term strategies for cooperation that more closely reflect real world situations (Davis 1983).

In the economic world, sociologist George Simmel noted that competition between businesses can be understood as an iterated game of Prisoner's Dilemma (Davis 1983). In narrative film, dramatic situations are quite frequently constructed around a Prisoner's Dilemma. One memorable example is the sequence in *The Dark Knight* in which the Joker plants explosives on two boats - one containing prisoners and one containing commuters, and gives each the opportunity to pre-emptively blow up the other. Maestripieri (2012, p117) offers an example from ethology, of the mutual cooperation between "large coral reef fish and the tiny cleaner fish that swim inside their mouths to clean them". Each of these fish could achieve the highest payoff by defecting rather than cooperating - the cleaner fish by snatching a bite of the flesh inside the host fish's mouth, and the host fish by swallowing the cleaner fish whole. Interestingly, this game between the reef fish is an iterated game, and researchers conclude that each type of fish chooses their partner based on observing and remembering which fish have cooperated or defected in the past. Reputation matters, even among fish.

Examples of neuroscience studies using The Prisoner's Dilemma include the study by Rilling et al (2002) described earlier, which found reward centres of the brain were activated when players cooperated during an iterated game of Prisoner's Dilemma. Other studies using this game identify further neural mechanisms for positive reinforcement of prosocial behaviors. For example, Zak et al. (2005) measured hormonal fluctuations during a game of Prisoner's Dilemma, and found that levels of players' oxytocin (the same social bonding hormone released when mothers breast feed) rose when they were trusted by another player. Singer et al (2004b) measured players' brain response to viewing pictures of other players after the game, and found the striatum (the same reward area triggered when perceiving beauty) was activated merely by viewing the faces of other players who had cooperated with them. And in the arena of artificial intelligence, Robert Axelrod's now famous tournaments of Prisoners Dilemma computer programs demonstrated that the basic human heuristic

of ‘Tit-For-Tat’ (cooperate except when retaliating to a defection) yields the best outcome in iterated games (Axelrod 1984).

These studies illuminate some of the innate underpinnings of social behavior; i.e. that non-cooperators trigger feelings of disgust; that cooperating triggers a feeling of reward; that being recognised as a cooperator creates a feeling of close social bonding; and that cooperators are more attractive to others. When it comes to social cognition, nature has really stacked the deck.

THE GAME OF PUBLIC GOODS

The Game of Public Goods is a complex iterated game played between multiple players. Each player is given a sum of money. In each round they contribute an amount of their choosing to a common fund. An interest percentage is then added to this common fund, and the money redistributed evenly among the players. Thus any player may refrain from contributing yet still enjoy a share of profits. A player who does this is termed a “freerider”. Real world examples of the Game of Public Goods are all too common, in the problems of distribution of wealth, fair taxation and policing of greenhouse gas emissions. In the animal world, primatologist Marc Hauser found that rhesus monkeys foraging in the wild typically call to alert others when they discover food, and have been observed to punish freeriders who fail to make this call (Hauser 1992). The Game of Public Goods is widely used in neuroscientific and psychological studies, including Singer et al’s study of the neurobiology of punishment discussed at the beginning of this section (Singer et al 2006). The game is of particular interest to neuroscientists because its complexity and range of strategic options allows for the emergence of distinct social roles.

Along with the basic roles of *cooperator* and *defector*, players in the Game of Public Goods may also, as we have seen, opt to be *freeriders*. When defectors and freeriders emerge, other players may opt to be *punishers*, and mete out penalties to these uncooperative players. When this penalising of non-cooperators comes at a cost to the

punisher, they are termed an *altruistic punisher*. This allows the emergence of a further level of defector - players who do not directly defect or freeride, but who make no contribution to punishing defectors and freeriders, leaving the cost of maintaining social equity up to others. These players are termed *second order freeriders*. Studies show that each of these social roles consistently activates a predictable affective response in other players (Fehr & Rockenbach 2004).

Game Theory: Summary

Economic games are used by neuroscientists, economists, ethologists and psychologists to explore how humans (and other primates) make social decisions. Evidence from these scientific disciplines consistently indicates that our neural mechanisms are innately tuned such that:

We experience cooperation and altruism as inherently rewarding

We experience empathetic mirroring for *cooperators*

We suppress empathetic mirroring for *defectors*

We experience punishment of *defectors* as innately rewarding

We admire *altruistic punishers* who punish defectors at cost to themselves

We class “*second order freeriders*” who don’t contribute to group punishment of defectors as defectors themselves

All of these calibrations of attitude are biologically realised, non-conscious and automatic.

In the following chapter I discuss how expert screenwriters orchestrate the viewer’s perception of a film character’s ‘game theory role’ within the narrative (i.e. framing them as cooperators, defectors, freeriders or punishers) as means of harnessing these automatic calibrations of attitude to direct the viewer’s empathetic alignment.

CONCLUSIONS

This chapter has been concerned with presenting evidence from neuroscience in support of the Perception-Action model of empathy. I identified how this model correlates with models described by Adolphs, Damasio, MacLean, de Gelder, Preston and de Waal, and Van Overwalle. These models agree that the cognitive processing of empathetic engagement may be understood as three phases, each processed by a loose network of brain systems of grouped by phylogenetic age. I presented evidence that the foundations of empathic engagement are instantiated by phylogenetically ancient brain regions that perceive and evaluate stimuli at short latency without requirement for conscious cognition. I provided evidence that these processes are necessary and sufficient to create empathic engagement with an object. Further, I provided evidence that this processing requires no conscious cognition, or explicit awareness of a social context. I presented evidence that the introduction of explicit cognition does not negate or over-rule automatic, unconscious cognition, but relies fundamentally upon it (Adolphs 2003; LeDoux 1996; Damasio 2010; Singer et al 2006).

I noted specific ways in which this model of empathy, upheld by neuroscience, correlates strongly with the implicit model of viewer empathy in the tacit knowledge of expert screenwriters. In contrast, I identified significant disagreements with the models of viewer engagement proposed by cognitive film theorists. In the table below, I compare the key claims of each of these three models (Figure 4). Support for each claim is identified with citations. Check boxes indicate where the expert screenwriters' model and the cognitive film theorists' model are supported or not supported by the neuroscientific evidence.

COMPARISON TABLE

KEY: ✓ = supported by neuroscience
 ✕ = not supported by neuroscience

	NEUROSCIENCE	THEORISTS		SCREENWRITERS	
Conception	Somatic / visceral resonance is empathy	Physical / visceral stimuli are incidental / irrelevant.	✕	Physical / visceral alignment creates empathetic engagement	✓
Mechanism	Perceptual systems; Mirror system; limbic system; IAC	n/a		Strong parallel physical experience	
Citation	di Pellegrino (1992); Singer (2004a); Craig (2009); Damasio (2010)	Carroll (2003); Bordwell (1985); Grodal (1997); Smith (1995); Plantinga (2009)		Beaufoy; Gallo; Brooks; Carriere; Hodges	
Conception	Emotional resonance is empathy	Emotional comprehension is necessary to empathy	✕	Emotional resonance creates empathetic engagement	✓
Mechanism	Mirror system; limbic system; reward system; von Economo Neurons	Mood cues; conscious evaluation; mirrored facial emotion		Subtextual clues; projection; unconscious emotional provocations	
Citation	Rizzolatti (1996); LeDoux (1996); de Gelder (2006); Damasio (2010)	Smith (1995); Carroll (2003); Grodal (1997); Plantinga (2009); Currie (1995)		Beaufoy; Coriat; Carriere	
Conception	Motivational alignment is empathy	Understanding character goals moves viewer from ToM to 'empathy proper'	✕	Feeling character desire creates empathetic engagement	✓
Mechanism	Dopamine system; ACC; von Economo neurons	Conscious interpretation		Relatable immediate goals	
Citation	Hollerman & Schultz (1998); Montague (2006)	Grodal (1997); Smith (1995); Plantinga (2009); Anderson (1996)		Beaufoy; Coriat; Carriere	
Conception	Territoriality is universal animal behavior	No comment	✕	Territorial invasion can create alignment	✓
Mechanism	Hippocampus; limbic system			Territory invasion	
Citation	Barash (2009); Hauser (1992); Maestriepieri (2012)			Brooks; Stanton; Ephron; Beaufoy; Schenk	
Conception	Innate bias to social cooperation	Moral preferability	✕	Initial alignment of malleable and context-contingent social evaluations	✓
Mechanism	mPFC; TPJ; hypothalamus; framing effects	Conscious assessment in reference to absolute moral standards		Framing character as cooperator in a 'social game'	
Citation	Singer (2006); Rillings (2002); Van Overwalle (2009); Zak (2003)	Smith (1995); Carroll (1999) Plantinga (2009)		Bass; Beaufoy; Carriere; Brooks; Gallo; Campion; Arriaga	
Conception	Intellectual alignment – shared task focus	Pleasure of the puzzle	✓	Solving problem with character; and solving problem of narrative	✓
Mechanism	Motivational system; constrained working memory; bias to social cooperation	Conscious engagement in problem solving; predictions, inferences		Withheld and fragmented information; multiple protagonists; non-linear structures	
Citation	Bor (2012); Baars (1997); Yantis (1992)	Bordwell (1985); Grodal (1997); Smith (1995); Buckland (2000); Currie (1995)		Beaufoy; Coriat; Carriere; Gallo; Hodges	
Conception	Empathetic alignment is primarily governed by non-conscious processes	Empathetic engagement is primarily governed by conscious processes.	✕	Empathetic alignment is primarily governed by non-conscious processes.	✓
Mechanism	Perceptual system; mirror system; motivational system; limbic system	Conscious evaluations		Visceral alignment, immediate goal alignment, framing of social context, territoriality, alignment of prediction and prediction error.	
Citation	Damasio (1999, 2010); LeDoux (1996); Singer (2004, 2006); Adolphs (2003); de Gelder (2006); Montague (2006); Craig (2009); Van Overwalle (2009)	Bordwell (1985); Carroll (1999, 2003); Grodal (1997); Smith (1995); Smith (1995); Plantinga (2009)		Beaufoy; Coriat; Carriere; Bass; Gallo; Brooks; Cameron; Arriaga;	

(Figure 4: Comparison of conceptions and mechanisms of empathy)

Chapter Seven

THE VIEWER WITH THREE BRAINS

Expert screenwriters' narrative strategies for creating and modulating viewer empathy

It is obvious that a work of this type has a very particular effect on the perceiver ... because the law of its structuring is also the law governing those who perceive the work, for they too are part of organic nature ... To a greater or lesser degree this feeling is inevitable in each of us
(Eisenstein 1987, p12)

The 'law' of 'organic nature' that Eisenstein is alluding to here is cognitive neuroscience. He does not name it as such because at the time of his writing, the science had not yet been conceived. Eisenstein was an exemplary reflective practitioner. The conceptions he held in his espoused theory and the actions he took in his operational theory constitute an understanding of viewer engagement with film narrative so advanced that it took science a half century to catch up (Tikka 2008). In the past several decades, cognitive science has made huge inroads into understanding empathy - what brain processes create it, enhance it, destroy it. Cognitive scientists are finally proving what creative artists, including expert filmmakers, have intuitively understood all along (Freedberg & Gallese 2007).

In the previous chapter I described the Perception-Action Model of empathy promoted by leading cognitive neuroscientists. This model identifies three distinct but interrelated phases of cognitive processing. In this chapter I identify a range of specific narrative forms and devices used by expert screenwriters to harness each of these phases in order to create empathy. Examples from films (written by the screenwriters interviewed, and by other expert screenwriters) will illustrate these strategies in action.

Screenwriting Strategies: Introduction

A film narrative is an unstoppable flow of information and sensation. The viewer's mind is flooded with an unrelenting tide of powerful forces - visceral, emotional and psychological. Expert screenwriters are aware that if these powerful forces are not harnessed to work for the intended effect, they are likely to be working against it. There are numerous considerations in harnessing the visceral, emotional and psychological power of the cinematic apparatus in service of a narrative. Primary among them, for the screenwriter, is the need to direct the audience's emotional point of view so that the events of the narrative are experienced from the perspective of a particular character, typically the protagonist. The expert screenwriters interviewed for this thesis consistently rated this as a first fact of creating viewer engagement with the narrative. In Simon Beaufoy's words, it is essential to calibrate the audience emotionally to "this person's world and the register of his emotional engagement with things". Empathy is crucial to how we understand film.

In the previous chapter I described how neuroscientists commonly divide cognitive processing of empathetic resonance into three phases, corresponding more or less with the recruitment of rear-brain, mid-brain and fore-brain areas (Damasio 2010, de Gelder 2006, Adolphs 2003, Preston & De Waal 2002, Van Overwalle 2009, MacLean 1991). In Chapters 3 and 4, I established that expert screenwriters orchestrate their work to trigger the viewer's cognitive processes in a remarkably similar progression. In this chapter, for clarity and ease of reference, I give each of these phases a label: "Primal Brain", "Individual Brain" and "Social Brain". These are not scientific terms - they are simply descriptive terms. As they are intended to denote demarcations applied by screenwriters, not scientists, I believe this is appropriate. I also believe it is helpful, as these labels hint at the phylogenetic age of the brain systems involved, and the role each plays in constructing the viewer's apprehension of the narrative.

PRIMAL BRAIN: This refers to processing by the network of phylogenetically ancient brain systems that perceive and regulate purely physical actions that may have no personal motivational valence. These include sensation of the internal state of the organism, sensation of pain, sensation of body orientation in space, startle and flinch reflexes, perception of ‘falling off spaces’, coarse processing of facial and bodily emotion, mirroring of others’ states and motor actions, as well as interoceptions such as disgust and air-hunger. Initial processing in this phase is entirely automatic and involuntary.

INDIVIDUAL BRAIN: This refers to processing by the network of phylogenetically more recent brain systems that perceive and regulate self-referential actions – i.e. behaviors that have personal motivational valence, but no other-regarding valence. This phase is concerned with basic survival desires and drives such as hunger, thirst and sex drive. It also includes prediction and prediction-error governed by the dopaminergic motivational system, and most basic emotion activations, such as fear, anger and joy. Processing in this phase is predominantly automatic, but is subject to voluntary re-appraisal and inhibition.

SOCIAL BRAIN: This refers to processing by our phylogenetically most recent brain systems that perceive and regulate social actions - i.e. behaviors that have other-regarding valence. This phase is concerned with all phenomena and actions whose meaning and value relies on social context. In particular this phase is concerned with recognition and evaluation of social roles, such as cooperator, defector, freerider or punisher.

In this chapter I consider each of these phases in turn. I identify specific narrative forms and devices employed by expert screenwriters to activate the neural mechanisms involved in each phase. I illustrate with examples from the work of expert screenwriters and draw upon the findings of cognitive neuroscience to expose how these narrative strategies work to create empathetic engagement with even the most challenging characters.

Screenwriting Strategies: Primal Brain

In this section I identify specific narrative strategies employed by expert screenwriters to harness the 'Primal Brain'. The Primal Brain is a descriptive label for the neural mechanisms that perceive and govern purely physical phenomena and actions that may have no motivational or social valence - that is, whose meaning and value is concerned with maintaining the integrity of the primal organism.

These include sensation of the internal state of the organism, sensation of pain, sensation of body orientation in space, startle and flinch reflexes, perception of 'falling off spaces', coarse processing of facial and bodily emotion, mirroring of others' states and motor actions, as well as interoceptions such as disgust and air-hunger. Initial processing in this phase is entirely automatic and involuntary. From the screenwriter's perspective, viewer engagement at this level is activated by provoking strong physiological responses simultaneously in viewer and character. These responses are typically overlooked or dismissed by cognitive film theorists. This is a mistake. Primitive responses may be simple and unsophisticated. But they are also powerful.

Let's begin with an example. George Gallo's screenplay for *Midnight Run* (1988) begins this way:

An unidentified man walks down a dingy corridor of a low-rent apartment building. He stops at a door. Listens. Takes out a lock pick and jiggles it in the lock. He drops the pick. As he bends to retrieve it, a shotgun blasts a massive hole through the door above his head.

I have screened this scene many times in screenwriting classes. When the shotgun blasts a hole in the door, the majority of viewers jump and gasp - at precisely the same instant the character on screen jumps and gasps. They share a simultaneous startle reflex. Motor areas automatically trigger the muscles needed to duck away. In viewers, the action is suppressed (barely, for some). Heart rate and breathing of both

viewer and character are elevated. Pupils of character and viewer are dilated. Adrenaline courses through the veins of character and viewer alike. Zoologist and Professor of Computer Science, George Mobus (2012) offers a graphic representation of perception, which illustrates that this kind of response is among the most basic behavioral routines for survival. It is shared by organisms as simple as sea slugs and even brainless, single cell organisms, which will recoil from noxious stimuli (Damasio 1999). And it is a powerful driver of somatic and affective resonance.

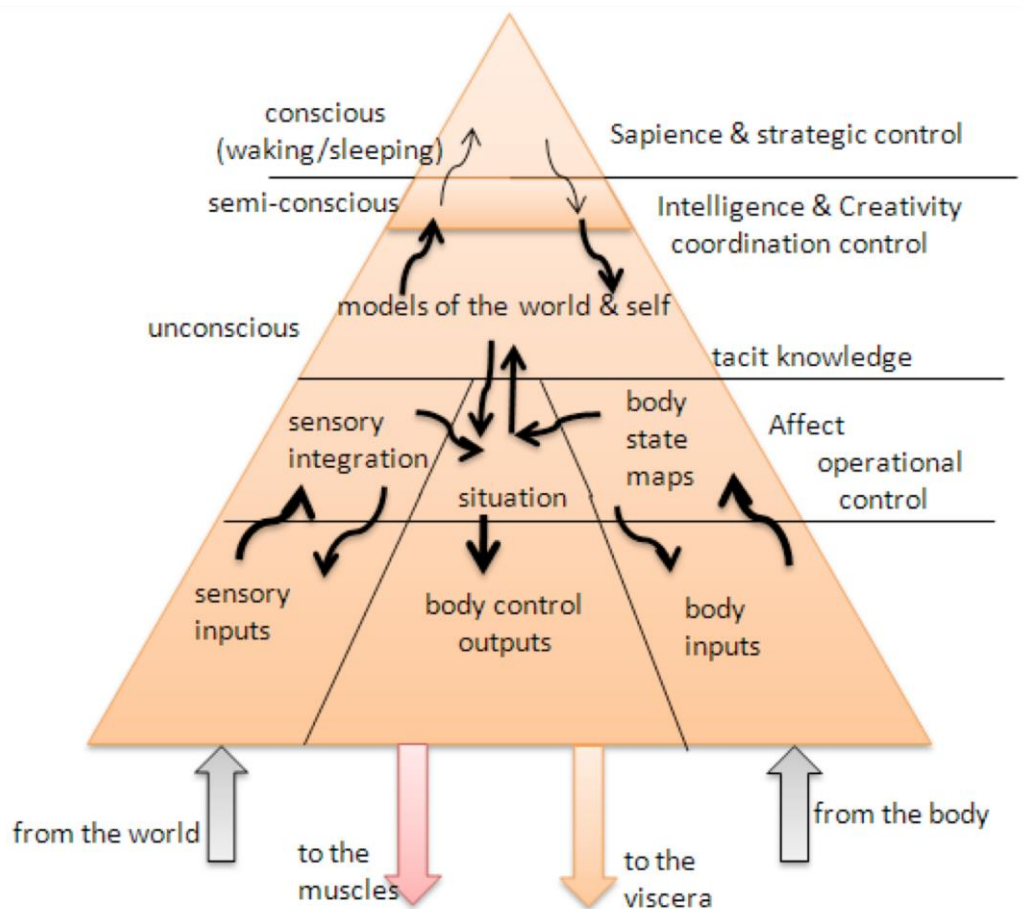


Figure 5: Overview of mind/brain functions (Mobus 2012)

Cognitive film theorists are dismissive of this primary step in creating empathy. They see it as insignificant, and restrict their focus to explicitly cognitive factors that appeal to the viewer's conscious perceptions - those at the top of Mobus' pyramid. While there are undeniably ways that screenwriters can appeal to engagement through explicitly conscious processes, these present a smaller target. Only a very narrow

selection of stimuli we experience are processed through our strategic, controlled, conscious assessments. And even those are also processed - before, during and after - by our automatic, unconscious cognitive processes (Damasio 2012). Our strategic, controlled, conscious assessments of the world are highly individual, and set us apart from others. Our opinions, beliefs and values rarely coincide exactly with those of any other human being - even our nearest and dearest. Appeals to conscious cognition are heavily filtered by the viewer. They are thus subject to much greater resistance (Moyer-Gusé 2008). On the other hand, our unconscious, primitive, autonomic responses are virtually identical to those of any normal member of our species. And as they are automatic, rapid and cognitively impenetrable, they are not filtered by the viewer (Adolphs 2003, LeDoux 1996).

Expert screenwriters understand this (albeit mostly intuitively) and typically begin the work of creating viewer empathy with character by provoking somatic and affective resonance via the most primitive paths of cognitive processing. They bootstrap empathetic engagement by activating primal responses from the base of Mobus' pyramid. Evidence of this was noted in the interviews in Chapter 3. In the discussion of his screenplay for *Salmon Fishing In The Yemen*, Simon Beaufoy nominates a simple physical injury (when Fred walks into a glass door) as the event that cements audience alignment with the character. This approach is highly effective for very sound reasons: it activates responses that are universal to all normative human beings, and does so automatically and unconsciously, thus bypassing the audience's conscious resistance. And it is employed with remarkable consistency by expert screenwriters.

Simon Beaufoy's screenplay for *Slumdog Millionaire* begins this way:

A sweet faced young man, Jamal, is hanging by his wrists in a police cell. A sweating fat man applies electrodes to the soles of his feet and shocks him. Jamal convulses painfully. As he grimaces and recoils, the viewer grimaces and recoils. We mirror his visceral, homeostatic response. Already, at a completely automatic and unconscious level, the process of alignment has begun. Of course there is further to go. And the screenwriter will take us there eventually, but at this point (both in our discussion, and

in viewing a screen story) we are concerned with this first step of unconscious, automatic, visceral alignment.

James L. Brooks and Mark Andrus' screenplay for *As Good As It Gets* (1997) begins this way:

A belligerent middle-aged man, Melvin Udall, is attempting to prevent a small dog from urinating in the hallway of his apartment building. Melvin tries to lure the dog into an elevator and when the dog cocks its leg against the wall Melvin snatches the dog up, at which point the dog urinates into the air and onto Melvin. As Melvin responds with surprise and disgust, the audience responds with surprise and disgust. We mirror his automatic, visceral, homeostatic, response. Once again, at a completely automatic and unconscious level, the process of engagement has begun. Brooks & Andrus' opening sequence for this film is a master class in the application of the expert screenwriters' implicit model of viewer empathy. They use no less than nine of the principles and techniques outlined here.

The screenplay for the animated children's film *Finding Nemo* (2003) begins this way:

A happy clownfish, Marlin, is playfully cavorting with his wife in their new anemone home located on the coveted 'drop off' to the deep ocean. Suddenly, unexpectedly, he is confronted by the sight of a giant predator watching them - a barracuda, it's huge maw bristling with rows of threatening, sharp teeth. As he freezes, motionless, eyes widen, breath bated, the audience freeze, eyes wide, breath bated. We mirror his visceral, homeostatic response. Here too, even with an animation of an anthropomorphised clownfish, at a completely automatic and unconscious level, the process of alignment has begun.

Similar examples are abundant. Many critically and commercially successful screenplays employ this strategy within the first few pages, ensuring that within the first few minutes of screen time the audience has experienced an unconscious,

automatic, visceral alignment with the central character. Even from this limited selection, it is apparent that this technique is used effectively by a range of screenwriters to activate a wide range of affective responses, such as startle response, fear, surprise, disgust and pain. All unconscious, automatic responses can be employed in this way. However, according to the neuroscience research, all visceral responses are not equal. Some are more powerful than others.

Interoception

In the previous chapter I introduced evidence from Craig (2009) that any stimulus that activates the anterior insular cortex will be felt as deeply personal. This brain area processes sensations including interoception, air hunger, pain and disgust. Expert screenwriters intuitively favour these powerful provocations as effective tools for creating and amplifying viewer alignment with characters. There is sound reason for doing so. If a viewer resonates a character's state, and that state has an interoceptive dimension, then the experience will be infused with a deeply personal qualia for the viewer. The viewer's sense of identification with the character will be powerfully augmented. This technique is used consistently by screenwriters in contemporary film, most commonly during the initial set-up phase in which empathetic alignment with the character is first being established, and during the high intensity act climaxes, when empathetic connection to the character's emotional state is most crucial to the effectiveness of the narrative.

During the set-up sequence of the film *Trainspotting* (1996), writer John Hodge offers one of the more memorable sequences in late twentieth century cinema, utilising a barrage of powerful interoceptive provocations to create affective and somatic resonance with a character whose moral position might be expected to make empathy a problematic proposition. The central character of the film, Mark Renton (played by Ewan McGregor) is a disengaged, solipsistic, amoral heroin addict. The sequence begins with his decision to wean himself off his heroin addiction by the use of suppositories. He is struck with diarrhoea, and doubled over by stomach cramps. He

enters a pub and finds a toilet - dank, wet, crusted with filth and overflowing with other people's excreta. The typical viewer response when I screen this scene is an audible groan of disgust, accompanied by the distinctive physiological response to a disgust stimulus - turning or leaning away from the source, pursing of the lips and pushing the sides of the mouth down, wrinkling the nose and scrunching the eyes partially closed (all perfectly sensible survival reflexes to protect the organism from potentially dangerous, contaminated objects). On screen, the character enacts the same disgust response. Powerful affective resonance has been achieved at a preconscious level already. But the screenwriter is not finished with us yet. The character sits on the toilet and relieves himself, then realises with alarm that he has expelled the suppositories into the toilet. Kneeling over the unflushable, overflowing toilet pan, he thrusts his hand into the filthy waste, gagging. When I screen the scene, viewers by this point are mirroring his extreme disgust - visibly and audibly. Then, in a moment of brilliant cinematic magic realism, Renton slithers completely into the toilet pan, and emerges in the ocean (complete with World War II shipping mines) where he swims down into the depths, towards his glowing suppositories. While submerged he is, of course, unable to breathe. The viewer, instinctively and unconsciously, begins to hold their breath. As Renton experiences air hunger, the audience experiences it with him. The physiological effects of urgency this provokes - release of cortisol, increased heart rate, burning lungs - overlay the sense of urgency felt by the character in the narrative (Parkes 2006). We feel what he is feeling. And because air hunger is an interoceptive sensation it feels deeply personal (Craig 2009). By triggering automatic, involuntary interoceptive responses Hodge is able to align viewers empathetically (somatically and affectively) with a character whom many viewers may find consciously repugnant.

In the climax sequence of the film *The Girl With The Dragon Tattoo* (2011), written by Steve Zaillian (based on the novel by Stieg Larsson) investigative journalist Mikael Blomkvist (played by Daniel Craig) is held captive by serial killer Martin Vanger (played by Stellan Skarsgard). Martin binds Mikael's wrists, suspends him from an industrial hoist and pulls a clear plastic bag over his head. The moment is distressing and horrific. Mikael desperately struggles to breathe, sucking the plastic into his mouth and spitting it out, while slowly suffocating. Here, as in the underwater sequence

described above, the viewer mirrors the physiological state of the character. The viewer's own air hunger is triggered. And here, once again, the physiological effects of air hunger are triggered in the viewer - cortisol release, accelerated heart rate, burning lungs - providing a deeply personal experience of the urgency and distress felt by the character in the narrative (Parkes 2006). In this example the screenwriter has used this visceral provocation of affective and somatic resonance not to trigger an initial empathetic bond, but rather to amplify the viewer's already established empathetic connection to the character during the most emotionally intense episode in the narrative.

We have seen that expert screenwriters use strong visceral stimuli as a powerful tool for constructing affective and somatic resonance. Are there other phenomena processed by the Primal Brain that expert screenwriters consistently use to create viewer alignment with character? The answer is unequivocally yes. While the phenomena listed below may not have quite as dramatic an impact, they are well established in the neuroscience literature, and their use is apparent in the work of expert screenwriters.

Semantically correct motor action

the instinct of imitation is implanted in man from childhood, one difference between him and other animals being that he is the most imitative of living creatures
(Aristotle 350 BCE, p5)

The cognitive film theorists surveyed for this study acknowledge that the mirror neuron system makes a contribution to viewer engagement with character. But their view of its use is largely limited to the mirroring of facial emotion (Grodal 1997). The role of the mirror system in everyday life, and in the cinema, extends far beyond this.

In Chapter 6 I discussed evidence that the mirror system is activated most strongly by movements that are ‘semantically correct’ - i.e. part of the viewer’s familiar motor repertoire (Calvo-Merino 2009; van Elk et al 2010). Conversely, movements that are unfamiliar or inappropriate to the situation activate the mirror neuron system less effectively. Expert screenwriters intuitively harness this phenomenon to modulate the degree to which viewers mirror (and thus resonate) the somatic state of characters. A ready example may be found in the scene with which we commenced this discussion - the opening scene of *Midnight Run*. In the moment immediately preceding the shotgun blast that explodes through the door above Walsh’s head (the strong visceral provocation that forms the centrepiece of this engagement routine) there is a supporting strategy so subtle that it is almost invisible. Walsh drops his lock-pick and bends to pick it up. This is not essential to the story. He could just as conceivably be standing, picking the lock when the blast goes through the door beside him. But by bending to retrieve it, his (semantically correct) motor action automatically triggers a matching motor routine in the audience - a reflex urge to bend and pick up a dropped item (van Elk et al 2010). The neurons in the viewer’s brain representing this motor action fire, and the nerves in the relevant muscles required to perform the action are also activated at a sub-threshold level (Fadiga et al 1995). As Walsh bends to retrieve the dropped item the viewer is unconsciously ghosting his movement - aligning them physically with him right at the moment when the extreme visceral provocation occurs. This pre-activation of mirroring intensifies the impact of the affective stimulus (Bastiaansen, Thioux & Keysers 2009).

The converse of this strategy is also employed by expert screenwriters. Antagonists are often depicted throughout screen narratives engaged in ‘semantically incorrect’ motor routines. This deliberate misalignment of mirror neuron system activation is equally effective. When a strong visceral stimulus provokes a response from the viewer, but provokes a semantically incorrect response, or even no response, from the character, there is an absence of affective and somatic resonance, and as a consequence an immediate empathetic gulf - sense of disengagement and alienation from the character. The strategy is used to great effect on a number of occasions throughout James Cameron’s *Terminator* films (1984; 1991; 2003; 2009). The cyborg

villain is attacked in some way that would be physically devastating to a human but, even when the attack clearly damages his physical integrity, the cyborg responds with indifference. The absence of affective and somatic response to strong stimuli works powerfully to position the character as some kind of automaton. In the case of the Terminator films, these characters are literally automatons, but in other films biologically human characters are rendered as virtual automatons through the same technique of affective disengagement, with often chilling results. The weary indifference of serial killer Jame Gumb in *Silence of the Lambs* (1991) is a memorable example. As his distressed prisoner sobs and pleads for her life, the viewer's emotional mirroring is wound to breaking point. But Gumb is unmoved, and blandly responds, "It rubs the lotion on its skin." This narrative strategy of provoking the viewer with an intense visceral and affective stimulus, and then showing the antagonist displaying a semantically incorrect lack of affect, is used frequently to deliberately sever any alignment with the antagonist. Another powerful cinematic example can be found in Guillermo del Toro's *Pan's Labyrinth* (2006) when the Captain Vidal (Sergi Lopez) sews his own slashed mouth with a large darning needle, seemingly oblivious to the disgust and pain felt by the viewer.

The same strategy is sometimes used more subtly to sway the balance of viewer alignment when multiple characters are presented. An example occurs in a sequence we have already discussed. In *As Good As It Gets*, when the little dog that Melvin has dropped down the garbage chute is returned to his owner, Simon, by the building supervisor. Simon "kisses" the little dog, letting it lick his mouth. When the supervisor tells him he found the dog "In the garbage eating diaper shit", the viewer experiences a strong disgust response. But Simon does not. This misalignment of motor response serves to distance us from Simon, thereby maintaining the primacy of our connection with Melvin - despite the fact that Melvin is not morally preferable, and that Simon is, in this moment, being focalised.

So we can see that the function of the mirror neuron system in moderating viewer engagement with characters in screen narrative is not restricted to the literal

imitation of an emotion. Nor is mirroring the only factor in engagement that is processed by the Primal Brain.

Territory

Across all species, animals are territorial. The higher primates are no exception. Ethologists (scientists who study the behavior of animals) have observed that territoriality is not only ubiquitous, it is also one of the few factors governing interaction between animals that is not decided by which of the animals is bigger or fiercer or hungrier. Territoriality is what game theorists call an “uncorrelated asymmetry” - a game changing factor governed by the players’ awareness of an arbitrary rule. Zoologist and Professor of Psychology David P. Baresh, in his book *The Survival Game*, describes it thus:

When an intruder encounters a territory owner, the owner nearly always wins. In fact, “fights” between proprietor and interloper are usually not even worth the name; the trespasser simply gives up ... This outcome is highly predictable, and nearly independent of need, physical capability, and past experience. It is, in short, an asymmetry that is uncorrelated with anything, except for prior ownership of the particular territory
(Baresh 2003, p227)

Baresh goes on to cite several animal studies confirming this. Across species, from baboons to butterflies, animals have an innate respect for the sanctity of territory. This is significant for the present research. It identifies another innate, unconscious process capable of influencing the viewer’s emotional alignment. It predicts that, because this sense of the territory is innate, any violation of a character’s established territory will trigger an instinctive support for the character whose territory has been intruded upon, and an adverse reaction to the intruder. Is this prediction borne out by the practice of expert screenwriters?

James L. Brooks and Mark Andrus' *As Good As It Gets* indicates that it is. In the first few minutes of the film, the central character Melvin Udall has his territory violated twice. Each time he reacts with aggressive, anti-social behavior that, in the absence of the territorial invasion, would most likely be alienating. In the first encounter, Melvin struggles with a small dog that seems intent on violating the territory of Melvin's apartment hallway by urinating on it. He successfully defends his territory by shoving the intruder down the garbage chute. In the second encounter, Melvin returns to his apartment and is deeply engrossed in composing the final sentence of his novel (an effective use of prediction and prediction-error, which we will discuss later) when he is intruded upon by an insistent banging at his door. It is Simon, the owner of the dog. Melvin again successfully defends his territory - this time with a breathtakingly cynical and homophobic tirade. We are aware that this man is a monster. But he is a monster defending his territory. Similar strategies are employed in the early scenes of other film narratives with difficult protagonists, including *Shrek* (2001), *Gran Torino* (2008), *Juno* (2007) and *The Burning Plain* (2008). The "uncorrelated asymmetry" of territoriality is another evolutionary legacy hardwired into our neural machinery that has been intuitively understood and harnessed by expert screenwriters.

SUMMARY

Empathy is not primarily a rational or even conscious phenomenon (Preston & de Waal 2002). Expert screenwriters understand this (intuitively or otherwise) and consistently construct empathetic engagement for their characters, in the first instance, by employing forms and devices that recruit the mechanisms of the viewer's Primal Brain, and act upon the viewer's unconscious, visceral responses. These narrative strategies are especially prevalent at the commencement of a screen narrative, when the viewer has insufficient information about a character on which to base high-order conscious processing. They are also frequently drawn upon during major plot points and climactic moments in screen narrative. These narrative forms and devices are consistent with the Perception-Action Model of empathy promoted by neuroscientists.

Screenwriting Strategies: Individual Brain

In this section I identify specific narrative strategies employed by expert screenwriters that harness the ‘Individual Brain’. The Individual Brain is a descriptive label for the neural mechanisms that perceive and govern phenomena that have personal motivational valence, but no other-regarding valence. These are phenomena whose significance is derived from the direct survival advantage they offer to the individual organism, rather than from any social context. From the screenwriter’s perspective, viewer engagement at this level is driven by the character’s actions towards relatable desires and expected outcomes. From a neuroscience perspective, it is driven primarily by motivation system processing (Montague 2006).

Expert screenwriters consistently build on the visceral alignment described in the previous section, by augmenting it with a relatable motivational desire. This desire generates predictions (Hollerman & Schultz 1998). Predictions are processed by the dopaminergic reward system, which profoundly influences attention, desires and behaviors (Wallenstein 2009; Montague 2006). This system is activated most powerfully when predictions are erroneous (Hollerman & Schultz 1998). Screenwriters use this fact to amplify engagement by activating a simultaneous error-prediction response in both character and viewer. This cluster of strategies is consistently applied by expert screenwriters as a method for ‘bootstrapping’ viewer engagement with character. To see how this works, we return to our example from the previous section - the opening sequence of the film *Midnight Run*.

In the opening sequence of *Midnight Run*, as you will recall, we saw an unidentified man (Walsh) walk down the corridor of a low rent apartment building, and begin picking the lock of an apartment door. Stooping to retrieve his dropped lock pick, he is startled when a shotgun blast explodes through the door above his head. Walsh kicks the door in and sees a man⁴¹ fleeing out the window onto the fire escape. Walsh pursues him, and the man turns and fires at him and again Walsh flinches. Walsh chases the man out into an alley, the two exchanging gunfire.

This apparently trivial shift in the screenplay's narrative seems to warrant little attention. But it recruits a complex cluster of cognitive processes that link to build a compelling sense of engagement. The fact that it is so easily overlooked by the wary and resistant conscious mind is a bonus. Prior to this point, the viewer has been somatically and affectively aligned with Walsh through Primal Brain mechanisms - first by mirroring his familiar motor-repertoire action when he bends to retrieve the dropped lock-pick, then by their matching visceral response to the shotgun blast through the door. Now the viewer is shown Walsh pursuing the fleeing man. The viewer's dopaminergic motivational system is recruited. The dopaminergic motivational system governs our sense of reward, desire, anticipation, prediction, task persistence and error (Salamone & Correa 2012). It is now busy generating a range of predictions in the viewer's mind - and attaching hedonic value to the possible outcomes. One predicted outcome is that Walsh will catch the man. This is a desirable prediction, which releases anticipatory dopamine reward (Hollerman & Schultz 1998). Another predicted outcome is that Walsh will get shot. This is an undesirable prediction, which releases anticipatory stressors, such as cortisol (Damasio 2012). These alternating bursts of anticipatory hope and anxiety align the viewer with the alternating emotional state of Walsh as he pursues the man, and evades his gunshots. The motivation system drives us to attend and desire closure. This aligns us with Walsh's drive to attend and his desire for closure. This process requires no high-order cognition (chase behavior is instinctive routine in all animals). It requires no information about the moral status of the characters. No priming by pervasive 'mood cues'. Yet it creates a powerful alignment.

Expert screenwriters use this strategy in a high percentage of their works. It is particularly prevalent in the opening minutes of film narratives. The emotional point-of-view character experiences a strong visceral provocation, and pursues a tangible, immediate, relatable goal. Think back to Melvin Udall in the opening moments of *As Good As It Gets* trying to lure the little urinating dog into the elevator. As discussed in Chapter 5, film theorists have proposed that telic (goal-oriented) concerns of the character have some significant bearing on the creation of viewer empathy for

characters in narrative film. The screenwriting strategy presently under discussion would suggest that the theorists are correct. There are, however, some vital distinctions to be drawn. Some cognitive film theorists propose that recognition of a character's telic concerns is necessary and sufficient to create empathy. Grodal (1997 p117) for example, argues that such recognition operates as a catalyst to move the viewer from one "type of mental operation" of proto-empathy to a distinctly different "type of mental operation" that constitutes full-blown empathy. The implicit model of viewer empathy employed by screenwriters does not support this contention. Neuroscience supports the screenwriters' model on this point. The dopaminergic motivational system generates desires, predictions and task persistence (Salamone & Correa 2012). There is no question that these are powerful tools for aligning the viewer with the character. But this type of alignment is not the only type. It is not a necessary prerequisite to creating empathy. As demonstrated with abundant scientific evidence in previous chapters, it is possible to have empathy without identifying telic concerns (remember Masserman's monkeys?). And it is equally possible to identify telic concerns without having empathy (remember Adolf Hitler?). Identifying the character's telic concerns is neither necessary nor sufficient to create empathy in the viewer. Alignment of desire and prediction through the dopaminergic motivation system is simply another hue in the rainbow of somatic and affective resonance that we call empathy. Empathy is a catch-all name we give to a set of biological mechanisms for inducing pro-social behaviors that are adaptive for group survival. If any mechanism activates the required behavior, it has done its job and we must consider it empathy. There is no reason to assume that any particular kind of resonance on the spectrum must be activated before the experience can be considered 'full-blown' empathy.

What Grodal and the cognitive film theorists seem to be acknowledging is that there are discernible types or strata of empathy - a visceral / somatic empathy, a motivational / affective empathy and a social / ethical empathy. On this we are in agreement. They, however, feel obliged to attach values to these different strata. They discount visceral / somatic empathy as a low form - worthy of little or no consideration. They accept motivational / affective empathy as a means to an end - a catalyst that triggers empathy proper. And they embrace social / ethical empathy - the

most cognitively explicit form - elevating it to the status of empathy proper. This ranking is subjective and without substance. It says more about the value system of the theorists than it does about the inherent nature of empathy. As we have seen over and over, activation of the appropriate neural mechanisms within any of these strata can result in pro-social sharing of others' feelings, understanding of others' actions and even self-sacrificing altruistic behaviors for others' benefit.

That said, there are obvious advantages to enticing the viewer to align with the character over a broad range of the empathy spectrum. The more types of empathetic resonance activated, the more profound and dimensional the viewer's sense of engagement with character will be. Motivational system alignment is certainly one of the more vivid 'colours' on the empathy rainbow. But, contrary to Grodal's assertion, simply identifying the character's telic concern does not ensure the viewer will align with that concern. There are four further requirements:

Firstly, the viewer needs to recognize the character's predictions about the outcome. (NB: these predictions need not match. Dramatic and comic tension may be effectively created by the viewer recognizing the character's false beliefs.)

Secondly, the actions the character takes in pursuit of the goal need to be part of the viewer's familiar motor repertoire. (Though not crucial, this is highly desirable – as noted in the previous chapter, familiar motor-repertoire actions trigger stronger mirror system engagement.⁴² Conversely, semantically incorrect motor actions dampen mirror system engagement.)

Third, the predicted outcome needs to activate matching hedonic value in viewer and character. (This is crucial. If the character desires something that repulses the viewer, the viewer will not align with the character's motivation.)

And fourth, the response of viewer and character to the outcome needs to be aligned. (This too is crucial. Misalignment of affective response creates a cognitive dissonance in the viewer between their own response and their mirroring of the character's response.)⁴³

From this sample of specific forms and devices employed by expert screenwriters, it is evident that their conceptions of the relationship between character telic concerns and

viewer engagement are exponentially more complex and sophisticated than those espoused by cognitive film theorists. And we have only just begun to explore their arsenal.

In Chapter 6 I discussed prediction-error signals and provided evidence of their power to command attention, create emotion and amplify desire. Expert screenwriters utilize this mechanism too. Having created somatic and motivational alignment, the expert screenwriter delivers an unexpected outcome to the character and viewer. In the case of Walsh, this is the arrival of his rival Marvin, who knocks the fleeing man down with his car door and claims him as his own prize. In the case of Melvin Udall, it is when he picks up the little dog only to have the dog pee on him. Character and viewer do not get the outcome they expect. Both experience prediction-error response in their dopamine system. Remember that Hollerman and Schultz (1998) found that unexpected outcomes trigger the dopamine system with around four times the intensity of predicted outcomes. The somatic and motivational alignment between viewer and character is now augmented by an intense spike of affective alignment.

Note that in both of these scenes the unexpected outcome is delivered via a strong visceral stimulus - physical pain in one and disgust in the other. Note also that in both of these examples all of this action occurs before the audience is given any information about the character, or their major goals or moral status. This is not accidental. Expert screenwriters consistently employ a sequence of strategies aimed at this cluster of unconscious, involuntary processes, prior to launching any appeals that rely on conscious processing. By provoking visceral resonance, then aligning familiar motor-repertoire actions towards an immediate goal (which generates motivated desire for a predicted outcome) and then activating error prediction response by providing an unexpected outcome, expert screenwriters 'bootstrap' empathetic engagement. This cluster of strategies is commonly employed by expert screenwriters in the early moments of a screen narrative, as an opening gambit to direct viewer alignment.

The pleasure of the puzzle

Anticipation, prediction and expectation are, as David Bordwell (1985) notes, fundamental activities through which the viewer constructs the narrative. Expert screenwriters harness and orchestrate these processes with a degree of sophistication that has not been recognised by mainstream cognitive film theory. Predictions may be divided into two kinds - intellectual and emotional. Both kinds engage the motivational dopamine system (Brugger 2001). Emotional predictions are those that arise from the drive to satisfy our desires and intentions. We have seen examples in the actions of Walsh and Melvin Udall. Intellectual predictions are those that arise from our innate compulsion to seek patterns (apophenia), attribute causality and complete incomplete information (Shermer 1999). This kind of prediction drives our enjoyment of games such as sudoku and crosswords. It is related to the perceptual biases that compel us to fill in missing parts of pictures, as in visual illusions like the Kaniza square (Figure 6).

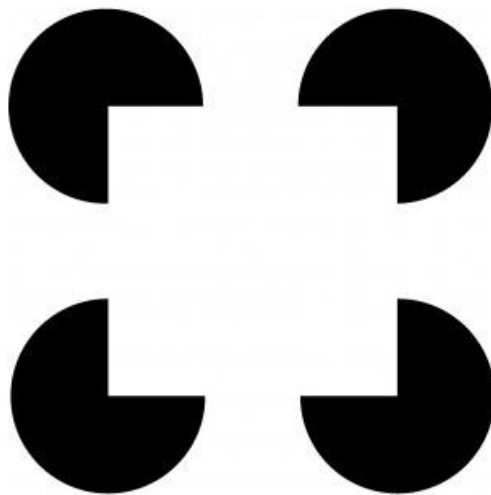


Figure 6: Kaniza square illusion. (Source: thebrainbank.org.uk)

Intellectual predictions are also central to our desire and our ability to construct a whole narrative from fragments. They are the source of ‘the pleasure of the puzzle’ experienced in viewing certain kinds of narrative (Buckland 2009). Like emotional predictions, intellectual predictions activate the reward and prediction-error signals of the dopaminergic motivational system. But the motivational system is not the only

'Individual Brain' mechanism that contributes to the pleasure of the puzzle. The limits of working memory also play a part.

Film is unique among the plastic arts for the degree to which it mimics the conditions under which cognitive mechanisms are activated in real life. Film provides an unstoppable flow of multi-modal sensory stimuli that must be filtered by the attentional systems, evaluated for salience, connected to other information, and compared against predictions. And all of this must be accomplished in real time. As this is being done, all these inputs need to be buffered in working memory. In his book *The Ravenous Brain* (2012), cognitive neuroscientist Daniel Bor explores the relationship between attention and consciousness. "More or less", he argues, "consciousness boils down to the information sitting right now in our working memory" (Bor 2012, p136). But our working memory is sorely constrained. Bor provides evidence that a "conscious limit of 4 objects turns up faithfully in almost any kind of experiment one tries" (Bor 2012, p137).⁴⁴ This constraint on working memory conflicts with our dopamine-driven hunger for pattern completion. The result is a cognitive 'juggling act' that has a direct bearing on how we engage with, and derive pleasure from, screen narratives. When harnessed, this phenomenon can enhance the effectiveness of screen narratives. When overlooked, it can damage the effectiveness of screen stories, rendering them trite and predictable, or incomprehensibly convoluted.

The story type that most overtly harnesses this phenomenon is the mystery. In a mystery narrative, viewer and protagonist grapple with an explicit puzzle. A fundamental operational requirement of this genre, as with any puzzle, is that the person attempting the solution (in this case the viewer and the protagonist) must be furnished with a range of plausible paths to potential solutions. Imagine, for example, you are completing a crossword puzzle, and you are presented with the clue "A large jungle cat - 7 letters". You have a choice between two equally viable solutions, "leopard" and "panther". Only by cross-referencing each of these possibilities with the intersecting words on the puzzle and checking whether the shared letters coincide can you ascertain which of these solutions is correct. All well and good if you have completed the intersecting words. But if you have not, the load on your working

memory just increased exponentially. Because now the task requires your working memory to hold your two possible solutions, plus the letters of each that would fall in the intersecting boxes, plus the clues to the intersecting words, and the potential solutions to those clues. The four item limit of working memory is quickly exhausted. And once it is, the cognitive juggling act begins (Bor 2012).

The challenge in designing such a puzzle is to provide the optimum number of possible solutions to stimulate player engagement. If there are too few possible options, the solutions are too readily apparent, the player's working memory is not sufficiently taxed and there is little neural reward for identifying the correct solution. The puzzle feels uninteresting. If, on the other hand, there are too many possible solutions, the working memory becomes overtaxed and it becomes beyond the capacity of the player's working memory to retrieve, compare and evaluate all the viable options. So the player makes a quick heuristic calculation that the chances of success are minimal, and their motivation system curtails its release of dopamine. The player gives up the chase. The challenge for the designer of a film narrative is precisely the same. Too few competing possible outcomes equals too little dopamine. Which equals no reward and no task persistence. Too many competing possible outcomes equals too many prediction error signals. Which equals no reward and no task persistence. For the participant to be engaged, their motivation system must be recruited in a drive towards an outcome that is inherently rewarding, and they must believe they are capable of accomplishing the required task (Bor 2012; Montague 2006).

Expert screenwriters utilise this principle when designing screen narratives. They activate the viewer's dopaminergic motivational system (as described earlier) by creating alignment with the character's desire for an outcome. Then they orchestrate the quantity of possible solutions and the frequency of clues to consistently encourage the viewer to believe it is within their capacity to solve the puzzle - provoking the viewer to make and revise predictions at a challenging but not overwhelming rate. The expert screenwriter entices the viewer to enter, and persist with, the cognitive juggling act. But the pleasure of the puzzle does not dictate that the viewer must ultimately discover a solution. In his book *Puzzle Films: Complex Storytelling in Contemporary Cinema*,

Warren Buckland challenges this notion and lays out a detailed analysis of several films, including David Lynch's *Lost Highway* (1997) to demonstrate his point that such films deliberately create "irresolvable ambiguities and inconsistencies" (Buckland 2009, p55). The extensive (and sometimes heated) debate that continues in online forums over the solution to puzzle films like Lynch's *Mulholland Drive* (2001) and Nolan's *Memento* (2000) is testament to the powerful engagement this strategy is capable of generating. A substantial amount of the pleasure of the puzzle is in the juggling act itself.

While this phenomenon is most evident in the mystery genre, its use is not restricted exclusively to that genre. As Bordwell notes, any narrative presents clues, fragments and gaps, and encourages the viewer to piece these together to construct the underlying story (Bordwell 1985). So any narrative may potentially make use of the tension between the viewer's hunger for pattern-completion and the constraints on their working memory. Lamentably, many do not. One narrative type that frequently does make use of this phenomenon is the multi-protagonist film.

Multi-protagonist (ensemble or parallel narrative) films are commonly perceived as richer and more complex narratives than single protagonist linear narrative films (Murphy 2007). This richness and complexity is illusory. The same amount of screen time is being expended. The sum total of images and events that may be delivered is essentially the same. In fact, in a linear, single protagonist narrative there is more time devoted to exploring the nuanced details of the sole central character, and more time available to explore a more complex causal chain of events. In a multi-protagonist narrative, there is less time available to portray the nuance of each character and less time available to explore a complex causal chain of narrative events in any one of their stories. How then do these films give the impression that they are more complex and richly detailed? The answer is hinted at in the operational theories of expert screenwriters. And lies in the phenomenon I have just been discussing. Introducing multiple character stories (even relatively simple, truncated stories) exponentially increases the load on the viewer's working memory. The viewer is obliged to perform cognitive construction activities - to juggle information and connections within

multiple narrative strands, and between each narrative strand. The viewer is able to accomplish this by ‘chunking’ relevant sets of data into separate packets for each character’s story strand. And packets of data for the connections between each story strand. And for the over all, combined / macro narrative, if there is one. Because the variables within each narrative may affect other narratives in the film, these ‘chunks’ are volatile. Every time they are accessed, or drawn into working memory, they are updated (Baddeley 2012). The sense of complexity emerges from these phenomena - the load on working memory that requires the viewer to “cognitively juggle” by setting aside and retrieving narrative elements essential to their story construction activities, plus the connections between narratives that cause the narrative and thematic information within each ‘story chunk’ to be volatile.

Recognition of this phenomenon helps illuminate a number of consistent tendencies in the work of expert screenwriters. The first is an explanation for the consistency with which the number of protagonists differs between ensemble narratives and parallel narratives. Ensemble narratives are narratives in which a group of characters share a journey towards a single goal. Ensemble narratives typically explore more than four characters who share a common narrative journey - for example, *The Full Monty* (1997), *The Magnificent Seven* (1960), *Little Miss Sunshine* (2006), *The Best Exotic Marigold Hotel* (2011). Parallel narratives, in contrast, are narratives that explore separate individual characters with separate individual goals. Parallel narratives typically explore *less* than four character stories. Most commonly they are restricted to three character stories - e.g. *The Hours* (2002), *Amores Perros* (2000), *21 Grams* (2003), *Fargo* (1996). The cognitive load on working memory required to weave a range of character perspectives into a single narrative strand (ensemble narrative structure) is less arduous than the cognitive load on working memory required to weave a range of character perspectives into numerous separate but intersecting narrative strands (parallel narrative structure). Therefore it follows that to achieve the optimal ‘puzzle’ balance as described above, an ensemble narrative requires more characters than a parallel narrative. Consistent with the findings of neuroscience, the threshold number seems to be four (Bor 2012; Yantis 1992). Expert screenwriters intuitively understand this and, as evidenced by the examples listed above, design their narratives accordingly.

This phenomenon also helps illuminate the principles underlying effective non-linear narrative structures. Non-linear narrative structures in film are fundamentally informed by the phenomenon of cognitive juggling caused by the tension between the compulsion to complete patterns and the constraints of working memory. Non-linear narrative structures are typically categorised according to the manner in which they break up the linear chronology of the story. So various observers have described ‘Reverse’, ‘Looping’, ‘Fragmented’ and ‘Forking’ structures, among others. (NB: different observers label these structures with a plethora of different names. There is, inconveniently, no broadly agreed set of labels at this time.) This typology is useful in as much as it allows us to readily distinguish the external form of such structures. But to some degree it also masks their underlying function.

Each of these non-linear structures works by displacing a key piece of the data required by the viewer to complete their cognitive story construction activities. This increases the cognitive load on working memory. It also creates volatility in the ‘chunks’ that the viewer is cognitively manipulating, so that when any chunk is recalled, its contents will have been revised. This places an extra cognitive load on the viewer. They are engaged in a kind of mental ‘shell game’, seeking to keep track of the most salient threads as story chunks are spun in and out of the view of their conscious mind. When considered in this way, it becomes apparent that each of the ‘types’ of non-linear narrative structure may be understood in terms of the kind of information / data it displaces. The cognitive load, the attention and the motivation of the viewer become unconsciously fixated on that kind of data. In this way a different aspect of the narrative gains a feeling of salience in each of the different non-linear narrative ‘types’. There is some preliminary evidence that expert screenwriters who work with these different non-linear narrative ‘types’ understand this. For example, screenwriter and script consultant Linda Aronson (2010) writes about the different aspect of narrative that each non-linear structure type is effective at emphasising. But at this time little research has been undertaken on the role of working memory load in creating the particular characteristics and appeal of different non-linear narrative structures. While

it is beyond the scope of this thesis to explore this line of inquiry further, it seems that it might offer an interesting and fruitful avenue of future research.

SUMMARY

In this section I discussed specific narrative forms and devices employed by expert screenwriters to harness and exploit the neural mechanisms of the Individual Brain. This phase recruits neural mechanisms that regulate phenomena that have self-regarding valence, but no other-regarding valence. I presented evidence that expert screenwriters consistently employ narrative strategies that target the particular features of these mechanisms. These strategies include providing protagonists with immediate, relatable goals in order to activate predictions, rewards and prediction errors in the viewer's motivational dopamine system, which are aligned with those of the character. I presented evidence that the tension between the innate (dopamine-driven) desire to complete patterns (apophenia) and the constraints of working memory requires the viewer to perform a 'cognitive juggling act' which, when appropriately balanced, is experienced as pleasurable and engaging. I identified specific narrative forms and devices utilized by expert screenwriters to activate and exploit this phenomenon. These include various iterations of multi-protagonist and non-linear narrative structure, designed to maximize the 'pleasure of the puzzle'.

Screenwriting Strategies: Social Brain

In this section I discuss specific narrative strategies employed by expert screenwriters that harness the 'Social Brain'. The Social Brain is a descriptive label for the neural mechanisms that perceive and regulate phenomena and actions that have other-regarding valence - that is, whose meaning and value relies on social context.

Thus far in this chapter, I have revealed how expert screenwriters utilise non-conscious, involuntary cognitive processes to initiate somatic and affective resonance

as a foundation for empathetic engagement. The sequence of narrative devices described is so consistently employed by expert screenwriters that it is nearly ubiquitous. And as noted, the elements employed in this sequence of devices may have little or no significance to the larger narrative. The question this raises, which I have deferred until now, is: why? Why at the outset of the story, when screen time is so precious, and first impressions are so powerful, would expert screenwriters apparently waste time dramatizing an event that is essentially narratively irrelevant? Why begin with a sidebar? Why not leap straight into the meat of the story? Despite the consistency of this apparent anomaly, none of the cognitive film theorists surveyed discuss it, or even note it. This is an unfortunate oversight. For, as it turns out, this anomaly is a pivotal clue to understanding the aspect of viewer empathy with which these film theorists seem to be most concerned. That is, the viewer's conscious, 'ethical' evaluation of the character in the social context. In order to understand how this works, we will need to backtrack just a little.

In Chapter 6, during the section on the cognitive processes of 'evaluation', I discussed the psychological phenomenon of 'framing effects', through which significant changes of preference are caused by insignificant changes in how an option is presented. Framing effects apply not just to our perception of economical value, but also to our perception of moral value. As Kahneman (2011) writes:

Your moral feelings are attached to frames, to descriptions of reality rather than to reality itself. The message about the nature of framing is stark: framing should not be viewed as an intervention that masks or distorts an underlying preference. ... there is no underlying preference ... our moral intuitions are about descriptions, not about substance
(Kahneman 2011, p370)

Framing has enormous power to shape how viewers interpret a narrative.⁴⁵ Narratives are about people solving problems - often complex social and ethical problems. The way the problem is presented ("framed") determines our "moral feeling" about the problem. Change the frame and the moral feeling changes with it.

There is no moral bedrock - no “underlying preference”. The frame *is* the moral value. This is not philosophical conjecture. It is not abstract theory. It is a thoroughly documented psychological phenomenon that has been empirically tested in every conceivable way. Framing effects are real. And they govern our decisions, economic, moral and otherwise, at all levels of human interaction (Thaler & Sunstein 2008).

The framing effect supplies an answer to our present screenwriting conundrum: Why at the outset of the story, when screen time is so precious, and first impressions are so powerful, would expert screenwriters apparently waste time dramatizing an event that is essentially narratively irrelevant? They do so because the visceral and motivational alignment this event creates between viewer and character provides a crucial component in framing the narrative. It sets the perspective from which the central narrative situation will be evaluated. Once somatic, affective and motivational alignment with a character is established, the viewer unconsciously frames whatever problem the narrative presents from the point of view of that character. The expert screenwriter introduces the protagonist in pursuit of a small, immediate goal irrelevant to the main plot because this allows her the freedom to construct an ideal environment to frame the character *before* the main dilemma of the plot (with its inherent restrictions) is introduced. How, precisely, does this framing work on the neural level?

In Chapter 6, I presented evidence that human neural systems are calibrated by our evolutionary history to bias us to recognise, reward and punish certain behaviors on the basis of their social value. This evidence included neuroscience studies demonstrating activation of the brain’s reward areas (nucleus accumbens) when others cooperate with us (Rilling 2002), and the release of the bonding hormone oxytocin when others trust us to cooperate with them (Zak et al 2003) and the activation of disgust areas when others behave unfairly (Sanfey 2003). Other studies demonstrated neural suppression of empathy for defectors and of pleasure at their punishment (Singer et al 2006). I presented evidence that our most uniquely human piece of cognitive machinery, the prefrontal cortex, is concerned predominantly with social evaluations (Van Overwalle & Baetens 2009). And evidence that this exalted piece of intellectual equipment relies utterly on the underlying substrate of physical and

emotional sensation in order to do its work (Damasio 2012). I discussed how this combination of conscious and non-conscious processing gives rise to a class of complex and exclusively human emotions - the social emotions (Maestripieri 2012). Studies show that players evaluate cooperators as more moral (Krueger & Acevedo 2007). Once reputation as a cooperator is established, it biases future evaluations - future cooperation is assumed, and cooperators are preferred as future exchange partners (Zimmerman & Eguiluz 2005). This personal evaluation is weighted more heavily than others' evaluations, and persists in the face of contradictory evaluations and even contradictory evidence: "people do not reason inductively about social consensus. Instead, they grant privileged status to their own endorsements" (Clement & Krueger 2000, p288).

What happens, in simple terms, is this: Person A evaluates Person B as either a cooperator or a defector in a social game. On the basis of this evaluation, Person A's neural responses to Person B's experiences are substantially altered. Strong visceral and emotional drivers of attachment or detachment are activated. These non-conscious drivers adhere, and bias future evaluations of Person B's actions. In short, if we establish Person B as a cooperator, we establish a powerful (non-conscious) alignment with them, and are inclined to see future interactions from their perspective. If these future interactions are "framed" so that the character is again presented as the cooperator, this alignment is deepened. In the case of narrative film, the initial evaluation takes place in the 'narratively inessential' visceral alignment sequence, and the 'future interaction' is the central narrative situation. This arrangement is nearly ubiquitous in canonical film narrative.

For example, in the film *Rain Man* (1988) written by Ronald Bass, the central character Charlie Babbitt is introduced in the middle of a negotiation to import Italian sports cars into the United States. The cars are seen being unloaded from the docks, as Charlie is on the phone to a government agency, futilely fighting the bureaucratic catch-22 that prevents him from selling them. We innately sense that Charlie has engaged in a fair exchange (legally importing a quality product) and that his ability to reach a fair trade is being blocked by a defector - the government agency demanding a

share (the compliance money) before Charlie even sells the cars. Charlie is a cooperator, the government agency is a defector. Then Charlie learns that his father has died and he believes he will receive an inheritance. We learn that Charlie's father never supported or encouraged him, and thus feel aligned with Charlie's view that he is due an inheritance - the social contract of parenthood includes nurture and support. We are already framing Charlie's deceased father as a defector and Charlie as a cooperator in this relationship. So when Charlie learns that he has not been willed any of his father's fortune, the father is framed as an even greater defector, and Charlie's desire to become a retaliator feels justified. We are aligned with him in his motivation to fight for his just share of the inheritance.

In *Avatar* (2009) the protagonist Jake Sully is framed as a cooperator in an ultimatum game - spy on the warlike Navi, and he'll get the use of his legs back, refuse and he'll get nothing. He initially accepts the ultimatum, framing him as a cooperator, then as he comes realise its cost to others, he rejects it and becomes an (even more empathetic) altruistic punisher. Even a broad comedy like *Withnail & I* (1987) a movie about two inept, unemployed actors in 60's London, frames its protagonist Marwood as a cooperator who shares domestic duties, tea and encouragement with his flatmate Withnail, a defector who selfishly shares nothing.

Expert screenwriters who utilise these strategies and exploit these psychological loopholes do not do so simply to create unbridled adoration for their characters. On the contrary, the expert screenwriters interviewed for this research were unanimous and emphatic in their desire to explore characters who are morally, ethically and socially challenging. This stands in stark contradistinction to the film theorists surveyed who argued that in order for a character to gain the viewer's empathy, he must be morally desirable, or at least morally preferable to the other characters available in the narrative (Smith 1995, p188; Carroll 1999, p45; Plantinga 2009). From the point of view of cognitive neuroscience, this is neither desirable nor necessary. The powerful framing effect of somatic / affective resonance and social game cooperation allows the screenwriter to explore characters who are transgressive, challenging and morally ambiguous. And to do so without alienating the viewer.

Further evidence that morally problematic characters are the norm rather than the exception in screen narrative is offered by the nature of social emotions themselves. In Chapter 6 I provided an overview of the social emotions, and noted that they are the emotional core of complex story telling. Few of the social emotions are positive in valence. Guilt, shame, jealousy, envy, and pride outnumber and outweigh compassion and admiration. Complex stories overwhelmingly centre around these complex social emotions: e.g. *21 Grams* (2003), *The Piano* (1993), *Schindler's List* (1993), *Raging Bull* (1980), *Blue Jasmine* (2013), *Brokeback Mountain* (2005). Complex film narratives are concerned to a great degree with transgression - specifically with social transgression. One of the great skills of expert screenwriters is keeping empathetic engagement intact in the face of the character's social transgressions.

Even in narratives that establish their character as abrasive and anti-social - like Walt Kowalski in *Gran Torino* or Melvin Udall in *As Good As It Gets* - the way the screenwriter "frames" the viewer's initial experience of character is designed to align the viewer with the character. And as the narrative progresses, the events of the character's social transgressions are also "framed" so that the viewer is *aligned* with the character by the *stimulus* that causes the event, and *diverges* from the character only in their *response*. For example, in *As Good As it Gets*, when Melvin is interrupted while composing the final sentence of his novel, the viewer is positioned to align with him in that moment and to experience the stimulus of the knocking on the door as an interruption to a desired completion. (Remember the power of error-prediction signals?). We relate to Melvin's vexation at being interrupted during his rapturous concentration. However, he responds rather differently than the average viewer might, demolishing his neighbour Simon with acerbic sarcasm, mixed with lashings of appalling homophobia and racism. In short, we are aligned with Melvin's stimulus, but not his response. Note also that Brooks does not begin the film on this moment. He begins with Melvin responding to an even more relatable and viscerally provocative stimulus (the dog pee) and responding with an action that is a social transgression (disposing of the offending dog down the garbage chute) but that is arguably closer to how we might - or at least wish that we might - respond.

Likewise in *Gran Torino*, the majority of viewers may be expected to experience the stimulus of the teenage gang members fighting on his lawn much as Walt does - as an invasion of territory and a potential threat. However, Walt responds by aiming a rifle at them and snarling threats and racist abuse - diverging from the response that one could reasonably expect most viewers would have. Again, the screenwriter aligns us with the character in experiencing the stimulus, but diverges in the response. This pattern can be seen again and again in screenplays by expert screenwriters as a strategy for creating viewer alignment for difficult characters. In the early scenes of *Slumdog Millionaire*, the viewer can align with the stimulus - Young Jamal's desire for the movie star's autograph and his frustration at being locked in the toilet by his older brother - but Jamal's response transgresses our norms when he jumps into the sewage pit and then strides into the middle of the crowd covered in effluent.

Through the use of narrative techniques such as these, expert screenwriters consistently position their central characters as cooperators in the way they initially frame the social game being played out in the narrative. I do not imply that expert screenwriters are experts in game theory or that they knowingly use the games and roles defined by formal game theory. My point is that game theory is derived from observations of the innate tendencies governing archetypal human social transactions, and that expert screenwriters are attuned to these same innate human tendencies. Game theory and screenwriting are both formalised and simplified ways of representing natural patterns in human behavior. And both understand that evaluations of moral / ethical desirability are contingent upon context.

The protagonist is not the only character whom expert screenwriters position emotionally for the viewer via application of game theory roles. Just as they 'pre-frame' the protagonist as a cooperator, expert screenwriters frequently 'pre-frame' the antagonist as a defector in a micro-conflict which may have no relevance to the overarching narrative. The antagonist's tendency to defection is then typically expanded over the course of the overarching narrative, with the antagonist displaying several (and frequently all) of the prototypical defector behaviors, such as impinging on the

protagonist's territory, unfairly exploiting the protagonist's altruistic tendency to cooperate, threatening or damaging the protagonist's welfare or social reputation, and willfully obstructing the protagonist's motivated goal. These defections are carried out by the antagonist for their own personal gain or pleasure - never for pro-social ends.

However, all defection and cooperation are not equal. Because of the primacy effect, the viewer's initial framing of the social game and the characters' roles within it has a critical impact on how the narrative is subsequently interpreted. Once we have bonded with an individual and categorised them as a cooperator, our response to their subsequent defections is tempered - we are inherently, *neurally*, more forgiving to those we know and love (Phelps & Sokol-Hessner 2011; Kubota, Banaji & Phelps 2012; Seymour, Singer & Dolan 2007, Zimmerman & Eguiluz 2005, Clement & Krueger 2000). While we may recognise their transgressions, and wish them to make amends, and perhaps even reconcile ourselves to their punishment, we do not suppress our empathetic response for them. And we particularly do not experience the 'gloating' reward we feel when an 'out group' defector is punished. Our social evaluations are, to a great degree, persistent.

Framing, by its very nature, is not immutable. There are inevitably multiple ways of framing the same problem (Kahneman 2011). Thus the framing of the central problem of the film narrative may be shifted by the screenwriter within the course of the narrative. This combination of factors - the persistence of social evaluations and the mutability of framing - affords the screenwriter a powerful strategy for challenging the viewer's perspective. The screenwriter may create persistent alignment with the character by 'pre-framing' them as a cooperator. Once this persistent alignment is established, the screenwriter may then reframe the central social problem of the narrative - thereby calling the character's actions and assumptions into question. The viewer will continue to feel engaged and aligned with the character, while simultaneously willing them to change their behavior. In this way, expert screenwriters utilise game theory roles to position and reposition their characters in complex, shifting webs of competition and cooperation.

An example of this is seen in the film *Rain Man*. As previously discussed, the character of Charlie Babbitt is initially framed as a defector. His father is established as a defector who has never loved Charlie. This is confirmed when the father dies and leaves Charlie none of his substantial fortune. But as the narrative unfolds we learn that Charlie has an autistic brother, Raymond, whose existence his father hid from him. We learn that when Charlie was an infant, Raymond almost accidentally killed him - and so his father sent Raymond to live in an institution. And now the father has left his money to Raymond, whose need is greater than Charlie's. Suddenly the characters' roles in the 'game' have shifted. Charlie's father is now no longer a defector. He is a cooperator who altruistically gave up his beloved first son in order to ensure infant Charlie's safety, and who has contributed all his money to nurture and protect the most vulnerable member of the family. This shift in the game theory roles engenders a commensurate shift in the viewer's perspective. Charlie's insistence on taking half of the inheritance no longer feels like justified retaliation, but rather self-serving. His subsequent decision to kidnap Raymond from the institution until he gets the money feels like outright defection. But - and this is the interesting part of the phenomenon - because we have already empathetically aligned with Charlie, and because we have (mis)interpreted the roles in the social game just as he has, we remain empathetically aligned with him. Our initial social evaluation persists. In spite of the fact that Charlie is now, for all intents and purposes, enacting selfish, anti-social defector behavior, we persist in seeing him as fundamentally a cooperator. Through this narrative strategy, the viewer is now placed in a position of empathetic engagement with a character whose actions they do not agree with. Indeed, in the story world of *Rain Man*, Charlie Babbitt is arguably the character whose morality is *least* preferable. And yet the viewer remains empathetically engaged with him, and continues to ride with him on his journey, experiencing it from his emotional POV. This neat trick of psychological 'bait and switch' is a narrative device employed regularly by expert screenwriters. Through use of this device, screenwriters create an enduring empathetic engagement with a difficult or ethically problematic character, but shifts their 'role' in the social 'game' being played - with the result that the viewer begins to wish them to change their actions. Given the ubiquity of character transformation stories in classical cinema, it should hardly come as a surprise that screenwriters would have such narrative device in

their bag of screenwriting tricks. How else could they get us to keep rooting for a character, while simultaneously hoping that character will see the error of their ways and learn to behave better?

None of the cognitive film theorists surveyed for this research identify any narrative form or device approximating this. Indeed, in their discussions of the viewer's moral / ethical evaluation of character, the theorists surveyed seem to assume that there is some universal and absolute ethical standard against which all viewers are able to measure characters. Such an assumption runs counter to mainstream psychological thought on the matter, and the evidence of a great many studies (Kahneman 2011; Medin, Ross & Markman 2005).

SUMMARY

In this section I discussed specific forms and devices employed by expert screenwriters that rely on activation of mechanisms of the Social Brain to create viewer empathy with character. This phase of processing recruits neural mechanisms that perceive and regulate phenomena and actions whose meaning and value rely on social context. The key neural mechanisms in this phase include the prefrontal cortex, which is involved in all cognitions with a social component (Van Overwalle & Baetens 2009) and the orbitofrontal cortex, which is involved in framing effects (Windmann et al 2006). I presented evidence that expert screenwriters consistently employ narrative strategies that target particular features of these mechanisms. These strategies include using micro-conflicts at the outset of the narrative to 'frame' characters within particular roles in archetypal (game theory) social transactions. This narrative strategy takes advantage of the innate, biologically instantiated biases to associate or disassociate with others on the basis of their perceived social cooperation (Singer et al 2006). It also takes advantage of the psychological phenomenon of 'framing effects' (Kahneman 2011). I provided evidence of these forms and devices in the work of expert screenwriters. And I described how, by shifting the way the social game is framed within the narrative, expert screenwriters are able to create and maintain

empathy for characters who are morally problematic. I proposed that this narrative strategy, and the underlying neuroscience, offer an explanation for the fact that (contrary to Murray Smith and other cognitive film theorists) ethically compromised protagonists are the norm rather than the exception in mainstream cinema.

Chapter Eight

FADE OUT: *Results and Conclusions*

Christian Metz (1974, p74) said the project of the film theorist is “to understand how film is understood”. David Bordwell (1985, p48) added that “A full theory of narration must be able to specify the objective devices and forms that elicit a spectator’s activity”. Historically, cognitive film theorists have not thought it necessary or desirable to consider screenwriters as a primary source of knowledge on this matter (Bordwell 1985, Grodal 1997, Currie 1996). I believe that this thinking requires revision. My aim in this thesis has been to demonstrate that screenwriters, in order for their work to communicate as they intend, must be in possession of precisely the kind of “full theory” that Bordwell demands. Indeed, not only must they be able to “specify” the “objective devices and forms that elicit a spectator’s activity”, they must be able to apply them. One reason that this has not been duly recognised is that expert screenwriters, like many expert practitioners, hold and employ the principles and techniques of their practice largely as tacit knowledge (Polanyi 1967; Schon 1983). In this research I set out to explicate one aspect of this tacit knowledge - the principles and practices governing viewer engagement with character. By doing so, I hoped to provide evidence that the project to ‘understand how film is understood’ may benefit from directly investigating film practitioners as a primary source of knowledge.

Several methodologies were applied in undertaking this research. In-depth, semi-structured interviews with expert screenwriters were used to elicit their tacit conceptions of viewer empathy with characters, and identify the specific practices they employ in their work to create and modulate this engagement. Phenomenographic

analysis of these interviews was utilised to extract categories of shared conceptions and practices and order them into a coherent model. Literature review of a representative cross-section of cognitive film theorists was used to identify the principal models of viewer empathy promoted by cognitive film theory. Literature review of neuroscience studies on the neural processing of empathy was undertaken to compile a model of the neural processes that govern a subject's empathetic alignment with, or disengagement from, a given object. Agreement and disagreement between the cognitive neuroscience model, the cognitive film theory model, and the expert screenwriters' model was surveyed.

In this chapter I lay out my results and conclusions. In the Results section I review the key claims made by each of these models. In the Conclusions section I survey the key points of agreement and disagreement between the models.

RESULTS

Claims of the expert screenwriters' model

The expert screenwriters' model of viewer empathy recognises three phases of engagement that make up a continuum of fellow-feeling responses, all of which qualify as empathy:

Primal empathy. This initial engagement is created by provoking the viewer to experience visceral and physiological responses simultaneously with the character. This kind of resonance is predominantly nonconscious. Primal, basic emotions are harnessed in this phase. This correlates with the first phase of the neuroscience model.

Individual empathy. This kind of engagement is triggered by inducing the viewer to anticipate satisfaction of a character's relatable individual desires. Viewers are aligned with character actions towards benefits or away from costs. This kind of resonance is amplified by frustrating the expected outcome of those goal-oriented actions. Basic, and some social emotions are harnessed in this phase. This correlates with the second phase of the neuroscience model.

Social empathy. This kind of engagement is created by coercing the viewer to adopt the social perspective of the character. This is typically achieved by ‘framing’ the character as a pro-social player within a prototypical social transaction. This ‘framing’ is not reliant on moral / ethical absolutes. Social emotions are elicited in the viewer by introducing problematic social contexts (typically after all three phases of engagement have been activated). This kind of resonance involves explicitly conscious evaluation of social context and potential courses of action. This correlates with the third phase of the neuroscience model.

Because the cognitive processes that activate empathetic engagement are predominantly nonconscious, the expert screenwriter’s evaluation and application of them when writing the screenplay is often correspondingly nonconscious. Nevertheless, specific conceptions, forms and devices exist and are subject to discovery. The expert screenwriters’ model of viewer empathy, and the specific forms and devices it employs, correlate strongly with the cognitive neuroscientists’ model and mechanisms. Conversely, it disagrees with several fundamental proposals of the cognitive film theorists’ model.

Claims of the cognitive film theorists’ model

The cognitive film theorists surveyed for this thesis contend that five principal requirements govern empathy:

- 1) Theory of Mind – the viewer must consciously recognize the states and intentions of the character
- 2) Focalisation - the character must be the primary focus of the viewer
- 3) Moral Superiority - the character must be evaluated as having a preferable moral status to other available characters.
- 4) Telic Concerns - the character must be pursuing a tangible goal that the viewer recognises.
- 5) Mood Cues - the prevailing emotional ambience must be consistent with the affective state of the character in order for the viewer to be primed to respond with the appropriate emotional response.

The cognitive film theorists surveyed propose a range of models of the processes through which some or all of the above key requirements work to move viewers into an empathetic and/or sympathetic relationship with a character. While there is variation between the models proposed by different theorists, there is nevertheless significant agreement between them. All propose a stepped series of processing phases:

- I. The first, foundational phase consists of the viewer entering into some version of a conscious Theory of Mind recognition of the character as a thinking, feeling agent.
- II. The subsequent phase consists of focalisation, which “forces” the viewer to accept the character as the primary object of their interest.
- III. The next phase consists of the viewer’s recognition of the character’s telic (motivated, goal-oriented) concerns. This phase moves the viewer into a state of ‘empathy proper’.
- IV. The ultimate phase of empathy is commonly linked to the viewer’s recognition of the character possessing an admirable, or at least preferable, moral position within the narrative.

Thus, according to the models put forward by the cognitive film theorists surveyed for this thesis, the bulk of cognitive processing involved is conscious and cognitively explicit. There is some disagreement between theorists over whether viewer simulation of character states is a factor. Grodal (1997) and Currie (1995) allow some simulation, but Murray Smith (1995, pp. 85-6) and Carroll (2003) unequivocally reject it. Even where simulation is allowed for, unconscious processes, including any emotions that are not the result of explicit cognition, are largely disregarded.

The cognitive film theorists surveyed for this research offer relatively little indication of the specific forms and devices that elicit these cognitive activities in the viewer. Their models do not correlate with the expert screenwriters’ model and mechanisms. They also disagree substantially with the cognitive neuroscientists’ model.

Claims of the neuroscientists' model

The model of empathy most widely agreed upon by neuroscientists also breaks down into phases but, distinct from the theorists' model, these phases are determined by the brain systems recruited, with phylogenetically older regions recruited before more recently evolved systems.

- I. Sub-cortical processing - automatic, cognitively impenetrable processes carried out by our phylogenetically ancient brain systems. These processes are directed at ensuring homeostasis and integrity of the organism.
- II. Limbic processing - emotional, motivational and self-regarding mentalizing processes that are directed at meeting fundamental drives of the individual.
- III. Cortical processing - explicitly sentient cognitive processes, carried out by our most recently evolved brain structures, predominantly directed at ensuring the survival of the social group.

These processes are recursive, with reappraisal of stimuli often recruiting the same brain structures to carry out different tasks at multiple phases of processing (Adolphs 2003). Recursiveness notwithstanding, a key feature of this model is that automatic processing precedes cognitively penetrable processing, to the extent that the former to a great extent determines the latter (Damasio 1999).

Cognitive neuroscientists have not, at the time of this writing, explicitly listed any set of requirements that must be met as precursors to empathetic engagement. One explanation for this may be that no single factor is indispensable. Factors that have been consistently established as being important in determining the extent of empathetic engagement include:

- 1) Somatic mirroring of semantically correct motor repertoire
- 2) Affective mirroring of basic emotions
- 3) Resonant co-activation of autonomic system
- 4) Resonant co-activation of basic emotions
- 5) Resonant engagement of motivational dopamine system

- 6) Innate acceptance of territoriality
- 7) Perceptual evaluation of in-group / out-group
- 8) Innate biases such as primacy & framing effects
- 9) Evaluation of cooperation / defection in group common good

Of these factors, only the last, ‘evaluation of cooperation / defection in group common good’, requires explicit conscious processing. Yet even this process, in its most basic form, does not require high-order, cognitively effortful processing of the kind exclusive to humans. Thus, according to the neuroscience model of empathy, the vast bulk of the work of perceiving and evaluating salient stimuli, of activating the appropriate physiological and affective response, and even of recognising emotion and its social valence, is undertaken automatically and unconsciously (Adolphs 2003; Damasio 1999; de Gelder 2006, Singer et al 2006). Empathy, as somatic and affective resonance, is instantiated by sub-cortical and limbic areas with minimal input required from cortical areas. Prefrontal cortical processing is activated as the last phase of the process - as a mechanism for calculating what to do with the somatic and emotional information provided, in order to achieve the most beneficial outcome (Van Overwalle & Baetens 2009; Preston & de Waal 2002, Damasio 2010).

The neuroscience model of empathy is as precise as current brain imaging technology will allow and makes falsifiable predictions that have been tested in thousands of clinical studies (Preston 2007; Damasio 2010, Adolphs 2003). The neuroscience model disagrees significantly with the film theorists’ model in regard to both how phenomena are processed and what prerequisites are necessary for empathy to occur. In contrast, the neuroscientists’ model and mechanisms correlate strongly with the model and narrative strategies of expert screenwriters.

CONCLUSIONS

Broadly there is agreement between experts in the fields of screenwriting, neuroscience and cognitive film theory on the definition of empathy as affective

resonance between a subject and object. There is, however, significant divergence regarding what constitutes ‘proper’ affective resonance and what processes create it. Theorists prefer to consider only affective resonance that is the result of conscious cognition, while screenwriters and neuroscientists insist that both conscious and unconscious cognition must be considered. Some theorists (e.g. Carroll 2003; Smith 1995) completely discount automatic, non-conscious affective response as essentially irrelevant. In contrast, some leading neuroscientists go so far as to contend that empathy is so overwhelmingly governed by these unconscious processes, that it may be more accurately defined as *homeostatic resonance* (Craig 2009; Damasio 2010). This disconnect would be unremarkable were it not for the fact that cognitive film theorists draw heavily on the discoveries of these same neuroscientists as the basis and validation for their theories. The inescapable question then is why, if theorists acknowledge the neuroscientists’ expertise in the area and accept the findings of their original studies, do they not embrace the model of empathetic processing these same neuroscientists propose? It is difficult to avoid the conclusion that this insistence on the separation of mind and body is the product of an unacknowledged dualism which remains rusted on to cognitive film theory. It is my view that so long as this ghost is allowed to remain in the machine, it will continue to steer cognitive film theory from its stated course of scientific type enquiry, and into the doldrums of doctrine and dogma.

In this research I identified how this dualism prejudices the initial epistemological stance of cognitive film theorists, exemplified by David Bordwell in *Narration in the Fiction Film*, who states, “I am assuming that a spectator’s comprehension of the film’s narrative is theoretically separable from his or her emotional response” (Bordwell 1985, p30). I demonstrated how this *a priori* assumption of Cartesian dualism confuses cognitive film theorist’s models of viewer empathy, exemplified by Noël Carroll’s ‘top down’ model described in his book *Engaging The Moving Image* (2003) which insists that emotions cannot precede, or exist independent of, conscious thought because “the cognitive state must be the cause of the inner consternation” (Carroll 2003, p64), an assertion which is contradicted by current neuroscience. And I discussed how this dualist stance blinkers cognitive film theorists

to the potential contribution of screenwriters to the project of ‘understanding how we understand film’, as exemplified by Gregory Currie in his book *Image and Mind* (1995), in which he argues that writers’ reflections on their intentions for their own work contribute nothing to our understanding of the way in which the meaning of the narrative is created (Currie 1995, p248). I provided evidence that the computational-representational view of human cognition adhered to by cognitive film theorists has been largely abandoned by the cognitive scientists from whom it was adopted (Hayes 2012). And I identified specific instances in which this adherence, and the separation of mind and body it entails, is impeding cognitive theorist’s ability to follow where the science is inevitably leading.

In contrast, I have shown that expert screenwriters embrace a holistic view of human cognition that is inclusive of computational and connectionist processes, and equally accepting of conscious and embodied ways of apprehending the world. And I have shown that, as a result, the conceptions and practices employed by expert screenwriters correlate to a significant degree with the findings of current cognitive neuroscience. As such, it is reasonable to conclude that they offer a more feasible model of viewer engagement with character in narrative film. If this conclusion is accepted, then this project has achieved its aim. It has demonstrated that by directly investigating the tacit knowledge of expert screenwriters, we may enhance understanding of how film is understood.

And then...?

In this research I have explored the tacit knowledge of only one contributor to narrative film - the screenwriter. And only one aspect of their contribution - the forms and devices that elicit viewer engagement with character. While I argue for the importance of screenwriters, and of this aspect of their work, there are other aspects and other contributors equally worthy of study. Nor do I flatter myself that this research is the final word on the subject. It is one small step. My hope is that it may encourage other researchers to see the excavation of film practitioners’ tacit knowledge

as achievable and valuable. I have no doubt that future researchers will find better tools and improved methods, and will excavate further layers of understanding. I wish them happy digging, and look forward to their findings.

References

- 127 Hours* 2010, motion picture, directed by Danny Boyle, USA, Fox Searchlight.
- 21 Grams* 2003, motion picture, directed by Alejandro González Inarritu, USA, This is That Productions.
- Abbott, HP 2002, *The Cambridge introduction to narrative*, Cambridge University Press, Cambridge.
- Adams, J 2006, *Tacit knowledge: making it explicit*, London School of Economics, London, viewed 28 December 2013, <http://www.lse.ac.uk/economicHistory/Research/facts/tacit.pdf>
- Adolphs, R 2003, 'Cognitive neuroscience of human social behaviour', *Nature Reviews Neuroscience*, vol. 4, no. 3, pp. 165-78.
- Akerlind, G 2005, 'Variation and commonality in phenomenographic research methods', *Higher Education Research & Development*, vol. 24, no. 4, pp. 321-34.
- Allen, R & Smith, M 1997, *Film theory and philosophy*. Oxford, New York, NY.
- Allison, D 2013, *The Cinema of Michael Winterbottom*, Lexington Books, Plymouth, UK
- Allman, JM, Hakeem, A, Erwin, JM, Nimchinsky, E & Hof, P 2001, 'The anterior cingulate cortex: the evolution of an interface between emotion and cognition', *Annals of the New York Academy of Sciences*, vol. 935, no. 1, pp. 107-17.
- Amadio, DM & Frith, C 2006, 'Meeting of minds: the medial frontal cortex and social cognition', *Nature Reviews Neuroscience*, vol. 7, no. 4, pp. 268-77.
- Amores Perros* 2000, motion picture, directed by Alejandro González Inarritu, Mexico, Altavista Films.
- Anderson, J 1996, *The reality of illusion: an ecological approach to cognitive film theory*, Southern

- Illinois University Press, Carbondale, IL.
- Anderson, J & Anderson, BF 2005, *Moving image theory: ecological considerations*, Southern Illinois University Press, Carbondale, IL.
- The Apartment*, 1960, motion picture, directed by Billy Wilder, USA, Mirisch Corporation.
- Argyris, C & Schon, DA 1982, *Theory in practice: increasing professional effectiveness*, Jossey-Bass, San Francisco, CA.
- Aristotle 350 BCE, *Poetics*, (trans. SH Butcher 1895), Dover Thrift Editions, Mineola, NY.
- Aronson, L 2010, *The 21st Century Screenplay: A comprehensive guide to writing tomorrow's films*, Allen & Unwin, Crows Nest.
- As good as it gets* 1997, motion picture, directed by James L. Brooks, USA, Sony Pictures.
- Astruc, A 1948, *The birth of a new avant-garde: la camera-stylo*, viewed 11 May 2014, https://soma.sbccc.edu/Users/DaVega/FILMST_113/Filmst113_ExFilm_Theory/CameraStylo_Astruc_1928.pdf
- Attwood, T 2006, *The complete guide to Asperger's syndrome*, Jessica Kingsley, London.
- Auyang, SY 2000, *Mind in everyday life and cognitive science*, MIT Press, Cambridge, MA.
- Avatar* 2009, motion picture, directed by James Cameron, USA, 20th Century Fox.
- Axelrod, R 1984, *The evolution of cooperation*, Basic Books, New York, NY.
- Baars, BJ 1997, *In the theater of consciousness: the workspace of the mind*, Oxford University Press, Oxford.
- Babel* 2006, motion picture, directed by Alejandro González Inarritu, USA, Paramount Pictures.
- Baddeley, A. 2012. Working memory: theories, models, and controversies. *Annual Review of Psychology*, vol. 63 pp. 1-29.

- Bara, G, Ciaramidaro, A, Walter, H & Adenzato, M 2011, 'Intentional minds: a philosophical analysis of intention tested through fMRI experiments involving people with schizophrenia, people with autism, and healthy individuals', *Frontiers in Human Neuroscience*, vol. 5, art. 7, pp. 1-11
- Barash, DP 2003, *The survival game: how game theory explains the biology of cooperation and competition*, Times Books, New York, NY.
- Bargh, JA 2006, 'What have we been priming all these years? On the development, mechanisms, and ecology of nonconscious social behavior'. *European Journal of Social Psychology* vol. 36. No. 2, pp. 147-68.
- Barnard, A, McCosker, H & Gerber, R 1999, 'Phenomenography: a qualitative research approach for exploring understanding in health care', *Qualitative Health Research*, vol. 9, no. 2, pp. 212-26.
- Baron-Cohen, S 1999, *Mindblindness: an essay on autism and theory of mind*, MIT Press, Cambridge, MA.
- Barsalou, LW 2008, 'Grounded cognition', *Annual Review of Psychology*, vol. 59, pp. 617-45.
- Barsalou, LW, Niedenthal, PM, Barbey, A & Ruppert, J (eds.) 2003, *Social embodiment*, Academic Press, San Diego, CA.
- Bastiaansen, JACJ, Thioux, M & Keysers C 2009, 'Evidence for mirror systems in emotions' *Philosophical Transactions of the Royal Society: Biological Sciences* vol. 364, doi: 10.1098/rstb.2009.0058, published 19 July 2009, viewed 19 August 2014, <http://rstb.royalsocietypublishing.org/content/364/1528/2391.full>
- Basu, K 1994, 'The traveler's dilemma: paradoxes of rationality in game theory', *The American Economic Review*, vol. 84, no. 2, pp. 391-5.
- Batty, C 2014, *Screenwriters and screenwriting: putting practice into context*, Palgrave Macmillan, London.
- Baumard, P 1999, *Tacit knowledge in organizations*, SAGE Publications, London.
- Baumgartner, T, Knoch, D, Hotz, P, Eisenegger, C & Fehr, E 2011, 'Dorsolateral and

- ventromedial prefrontal cortex orchestrate normative choice', *Nature Neuroscience*, vol. 14, no. 11, pp. 1468-74.
- Bechtel, W & Abrahamsen, AA 2002, *Connectionism and the mind: parallel processing, dynamics, and evolution in networks*. 2nd ed. Blackwell, Oxford.
- Being there* 1979, DVD, directed by Hal Ashby, USA, Lorimar Film Entertainment.
- Bell, D 2011, 'The primacy of practice?', *Kinema: a journal for film and audiovisual media*, Spring, viewed 8 May 2014, <http://www.kinema.uwaterloo.ca/issue.php?year=2011>
- Belle de Jour* 1967, motion picture, directed by Luis Bunuel, France, Paris Film Productions.
- Benner, P 1984, *From novice to expert: Excellence and power in clinical nursing practice*, Addison-Wesley, Menlo Park, CA.
- Bennett, B 2014, *Logically Fallacious: The Ultimate Collection of over 300 logical fallacies (Academic Edition)*, ebookit.com, Sudbury, MA.
- Bereiter, C 2002, *Education and mind in the knowledge age*, Erlbaum, London.
- The Best Exotic Marigold Hotel* 2011, motion picture, directed by John Madden, UK, Blueprint Pictures.
- Biggs, JB & Collis, KF 1982, *Evaluating the quality of learning: the SOLO taxonomy*, New York Academic Press, New York, NY.
- Blackrock* 1997, motion picture, directed by Steven Vidler, Australia, Australian Film Finance Corporation.
- Blue Jasmine* 2013, motion picture, directed by Woody Allen, USA, Perdido Productions.
- Bolwerk A, Mack-Andrick J, Lang FR, Dörfler A, Maihöfner C 2014. 'How Art Changes Your Brain: Differential Effects of Visual Art Production and Cognitive Art Evaluation on Functional Brain Connectivity', *PLoS ONE* 9(7):

- e101035. doi:10.1371/journal.pone.0101035, viewed 3 August 2014,
<http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0101035>
- Boon, KA 2008, *Script culture and the American screenplay*, Wayne State University Press, Detroit, MI.
- Bor, D 2012, *The ravenous brain: How the new science of consciousness explains our insatiable search for meaning*, Basic Books, New York.
- Bordum, A 2002, 'From tacit knowing to tacit knowledge - emancipation or ideology?', *Critical Quarterly*, vol. 44, no. 3, pp. 50-4.
- Bordwell, D 1979, 'The Art Cinema as a Mode of Film Practice', *Film Criticism* vol. 4, no. 1 (Fall 1979) pp. 56-64
- Bordwell, D 1985, *Narration in the fiction film*, Methuen, London.
- Bordwell, D 2008, *Poetics of Cinema*, Routledge, New York, NY.
- Bordwell, D 2011, 'JCC', *Observations on Film Art*, (9 Sept 2011), viewed on 20 July 2104, <http://www.davidbordwell.net/blog/2011/09/09/jcc/>
- Bourdieu, P 2000, *Pascalian meditations*, Stanford University Press, Stanford, CA.
- Bourdieu, P & Nice, R 1977, *Outline of a theory of practice*, Cambridge University Press, Cambridge, UK.
- Bowden J & Marton, F 1998, *The University of learning: Beyond quality and competence in higher education*. Kogan Page, London.
- The Boy in the Striped Pyjamas* 2008, DVD, Directed by Mark Herman, Miramax Films, USA.
- Boyd, B 2009, *On the origin of stories: evolution, cognition, and fiction*, Belknap Press of Harvard University Press, Cambridge, MA.
- Bozarth, MA 1994, 'Pleasure systems in the brain', in DM Warburton (ed.), *Pleasure: the politics and the reality*, John Wiley & Sons, New York, NY.

- Branigan, E 1992, *Narrative comprehension and film, Sightlines*. Routledge, London; New York.
- Bredo, E 1994, 'Reconstructing educational psychology: Situated cognition and Deweyian pragmatism', *Educational Psychologist*, vol. 29, no. 1, pp. 23-35, viewed 29 December 2013, http://dx.doi.org/10.1207/s15326985ep2901_3
- British cinema: a personal view* 1986, television broadcast, Thames Television, Presented by Alan Parker.
- Brokeback Mountain* 2005, motion picture, directed by Ang Lee, USA / Canada, Focus Features.
- Bruce, C 1994, 'Reflections on the experience of the phenomenographic interview', in R Ballantyne & C Bruce (eds), *Phenomenography: philosophy and practice conference*, Brisbane.
- Brugger, P 2001, 'From haunted brain to haunted science: A cognitive neuroscience view of paranormal and pseudoscientific thought', in J Houran & R Lange (eds), *Hauntings and poltergeists: multidisciplinary perspectives*, McFarland, Jefferson, NC.
- Buccino, G, Binkofski, F, Fink, GR, Fadiga, L, Fogassi, L, Gallese, V, Seitz, RJ, Zilles, K, Rizzolatti, G & Freund, HJ 2001, 'Action observation activates premotor and parietal areas in a somatotopic manner: an fMRI study', *Neuroscience*, vol. 13, no. 2, pp. 400-4.
- Buckland, W 2000, *The cognitive semiotics of film*, Cambridge University Press, Cambridge.
- Buckland, W 2009, (ed.) *Film Theory And contemporary Hollywood Movies*, Routledge, New York, NY.
- Buonomano, D 2011, *Brain bugs: how the brain's flaws shape our lives*, Norton, New York, NY.
- The Burning Plain* 2008, motion picture, directed by Guillermo Arriaga, USA / Argentina, 2929 Productions.
- Calder, AJ, Keane, J, Manes, F, Antoun, N & Young, AW 2000, 'Impaired recognition

- and experience of disgust following brain injury', *Nature Neuroscience*, vol. 3, no. 11, pp. 1077-8
- Call, J & Tomasello, M 2008, 'Does the chimpanzee have a theory of mind? 30 years later', *Trends in Cognitive Sciences*, vol. 12, no. 5, pp. 187-92.
- Calvo-Merino, B 2009, 'Neural signatures of the aesthetic of dance', in C Stoc (ed.), *Dance dialogues: conversations across cultures, artforms and practices*, The Australian Dance Council and Queensland University of Technology, Canberra.
- Camerer, CF 1997, 'Progress in behavioral game theory', *Journal of Economic Perspectives*, vol. 11, no. 4, pp. 167-88.
- Camerer, CF, Loewenstein, G & Prelec, D 2005, 'Neuroeconomics: how neuroscience can inform economics', *Journal of Economic Literature*, vol. 43, no. 1, pp. 9-64.
- Cameron, CD, & Payne BK 2011, 'Escaping affect: How motivated emotion regulation creates insensitivity to mass suffering', *Journal of Personality and Social Psychology*, vol. 100, pp. 1-15.
- Cameron, L 2012, *Dyspathy: the dynamic complement of empathy*, The Open University, Milton Keynes, viewed June 20 2014, <http://www.open.ac.uk/researchprojects/livingwithuncertainty/pics/d134491.pdf>
- Canessa N, Motterlini M, Di Dio C, Perani D, Scifo P, et al. 2009, 'Understanding Others' Regret: A fMRI Study', *PLoS ONE* vol. 4, no. 10, e7402. doi:10.1371/journal.pone.0007402, viewed 13 June 2010, <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0007402>
- Capraro, V 2013, 'A model of human cooperation in social dilemmas', *PLoS ONE*, vol. 8, no. 8, viewed 29 August 2013, <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0072427#pone-0072427-g001>
- Carp, J, Halenar, MJ, Quandt, LC, Sklar, A & Compton, RJ 2009, 'Perceived similarity and neural mirroring: evidence from vicarious error processing', *Social*

- Neuroscience*, vol. 4, no. 1, pp. 85-96.
- Carriere, JC & Bonitzer, P 1990 *Exercice du Scenario*, FEMIS, Paris, Fr.
- Carriere, JC 1994, *The Secret Language of Film*, Pantheon, New York, NY.
- Carroll, N 1988, *Mystifying movies: fads & fallacies in contemporary film theory*, Columbia University Press, New York, NY.
- Carroll, N 1996, 'Prospects for Film Theory.' In Bordwell, D & Carroll, N (eds.), *Post Theory. Reconstructing Film Studies*, pp. 37–68. University of Wisconsin Press, Madison, WI.
- Carroll, N 1999, 'Film, emotion and genre', in C Plantinga & GM Smith (eds.), *Passionate views: film, cognition and emotion*, The Johns Hopkins University Press, Baltimore, MD.
- Carroll, N 2003, *Engaging the moving image*, Yale University Press, New Haven, CT.
- Carter, R & Frith, CD 2010, *Mapping the mind*, University of California Press, Berkeley, CA.
- Ceruzzi, PE 2003, *A history of modern computing*. MIT Press, Cambridge, MA.
- Chater, N, Tenenbaum, JB, & Yuille, A 2006, 'Probabilistic models of cognition: conceptual foundations', *Trends in Cognitive Sciences*, vol. 10, no. 7, 287-91.
- Chemero, A 2009, *Radical embodied cognitive science*, MIT Press, Cambridge, MA.
- Churchland, PM 1991, 'Folk psychology and the explanation of human behavior', in JD Greenwood (ed.), *The future of folk psychology*. Cambridge University Press, Cambridge.
- Clark, T 2011, *Martin Heidegger (Routledge critical thinkers)*, 2nd edn, Routledge, London.
- Clement, RW & Krueger J 2000, 'The primacy of self-referent information in perceptions of social consensus', *The British journal of social psychology*, vol. 39, pt. 2 pp. 279-99.
- Clore, GL 2013, 'Cognitive phenomenology: feelings and the construction of

- judgement', in LL Martin & A Tesser (eds.), *The construction of social judgements*, Psychology Press, London.
- Coriat, L 2008, 'Laurence Coriat on screenwriting: concepts, beliefs and philosophies', *Indivision News*, viewed 11 April 2015, http://afcarchive.screenaustralia.gov.au/newsandevents/afcnews/converse/laurencecoriat/newspage_465.aspx
- Craig, AD 2003, 'Interoception: the sense of the physiological condition of the body', *Current Opinion in Neurobiology* vol. 13, pp. 500-05.
- Craig, AD 2009, 'How do you feel—now? The anterior insula and human awareness', *Nature Reviews Neuroscience*, vol. 10, no. 1, pp. 59-70.
- Colville-Andersen, M, 1999, 'The Storytellers - Interview with Jean-Claude Carrière', *Euroscreenwriters*, viewed 28 March 2015, http://zakka.dk/euroscreenwriters/screenwriters/jean-claude_carriere.htm
- Conan Doyle, A 1894, 'The Final Problem', in *The Memoirs of Sherlock Holmes*, Dover Books, New York, NY.
- Corliss, R 1974, *Talking pictures: screenwriters in the American cinema, 1927-1973*, Overlook Press, Woodstock, NY.
- Csikszentmihalyi, M 1988, 'Society, culture, person: A systems view of creativity', in RJ Sternberg (ed.) *The Nature of Creativity*, Cambridge University Press, Cambridge, UK.
- Csikszentmihalyi, M 2014, *The Systems Model of Creativity: The Collected Works of Mihaly Csikszentmihalyi*, Springer, New York, NY.
- Csikszentmihalyi, M 1990, *Flow: the psychology of optimal experience*, Harper & Row, New York, NY.
- Currie, G 1995, *Image and mind: film, philosophy and cognitive science*, Cambridge University Press, Cambridge.
- Cyrano de Bergerac* 1990, motion picture, directed by Jean-Paul Rappeneau, France,

Camera One.

Damasio, AR 1994, *Descartes' error: emotion, reason, and the human brain*, G.P. Putnam, New York, NY.

Damasio, AR 1999, *The feeling of what happens: body and emotion in the making of consciousness*, Harcourt Brace, New York, NY.

Damasio, AR 2010, *Self comes to mind: constructing the conscious brain*, Pantheon Books, New York, NY.

Damasio, AR & Damasio, H 1996, *Neurobiology of decision-making*, Springer, New York, NY.

Dancyger, K & Rush, J 2013, *Alternative scriptwriting: beyond the Hollywood formula*. Focal Press, Burlington, MA.

Daniel, B 2012, *The ravenous brain*, Basic Books, New York, NY.

Dapretto, M, Davies, MS, Pfeifer, JH, Scott, AA, Sigman, M, Bookheimer SY & Iacoboni, M 2006, 'Understanding emotions in others: mirror neuron dysfunction in children with autism spectrum disorders', *Nature Neuroscience*, vol. 9, no. 1, pp. 28-30.

The Dark Knight 2008, motion picture, directed by Christopher Nolan, USA, Warner Bros.

Davis, D & Levine, E 1982, 'The challenge of new media: two viewpoints', *Art Journal*, vol. 42, no. 1, pp. 46-9.

Davis, M, Dautenhahn, K, Nehaniv, C & Powell, S 2006, 'Towards an interactive system eliciting narrative comprehension in children with autism: a longitudinal study', in J Clarkson, P Langdon & P Robinson (eds.), *Designing accessible technology*, Springer, London.

Davis, MD 1983, *Game theory: a nontechnical introduction*, Basic Books, New York, NY.

Decety, J & Sommerville, JA 2003, 'Shared representations between self and other: A social cognitive neuroscience view'. *Trends in Cognitive Sciences*, vol. 7, pp. 527-33.

- de Gelder, B 2006, 'Towards the neurobiology of emotional body language', *Neuroscience*, vol. 7, no. 3, pp. 242-9.
- de Gelder, B, Vroomen, J, Pourtois, G & Weiskrantz, L 1999, 'Non-conscious recognition of affect in the absence of striate cortex', *NeuroReport*, vol. 10, no. 18, pp. 3759-63.
- Dennett, DC 1987, *The intentional stance*, MIT Press, Cambridge, MA.
- Dennett, DC 1991, *Consciousness explained*, Little Brown, Boston, MA.
- Dennett, D. C. 1996. *Kinds of minds : toward an understanding of consciousness*. 1st ed. New York, N.Y.: Basic Books.
- Dennett, DC 2003, 'Who's on first? Heterophenomenology explained', *Journal of Consciousness Studies*, vol. 10, no. 9-10, pp. 19-30.
- DeSteno, D, Valdesolo, P & Bartlett, MY 2006, 'Jealousy and the threatened self: getting to the heart of the green-eyed monster', *Journal of Personality and Social Psychology*, vol. 91, no. 4, pp. 626-64.
- de Waal, FBM 2008, 'Putting the Altruism Back into Altruism: The Evolution of Empathy', *Annual Review of Psychology*, vol. 59, pp. 279-300
- Dewey, J 1916, *Essays in experimental logic*. The University of Chicago Press, Chicago, IL.
- Di Pellegrino, G, Fadiga, L, Fogassi, L, Gallese, V & Rizzolatti, G 1992, 'Understanding motor events: a neurophysiological study', *Experimental Brain Research*, vol. 91, no. 1, pp. 176-80.
- Die Hard* 1988, DVD, Directed by John McTiernan, USA, 20th Century Fox.
- A Difficult Woman*, 1998, television mini-series, directed by Tony Tilse, ABC / Southern Star.
- The Discreet Charm of the Bourgeoisie* 1972, motion picture, directed by Luis Bunuel, France, Greenwich Film Productions.

- Dorfman, J, Shames, VA, & Kihlstrom, JF 1996, 'Intuition, Incubation and Insight: Implicit Cognition in Problem Solving', in Underwood, G (ed), *Implicit cognition, Oxford science publications*. Oxford: Oxford University Press.
- Downfall* 2004, DVD, directed by Oliver Hirschbiegel, Germany, Constantin Film.
- Dreyfus, HL, Dreyfus, SE and Athanasiou, T 1986, *Mind over machine : the power of human intuition and expertise in the era of the computer*. Free Press, New York.
- Eisenberger, NI 2012, 'The pain of social disconnection: examining the shared neural underpinnings of physical and social pain', *Nature Reviews Neuroscience*, vol. 13, no. 6, pp. 421-34.
- Eisenberger, NI, Lieberman, MD & Williams, KD 2003, 'Does rejection hurt? an fMRI study of social exclusion', *Science*, vol. 302, no. 5643, pp. 290-2.
- Eisenstein, S 1987, *Nonindifferent nature: Film and the structure of the things*. Cambridge University Press, Cambridge.
- Ekman, P (ed.) 1982, *Emotion in the human face*. 2nd ed. Cambridge University Press. Cambridge.
- Ekman, P 1999, 'Basic emotions', in T Dalgleish & M Power (eds.), *Handbook of cognition and emotion*, John Wiley & Sons, Sussex.
- Elbert, T, Pantev, C, Wienbruch, C, Rockstroh, B & Taub, E 1995. 'Increased cortical representation of the fingers of the left hand in string players', *Science* vol. 270 No. 5234, pp. 305-7.
- Elkins, J 2009, 'On beyond research and new knowledge', in J Elkins (ed.), *Artists with PhDs: On the New Doctoral Degree in Studio Art*, New Academy Publishing, Washington, DC.
- Ellison, PT & Gray, PB 2009, *Endocrinology of social relationships*, Harvard University Press, Cambridge, MA.
- Eraut, M 2000, 'Non-formal learning and tacit knowledge in professional work'. *British Journal of Educational Psychology* vol. 70 (Pt 1) pp. 113-36.

- Everyday*, 2012, motion picture, directed by Michael Winterbottom, UK, Revolution Films
- Fadiga, L, Fogassi, L, Pavesi, G & Rizzolatti, G 1995, 'Motor facilitation during action observation: a magnetic stimulation study', *Journal of Neurophysiology*, vol. 73, pp. 2608–2611.
- Fadiga, L, Craighero, L & Olivier, E 2005, 'Human motor cortex excitability during the perception of others' action', *Current Opinion in Neurobiology*, vol. 15, no. 2, pp. 213-8.
- Fargo* 1996, motion picture, directed by Joel Coen, USA, Polygram Filmed Entertainment.
- Fehr, E & Rockenbach, B 2004, 'Human altruism: economic, neural, and evolutionary perspectives'. *Current Opinion in Neurobiology*, vol. 14, no. 6, pp. 784-90.
- Ffytche, DH & Zeki, S 2011, 'The primary visual cortex, and feedback to it, are not necessary for conscious vision'. *Brain* vol. 134, no. 1, pp. 247-57.
- Fight Club* 1999, motion picture, directed by David Fincher, USA, Fox 2000 Pictures.
- Finding Nemo* 2003, motion picture, directed by Andrew Stanton & Lee Unkrich, USA, Pixar Animation Studios.
- Fisher, L 2008, *Rock, paper, scissors: game theory in everyday life*, Basic Books, New York, NY.
- Fodor, JA 1968, 'The appeal to tacit knowledge in psychological explanation', *The Journal of Philosophy*, vol. 65, no. 20, pp. 627-40.
- Fodor, JA & Pylyshyn ZW 1988, 'Connectionism and cognitive architecture: a critical analysis', in S Pinker & J Mehler (eds.) *Connections and symbols*, MIT Press, Cambridge, MA.
- Francis, H 1996, 'Advancing phenomenography - Questions of method', in G Dall'Alba & B Hasselgren (Eds.), *Reflections on phenomenography - Toward a methodology?* Vol. 109, pp. 35-47.

- Freedberg, D & Gallese, V 2007, 'Motion, emotion and empathy in esthetic experience'. *Trends in Cognitive Sciences*, vol. 11, no. 5, pp. 197-203.
- Frigg, R and Hartmann, S 2012, 'Models in Science', In EN Zalta (ed.) *The Stanford Encyclopedia of Philosophy* (Fall 2012 Edition), viewed 9 April 2105, <http://plato.stanford.edu/archives/fall2012/entries/models-science/>
- Frijda, NH, Manstead, ASR & Bem S 2000, 'Emotions and Beliefs: How Feelings Influence Thoughts', Cambridge University Press, New York, NY.
- Frith, U & Frith, CD 2003, 'Development and neurophysiology of mentalizing'. *Philosophical Transactions of the Royal Society of London : Biological Sciences*, vol. 358, pp. 459-73.
- Frith, CD & Singer, T 2008, 'The role of social cognition in decision making', *Philosophical Transactions of the Royal Society of London B: Biological Sciences*, vol. 363, no. 1511, pp. 3875-86.
- Fuller, G 2000, 'A New Generation of Realists Scrap the Kitchen Sink', *NYTimes.com*, July 23 2000, viewed 11 April 2015, <http://www.nytimes.com/2000/07/23/movies/film-a-new-generation-of-realists-scrap-the-kitchen-sink.html>
- Gallese, V 2003. "The roots of empathy: the shared manifold hypothesis and the neural basis of intersubjectivity", *Psychopathology* vol. 36, no. 4, pp. 171-80.
- Gallese, V, Keysers, C & Rizzolatti, G 2004, 'A unifying view of the basis of social cognition', *Trends in Cognitive Science*, vol. 8, no. 9, pp. 396-403.
- Garcia, SM, Weaver, K, Moskowitz, GB & Darley JM 2002, 'Crowded Minds: The Implicit Bystander Effect', *Journal of Personality and Social Psychology*, vol. 83, no. 4, pp. 843-53.
- Garland, E, & Howard, M 2009, 'Neuroplasticity, Psychosocial Genomics, and the Biopsychosocial Paradigm in the 21st Century', *Health & Social Work*, vol. 34, No. 3, pp. 191-99.

- Garvey, J 2011, *The Continuum companion to philosophy of mind*, Continuum, New York, NY.
- Gazzaniga, MS 2004, *The cognitive neurosciences*, MIT Press, Cambridge, MA.
- Gehman 1960, 'Charming Billy', in R Horton (ed.) 2001, *Billy Wilder: Interviews*, University Press of Mississippi, Jackson, MS.
- Gendlin, ET 1996, *Focusing Oriented Psychotherapy*, The Guilford Press, New York, NY.
- Genova 2008, motion picture, directed by Michael Winterbottom, Revolution films, UK.
- Gibson, EJ 1969, *Principles of perceptual learning and development*, Appleton-Century-Crofts, New York, NY.
- Gibson, EJ & Pick, AD, 2000. *An ecological approach to perceptual learning and development*. Oxford University Press. New York.
- The Girl With The Dragon Tattoo* 2011, motion picture, directed by David Fincher, USA, Columbia Pictures.
- Glimcher, PW & Rustichini, A 2004, 'Neuroeconomics: the consilience of brain and decision', *Science*, vol. 306, pp. 447-52.
- Goldman, JS & Coleman, PT n.d., *A theoretical understanding of how emotions fuel intractable conflict: the case of humiliation*, Columbia University, New York, NY, viewed 2 March 2014, <http://www.humiliationstudies.org/documents/GoldmanNY05meetingRT2.pdf>
- Goldstone, RL 1998, 'Perceptual Learning', *Annual Review of Psychology*, vol. 49, no. 1, pp. 585-612.
- Goldstone, RL, Braithwaite, DW & Byrge, LA 2012, 'Perceptual Learning', in NM Seel (ed.), *Encyclopedia of the Sciences of Learning*, Springer, New York, NY.
- Goleman, D 2006, *Social intelligence: the new science of human relationships*, Bantam Books, New York, NY.
- Gopnik, A 1993, 'How we know our minds: The illusion of first-person knowledge of

- intentionality', in AI Goldman (ed.), *Readings in Philosophy and Cognitive Science*, MIT Press, Cambridge, MA.
- Gopnik, A 2003, 'The theory theory as an alternative to the innateness hypothesis', in LM Antony & N Hornstein (eds.), *Chomsky and his critics*, Blackwell, Oxford.
- Gopnik, A & Meltzoff, AN 1997, *Words, thoughts, and theories (learning, development, and conceptual change)*, The MIT Press, Cambridge, MA.
- Gordon, RM 1992, 'The simulation theory: objections and misconceptions', *Mind & Language*, vol. 7, no. 1-2, pp. 11-34.
- Gordon, RM 1996, 'Radical simulationism', in P Carruthers & PK Smith (eds.), *Theories of theories of mind*, Cambridge University Press, Cambridge.
- Gran Torino* 2008, motion picture, directed by Clint Eastwood, USA, Matten Productions.
- Grezes, J, Armony, JL, Rowe, J & Passingham, RE 2003, 'Activations related to 'mirror' and 'canonical' neurones in the human brain: an fMRI study', *Neuroimage*, vol. 18, no. 4, pp. 928-37.
- Griffiths, TL & Tenenbaum, JB 2006, 'Optimal predictions in everyday cognition', *Psychological Science*, vol. 17, no. 9, pp. 767-73.
- Grodal, TK 1997, *Moving pictures: a new theory of film genres, feelings, and cognition*, Oxford University Press, Oxford.
- Grodal, TK 1999, 'Emotions, cognitions, and narrative patterns in film', in C Plantinga & GM Smith (eds.), *Passionate views: film, cognition and emotion*, The Johns Hopkins University Press, Baltimore, MD.
- Grodal, TK 2009, *Embodied visions: evolution, emotion, culture, and film*, Oxford University Press, Oxford.
- Gulino, P 2004, *Screenwriting: The Sequence Approach*, Bloomsbury, New York, NY.
- Haldin-Herrgard, T 2000, 'Difficulties in diffusion of tacit knowledge in organizations',

- Journal of Intellectual Capital*, vol. 1, no. 4, pp. 357-65.
- Hamm, AO, Weike, AI, Schupp, HT, Treig, T, Dressel, A & Kessler, C 2003, 'Affective blindsight: intact fear conditioning to a visual cue in a cortically blind patient', *Brain*, vol. 126, no. 2, pp. 267-75.
- Harari, YN 2014, *Sapiens: a brief history of humankind*, Random House, London.
- Harmon-Jones, E 2000, 'A cognitive dissonance theory perspective on the role of emotion in the maintenance and change of beliefs and attitudes', in NH Frijda, ASR Manstead & S Bem (eds.), *Emotions and beliefs: how feelings influence thoughts (studies in emotion and social interaction)*, University of Cambridge, Cambridge.
- Harrington, J 2009, *Games, strategies and decision making*, Worth, New York, NY.
- Harris, LT & Fiske, ST 2006, 'Dehumanizing the lowest of the low: Neuroimaging response to extreme out-groups', *Psychological Science*, vol. 17, no. 10, pp. 847-53.
- Hatfield, E, Cacioppo, JT & Rapson, RL 1993, 'Emotional contagion'. *Current Directions in Psychological Science*, vol. 2, pp. 96-9.
- Hauser, MD 1992, 'Costs of deception: cheaters are punished in rhesus monkeys (*Macaca mulatta*)', *Proceedings of the National Academy of Sciences of the United States of America*, vol. 89, no. 24, pp. 12137-9.
- Hayes, B 2012, 'The Manifest Destiny of Artificial Intelligence', *American Scientist*, vol. 100, pp. 282-7.
- Hedges, I 1991, *Breaking the frame: film language and the experience of limits*, Indiana University Press, Bloomington.
- Herman, D 2001, 'Narrative theory and the cognitive sciences', *Narrative Inquiry*, vol. 11, no. 1, pp. 1-34.
- Hill, E & Sally, D 2003, 'Dilemmas and Bargains: Autism, Theory-of-Mind, Cooperation and Fairness.' *University College London Working Paper*, viewed 22 May 2012, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=407040

- Hillis, AE 2014, 'Inability to empathize: brain lesions that disrupt sharing and understanding another's emotions', *Brain*, vol. 137, Pt. 4, pp. 981-97.
- Hollerman, JR & Schultz, W 1998, 'Dopamine neurons report an error in the temporal prediction of reward during learning', *Nature Neuroscience*, vol. 1, no. 4, pp. 304-9.
- Horne, W 1992, 'See shooting script: reflections on the ontology of the screenplay', *Literature film quarterly* vol. 20, no. 1, pp. 48-54
- Hotton, S & Yoshimi, J 2011, 'Extending dynamical systems theory to model embodied cognition', *Cognitive Science*, vol. 35, no. 3, pp. 444-79.
- The Hours* 2002, motion picture, directed by Stephen Daldry, USA / UK, Paramount Pictures / Miramax.
- The Hunger Games: Catching Fire* 2013, motion picture, directed by Gary Ross, USA, Lionsgate.
- Hurley, S 2008 'The shared circuits model (SCM): how control, mirroring, and simulation can enable imitation, deliberation, and mindreading'. *Behavioral and Brain Sciences*, vol. 31, no. 1, pp. 1-22.
- Iacoboni, M, Woods, R, Brass, M, Bekkering, H, Mazziotta, JC & Rizzolatti, G 1999, 'Cortical mechanisms of human imitation', *Science*, vol. 286, no. 5449, pp. 2526-8.
- Inkson, K & Parker, P 2005, 'Boundaryless careers and the transfer of knowledge: a middle earth perspective', *Higher Education Policy*, vol. 18, no. 3, pp. 313-25.
- Ito, TA & Urland, GR 2003, 'Race and gender on the brain: Electro cortical measures of attention to the race and gender of multiply categorizable individuals'. *Journal of Personality and Social Psychology*, vol. 85, no. 4, pp. 616-26.
- Jackendoff, R. 2002. *Foundations of language: brain, meaning, grammar, evolution*. Oxford University Press, Oxford; New York:
- Johnson, M 1987, *The body in the mind: the bodily basis of meaning, imagination, and reason*,

University of Chicago Press, Chicago, IL.

Johnson, MH 2005, 'Subcortical face processing', *Nature Reviews Neuroscience*, vol. 6, no. 10, pp. 766-74.

Jolij, J & Lamme, VAF 2005, 'Repression of unconscious information by conscious processing: evidence from affective blindsight induced by transcranial magnetic stimulation', *Proceedings of the National Academy of Sciences of the United States of America*, vol. 102, no. 30, pp. 10747-51.

Jones, G 2003, 'Testing two cognitive theories of insight. *Journal of Experimental Psychology: Learning Memory & Cognition*, vol. 29, vol. 5, pp. 1017-27.

Juno 2007, motion picture, directed by Jason Reitman, USA, Fox Searchlight Pictures.

Kahneman, D 2011, *Thinking, fast and slow*, Farrar, Straus and Giroux, New York, NY.

Kahneman, D & Tversky, A 1979, 'Prospect theory: an analysis of decision under risk', *Econometrica*, vol. 47, no. 2, pp. 263-92.

Kitching, GN 2008, *The trouble with theory: the educational costs of postmodernism*, Pennsylvania State University Press, University Park, PA.

Krueger, JI & Acevedo M 2007, 'Perceptions of self and other in the prisoner's dilemma: outcome bias and evidential reasoning', *American Journal of Psychology*, vol. 120, no. 4, pp.593-618.

Kubota, JT, Banaji, MR & Phelps, EA 2012, 'The neuroscience of race', *Nature Neuroscience*, vol. 15, no. 7, pp. 940-48.

Lakoff, G & Johnson, M 1999, *Philosophy in the flesh: the embodied mind and its challenge to western thought*, Basic Books, New York, NY.

Lapsley, R & Westlake, M 2006, *Film theory: an introduction*, 2nd edn, Manchester University Press, Manchester.

LeDoux, JE 1996, *The emotional brain: the mysterious underpinnings of emotional life*, Simon & Schuster, New York, NY.

- Lee, D 2008, 'Game theory and neural basis of social decision making', *Nature Neuroscience*, vol. 11, no. 4, pp. 404-9.
- Lehrer, J 2009, *How we decide*, Houghton Mifflin Harcourt, Boston.
- Leventhal, H & Scherer, K 1987, 'The relationship of emotion to cognition: a functional approach to a semantic controversy', *Cognition & Emotion*, vol. 1, no. 1, pp. 3-28.
- Levine, E 1982, 'Vision and Its Medium', *Art Journal*, vol. 42, no. 1, pp. 48-49.
- Levine, J 2001, *Purple haze: the puzzle of consciousness*. Oxford University Press, Oxford.
- Linville, J 1996, 'Billy Wilder, The Art of Screenwriting No. 1', *The Paris Review*, no. 138, Spring 1996, viewed 25 July 2012, <http://www.theparisreview.org/back-issues/138>
- Life is Beautiful* 1997, DVD, directed by Roberto Benigni, Italy, Cecchi Gori Group.
- Little Miss Sunshine* 2006, motion picture, directed by Jonathan Dayton & Valerie Faris, USA, Fox Searchlight Pictures.
- Lorenzo's Oil* 1992, motion picture, directed by George Miller, USA, Universal Pictures.
- Lost Highway* 1997, motion picture, directed by David Lynch, France / USA, October Films.
- Lund, FH 1939, *Emotions : their psychological, physiological and educative implications*. The Ronald Press Company, New York, NY.
- Nelmes, J 2010, 'Editorial', *Journal of Screenwriting*, vol. 1, no. 1, pp. 3-6.
- Macdonald, I 2010, 'Editorial', *Journal of Screenwriting*, vol. 1, no. 1, pp. 7-10.
- Macdonald, I 2014, *Screenwriting poetics and the screen idea*, Palgrave Macmillan, London.
- MacLean, I 1999, 'The Process of Intellectual Change: A Post-Foucauldian Hypothesis', in Neubauer J (ed), *Cultural History After Foucault*, Aldine De Gruyter, New York, NY.
- MacLean, PD 1990, *The triune brain in evolution: role in paleocerebral functions*. Plenum Press,

New York, NY.

Maestripieri, D 2012, *Games Primates Play: an undercover investigation of the evolution and economics of human relationships*, Basic Books, New York, NY.

The Magnificent Seven 1960, motion picture, directed by John Sturges, USA, Mirisch Company.

The Mahabharata 1989, television series, directed by Peter Brook, France / UK, MP Productions / Channel 4 Television.

The Man Who Knew too Much 1956, motion picture, directed by Alfred Hitchcock, USA, Paramount Pictures.

Mann, L 2010, *Critical features of phenomenography*, Central Queensland University, North Rockhampton, viewed 29 June 2010, <http://aace-scholar.pbworks.com/Research+Method+-+Phenomenography?mode=print>

Maras, S 2009, *Screenwriting: history, theory and practice*, Wallflower Press, London.

Marcus, G 2009, 'How does the mind work? Insights from biology', *Topics in Cognitive Science*, vol. 1, no. 1, pp. 145-72.

Margaret, 2011, Directed by Kenneth Lonergan, USA, Fox Searchlight.

Martindale, C & Taylor, AB 2004, *Shakespeare and the classics*, Cambridge University Press, Cambridge, UK.

Marton, F 1981, 'Phenomenography - describing conceptions of the world around us', *Instructional Science*, vol. 10, pp. 177-200.

Marton, F 1986, 'Phenomenography: a research approach to investigating different understandings of reality', *Journal of Thought*, vol. 21, no. 3, pp. 28-49.

Marton, F 1994, 'Phenomenography', in T Husen & TN Postlethwaite (eds.), *The international encyclopedia of education*, 2nd edn, Pergamon Press, Oxford.

Marton, F & Booth, S 1997, *Learning and awareness*, Lawrence Erlbaum Associates, Mahwah, NJ.

- Masserman, JH, Wechkin, S & Terris, W 1964, "Altruistic" Behavior in Rhesus Monkeys'. *American Journal of Psychiatry*, vol. 121, pp. 584-5.
- Masten, CL, Eisenberger, NI, Pfeifer, JH & Dapretto, M 2010, 'Witnessing peer rejection during early adolescence: neural correlates of empathy for experiences of social exclusion', *Social Neuroscience*, vol. 5, no. 5-6, pp. 496-507.
- McGuirk, T 2011, 'Drawing and intellectualism: Contested paradigms of knowledge', *Art, Design & Communication In Higher Education*, vol. 10, no. 2, pp. 217-231, viewed 31 December 2013,
<http://simsrad.net.ocs.mq.edu.au/login?url=http://search.ebscohost.com/simsrad.net.ocs.mq.edu.au/login.aspx?direct=true&db=ufh&AN=84199615&site=ehost-live>
- Me Without You*, 2001, motion picture, directed by Sandra Goldbacher, UK, Samuel Goldwyn Films
- Medin, DL & Ross, BH & Markman AB 2005, *Cognitive psychology* (4th ed) John Wiley & Sons, Hoboken, NJ.
- Meeren, HK, van Heijnsbergen, CC & de Gelder, B 2005, 'Rapid perceptual integration of facial expression and emotional body language', *Proceedings of the National Academy of Sciences of the United States of America*, vol. 102, no. 45, pp. 16518-23.
- Mehlmann, A 2000, *The game's afoot! Game theory in myth and paradox*, trans. D Kramer, The American Mathematical Society, Providence, RI.
- Memento* 2000, Director Christopher Nolan, USA, Newmarket Films.
- Merleau-Ponty, M 1962, *Phenomenology of perception*, trans. C Smith, Routledge, New York, NY.
- Merriam-Webster Dictionary (online) 2014, *Empathy*, viewed 7 August 2014,
<http://www.merriam-webster.com/dictionary/empathy>
- Metz, C 1974, *Language and cinema*, trans. J Umiker-Sebeok, The Hague, Mouton.

- Midnight Run* 1988, motion picture, directed by Martin Brest, USA, Universal Pictures.
- A Mighty Heart*, 2007, motion picture, directed by Michael Winterbottom, USA, Paramount Vantage.
- Millard, K 2006, 'Writing for the Screen: Beyond the Gospel of Story', *Scan Journal*, vol. 3, no. 2, October 2006, Macquarie University, North Ryde, viewed 27 September 2014, http://www.scan.net.au/scan/journal/print.php?journal_id=77&j_id=8
- Millard, K 2014, *Screenwriting in a digital era*, Palgrave Macmillan, London.
- Minsky, ML 2006, *The emotion machine : commonsense thinking, artificial intelligence, and the future of the human mind*, Simon & Schuster, New York, NY.
- Mobus, G 2012, 'The components of sapience', *Question Everything*, viewed 12 Sept 2013, <http://faculty.washington.edu/gmobus/TheoryOfSapience/SapienceExplained/3.sapiencecomponents/sapienceComponents.html>
- Moll, J, Zahn, R, Oliveira-Souza, R, Krueger, F & Grafman, J 2005, 'The neural basis of human moral cognition', *Nature Reviews Neuroscience*, vol. 6, no. 10, pp. 799-809.
- Montague, R 2006, *Why choose this book: how we make decisions*, Dutton, New York, NY.
- Moyer-Gusé, E 2008, 'Toward a Theory of Entertainment Persuasion: Explaining the Persuasive Effects of Entertainment-Education Messages', *Communication Theory*, vol. 18, pp. 407-25
- Mulholland Drive* 2001, Director David Lynch, USA, Les Films Alain Sarde.
- Murphy, JJ 2007, *Me and you and Memento and Fargo: how independent screenplays work*. Continuum, New York, NY.
- Nagell, K, Olguin, R & Tomasello, M 1993, 'Processes of social learning in the tool use of chimpanzees (*Pan troglodytes*) and human children (*Homo sapiens*)', *Journal of Comparative Psychology*, vol. 107, no. 2, pp. 174-86.
- Nannicelli, T 2013, *A philosophy of the screenplay*, Routledge, New York, NY.

- Neale, S & Smith, M 1998, *Contemporary Hollywood cinema*, Routledge, London.
- Nelmes, J 2010, 'Editorial', *Journal of Screenwriting*, vol. 1, no. 1, pp. 3-6.
- Nelmes, J 2013, *The screenwriter in British cinema*, Palgrave Macmillan, London.
- Newman, JD & Harris, JC 2009, 'The scientific contributions of Paul D. MacLean (1913-2007)', *Journal of Nervous and Mental Disease*, vol. 197, no. 1, pp. 3-5.
- Niedenthal, PM & Maringer, M 2009, 'Embodied emotion considered', *Emotion Review*, vol. 1, no. 2, pp. 122-8.
- Noë, A 2002, *Art as enaction*, University of California, Berkeley, CA, viewed 3 February 2014, <http://www.scribd.com/doc/51703258/Alva-Noe-Art-as-enaction>
- Noë, A 2004, *Action in perception, Representation and mind*. MIT Press, Cambridge, Mass.
- Noë, A 2009, *Out of our heads: why you are not your brain, and other lessons from the biology of consciousness*, Hill and Wang, New York, NY.
- Nonaka, I & Takeuchi, H 1995, *The knowledge-creating company*. Oxford University Press, New York, NY.
- Oberman LM, Pineda JA, Ramachandran VS 2007, 'The Human Mirror Neuron System: A Link Between Action Observation and Social Skills', *Social Cognitive and Affective Neuroscience*, vol. 2, pp. 62-6.
- O'Connor, JJ & Robertson, EF 2010, *Albert William Tucker*, University of St Andrews, Scotland, viewed 8 March 2014, http://www-history.mcs.st-andrews.ac.uk/Biographies/Tucker_Albert.html
- Ornek, F 2008, 'An overview of a theoretical framework of phenomenography in qualitative education research: an example from physics education research', *Asia-Pacific Forum on Science Learning and Teaching*, vol. 9, no. 2, pp. 1-14.
- Osborne, MJ 2004, *An introduction to game theory*, Oxford University Press, Oxford.
- Osborne, MJ & Rubinstein, A 1994, *A course in game theory*, MIT Press, Cambridge, MA.

- Oxford English Dictionary (online) 2014, *Empathy*, viewed 7 August 2014,
<http://www.oxforddictionaries.com/definition/english/empathy>
- Panksepp, J 1998, *Affective neuroscience: the foundations of human and animal emotions*, Oxford University Press, Oxford.
- Panksepp, J 2003, 'Feeling the pain of social loss', *Science*, vol. 302, no. 5643, pp. 237-9.
- Pan' Labyrinth* 2006, motion picture, directed by Guillermo del Toro, Spain, Estudios Picasso.
- Parker, A 1986, British Cinema: A Personal View, television program, 12 March 1986, Thames Television.
- Parkes, MJ 2006, 'Breath-holding and its breakpoint', *Experimental Physiology*, vol. 91 no. 1, pp. 1-15.
- Parsaye, K & Chignell, M 1988, *Expert systems for experts*, Wiley, Hoboken, NJ.
- Partridge, H & Edwards, S 2006, 'The rippling pond: ruminations and other musings on the development and use of an online learning environment in the Faculty of Information Technology', in CS Bruce, G Mohay, G Smith, I Stoodley & R Tweeddale (eds.), *Transforming IT education: promoting a culture of excellence*, Informing Science Press, Santa Rosa, CA.
- Phelps, EA, O'Connor, KJ, Cunningham, WA, Funayama, ES, Gatenby, JC, Gore, JC & Banaji, MR 2000, 'Performance on indirect measures of race evaluation predicts amygdala activation'. *Journal of Cognitive Neuroscience*, vol. 12, no. 5, pp. 729-38.
- Phelps EA & Sokol-Hessner P 2011, 'Social and emotional factors in decision-making: appraisal and value', in RJ Dolan & T Sharot (eds), *Neuroscience of Preference and Choice: Cognitive and Neural Mechanisms*, Academic Press, London.
- The Piano* 1993, motion picture, directed by Jane Campion, NZ / Australia, Australian Film Commission.
- Pinker, S 2007, *The stuff of thought: language as a window into human nature*, Viking, New

York, NY.

Pitcher, D, Garrido, L, Walsh, V, & Duchaine, B 2008, 'TMS disrupts the perception and embodiment of facial expressions', *The Journal of Neuroscience*, vol. 28, no. 36, pp. 8929–8933.

Plantinga, C & Smith, GM 1999, *Passionate views: film, cognition and emotion*, The Johns Hopkins University Press, Baltimore, MD.

Plantinga, CR 2009, *Moving viewers: American film and the spectator's experience*. University of California Press, Berkeley, CA.

Plutchik, R 1962, *The Emotions: Facts, Theories, and a New Model*. Random House, New York, NY.

Plutchik, R 2002, *Emotions and life: perspectives from psychology, biology, and evolution*, American Psychological Association, Washington, DC.

Polanyi, M 1958, *Personal knowledge: towards a post-critical philosophy*, The University of Chicago Press, Chicago, IL.

Polanyi, M 1967, *The tacit dimension*, Routledge & K. Paul, London.

Port, RF 2006, 'Dynamical systems hypothesis in cognitive science', in *Encyclopedia of cognitive science*, John Wiley & Sons, Hoboken, NJ.

Preston, L 2008, 'The Edge of Awareness: Gendlin's Contribution to Explorations of Implicit Experience', *International Journal of Psychoanalytic Self Psychology*, vol. 3, no. 4, pp. 347-69.

Preston, SD 2007, 'A perception-action model for empathy', in TF Farrow & PW Woodruff (eds.), *Empathy in mental illness*, Cambridge University Press, Cambridge.

Preston, SD, Bechara, A, Damasio, H, Grabowski, TJ, Stansfield, RB, Mehta, S & Damasio, AR 2007, 'The neural substrates of cognitive empathy', *Social Neuroscience*, vol. 2, no. 3-4, pp. 254-75.

- Preston, SD, de Waal, F & Frans, BM 2002, 'Empathy: it's ultimate and proximate bases', *Behavioral and Brain Sciences*, vol. 25, no. 1, pp. 1-20.
- Preston, SD & Hofelich, AJ 2012, 'The many faces of empathy: parsing empathic phenomena through a proximate, dynamic-systems view of representing the other in the self', *Emotion Review*, vol. 4, no. 1, pp. 24-33.
- Price, S 2010, *The screenplay: authorship, theory and criticism*, Palgrave Macmillan, London.
- Prieto, JM 2001, 'Guillermo Arriaga: Interview', *Bomb*, no. 76, pp. 68-73.
- Prince, S & Hensley WE 1992, 'The Kuleshov Effect: Recreating the Classic Experiment', *Cinema Journal*, vol. 31, no. 2 (Winter, 1992), pp. 59-75.
- The Princess Bride* 1987, motion picture, directed by Rob Reiner, USA, 20th Century Fox.
- Prisner, E 2009, *Game theory through examples*, Franklin University, Switzerland, viewed 8 March 2014, <http://www.eprisner.de/MAT109/Simultaneous.html#1.4>
- Psycho* 1960, motion picture, directed by Alfred Hitchcock, USA, Shamley Productions.
- Raging Bull* 1980, motion picture, directed by Martin Scorsese, USA, United Artists.
- Rain Man* 1988, motion picture, directed by Barry Levinson, USA, United Artists.
- Reed, B 2006, 'Phenomenography as a way to research the understanding by students of technical concepts', *Nucleo de Pesquisa em Tecnologia da Arquitetura e Urbanismo (NUTAU): Technological Innovation and Sustainability*, Sao Paulo, Brazil.
- The Return of Martin Guerre* 1982, motion picture, directed by Daniel Vigne, France, Dussault.
- Rilling, JK, Gutman, DA, Thorsten, ZR, Pagnoni, G, Berns, GS & Kilts, CD 2002, 'A neural basis for social cooperation', *Neuron*, vol. 35, no. 2, pp. 395-405.
- Rizzolatti, G, Fadiga, L, Gallese, V & Fogassi, L 1996, 'Premotor cortex and the recognition of motor actions', *Cognitive Brain Research*, vol. 3, no. 2, pp. 131-41.
- Robb, G 1998, *Victor Hugo: a biography*, W.W. Norton & Co, New York, NY.

- Rodowick, DN 2007, 'An Elegy for Theory', *October* vol. 122, Fall 2007, pp. 91-109.
- Roitblat, HL & Meyer, J-A 1995, *Comparative approaches to cognitive science*, MIT Press, Cambridge, MA.
- Rolf, B 1991, *Profession, tradition och tyst kunskap*, Nya Doxa, Nora.
- Rumelhart, DE & McClelland, JL, 1987, *Parallel distributed processing. Volume 1, Foundations explorations in the microstructure of cognition*. MIT Press. Cambridge, MA.
- Rushton, R & Bettinson, G. 2010, *What is film theory? : an introduction to contemporary debates*. Open University Press, Maidenhead, Berkshire.
- Sabrina* 1954, motion picture, directed by Billy Wilder, USA, Paramount Pictures.
- Salamone, JD & Correa, M 2012, 'The mysterious motivational functions of mesolimbic dopamine', *Neuron*, vol. 76, no. 3, pp. 470-85.
- Saljo, R 1997, 'Talk as data and practice - a critical look at phenomenographic inquiry and the appeal to experience.', *Higher Education Research & Development*, vol. 16, no. 2, pp. 173-90.
- Salmon Fishing In The Yemen* 2011, motion picture, directed by Lasse Hallström, UK, UK Film Council.
- Sanfey, AG, Rilling, JK, Aronson JA, Nystrom LE, Cohen, JD 2003, 'The neural basis of economic decision making in the Ultimatum Game', *Science*, vol. 300, pp. 1755-8.
- Sarris, A 1968, *The American cinema: directors and directions, 1929-1968*, Dutton, New York, NY.
- Schachter, S & Singer, JE, 1962, 'Cognitive, social and physiological determinants of emotional states', *Psychological Review*, vol. 69, pp. 379-99
- Schank, R & Abelson, PA, 1977, *Scripts, plans, goals and understanding: an inquiry into human knowledge structures*, Lawrence Erlbaum, New Jersey, NJ.
- Schindler's List* 1993, motion picture, directed by Steven Spielberg, USA, Universal

Pictures.

Schön, DA 1983, *The reflective practitioner: how professionals think in action*, Basic Books, New York, NY.

Schoner, G 2007, 'Dynamical systems approaches to cognition', in R Sun (ed.), *The Cambridge handbook of computational psychology*, Cambridge University Press, Cambridge.

Schotter, A 1992, 'Oskar Morgenstern's contribution to the development of the theory of games', in ER Weintraub (ed.), *Toward a history of game theory*, Duke University Press, Durham, NC.

Schulte-Rüther, M, Markowitsch, HJ, Fink, GR & Piefke, M 2007, 'Mirror neuron and theory of mind mechanisms involved in face-to-face interactions: a functional magnetic resonance imaging approach to empathy'. *Journal of Cognitive Neuroscience*, vol. 19, no. 8, pp. 1354-72.

Searle, JR 2002, 'Why I am not a property dualist', *Journal of Consciousness Studies*, vol. 9, no. 12, pp. 57-64

Searle, JR, Dennett, DC & Chalmers, DJ 1997, *The mystery of consciousness*, Granta, London.

Seeley, WW, Carlin, DA, Allman, JM, Macedo, MN, Bush, C, Miller, BL & Dearmond, SJ 2006, 'Early frontotemporal dementia targets neurons unique to apes and humans', *Annals of Neurology*, vol. 60, no. 6, pp. 660-7.

Seymour B, Singer T & Dolan R 2007, 'The neurobiology of punishment', *Nature Reviews Neuroscience*, vol. 8, no. 4, pp. 300-11

Shermer, M 2011, *The Believing Brain*, Times Books, New York, NY.

Shizgal, P & Conover, K 1996, 'On the neural computation of utility', *Current Directions In Psychological Science*, vol. 5, no. 2, pp. 37-43.

The Silence of the Lambs 1991, motion picture, directed by Jonathan Demme, USA, Orion Pictures.

The Simpsons 1989-present, television series, Created by Matt Groening, 20th Century Fox, USA.

Singer, T, Seymour, B, O'Doherty, J, Kaube, H, Dolan, RJ & Frith, CD 2004a, 'Empathy for pain involves the affective but not sensory components of pain', *Science*, vol. 303 no. 5661, pp. 1157-62.

Singer, T, Kiebel, SJ, Winston, JS, Dolan, RJ & Frith, CD 2004b, 'Brain responses to the acquired moral status of faces', *Neuron*, vol. 41, no. 4, pp. 653-62.

Singer, T, Seymour, B, O'Doherty, JP, Klaas, SE, Dolan, RJ & Frith, CD 2006, 'Empathic neural responses are modulated by the perceived fairness of others', *Nature*, vol. 439, no. 7075, pp. 466-9.

Singerman, H 1999, *Art Subjects: Making Artists in the American University*, University of California Press, Berkeley, CA.

Slumdog Millionaire 2009, motion picture, directed by Danny Boyle, UK, Celador.

Smith, ER & Neumann, R 2005, 'Emotion processes considered from the perspective of dual-process models', in LF Barrett, PM Niedenthal & P Winkielman (eds.), *Emotion and consciousness*, The Guilford Press, New York, NY.

Smith, GM 1999, 'Local emotions, global moods, and film structure', in C Plantinga & GM Smith (eds.), *Passionate views: film, cognition and emotion*, The Johns Hopkins University Press, Baltimore, MD.

Smith, GM 2003, *Film structure and the emotion system*, Cambridge University Press, Cambridge.

Smith, M 1995, *Engaging characters: fiction, emotion, and the cinema*, Clarendon Press, New York.

Smyth, MM, Morris, PE, Levy, P & Ellis, AW 1987, *Cognition in action*, Lawrence Erlbaum Associates, Hillsdale, NJ.

Sommersby 1993, motion picture, directed by Jon Amiel, USA / France, Canal +.

- Sommerville, JA & Decety, J 2006, 'Weaving the fabric of social interaction: Articulating developmental psychology and cognitive neuroscience in the domain of motor cognition'. *Psychonomic Bulletin and Review*, vol. 13, no. 2, pp. 179-200.
- Sophie's Choice* 1982, motion picture, directed by Alan J Pakula, UK / USA, Incorporated Television Company.
- Stam, R 2000, *Film theory: an introduction*. Blackwell Publishers, Malden, MA.
- Stekelenburg, JJ & de Gelder, B 2004, 'The neural correlates of perceiving human bodies: an ERP study on the body-inversion effect', *NeuroReport*, vol. 15, no. 5, pp. 777-80.
- Sternberg, RJ & Horvath, JA 1999, *Tacit knowledge in professional practice: researcher and practitioner perspectives*, Lawrence Erlbaum Associates, Mahwah, NJ.
- Stillings, NA, Weisler, SE, Chase, CH, Feinstein, MH, Garfield, JL & Rissland, EL 1995, *Cognitive science: an introduction*, MIT Press, Cambridge, MA.
- Stirling, JD, 2000, *Cortical functions*, Routledge, London.
- Stone, VE 2006, 'Theory of mind and the evolution of social intelligence', in JT Cacciopo, PS Visser & CL Pickett (eds.), *Social neuroscience: people thinking about thinking people*, MIT Press, Cambridge, MA.
- Svensson, L 1997, 'Theoretical foundations of phenomenography', *Higher Education Research & Development*, vol. 16, no. 2, pp. 159-71.
- Swann in Love* 1984, motion picture, directed by Volker Schlöndorff, France / West Germany, Gaumont.
- Swarup, V 2005, *Q & A: a novel*. Scribner, New York, NY.
- Tamietto, M & de Gelder, B 2010, 'Neural bases of the non-conscious perception of emotional signals', *Nature Reviews Neuroscience*, vol. 11, no. 10, pp. 697-709.
- The Terminator* 1984, motion picture, directed by James Cameron, UK / USA, Hemdale Film.

- Thagard, P 2005, *Mind: introduction to cognitive science*, MIT Press, Cambridge, MA.
- Thaler, RH & Sunstein CR 2008, *Nudge: improving decisions about health, wealth, and happiness*, Yale University Press, New Haven, CT.
- Tikka, P 2008, *Enactive cinema: simulatorium eisensteinense*, University of Art and Design, Helsinki.
- The Tin Drum* 1979, motion picture, directed by Volker Schlöndorff, West Germany / France, Argos Films.
- Toom, A 2012, 'Considering the artistry and epistemology of tacit knowledge and knowing', *Educational Theory*, vol. 62, no. 6, pp. 621-40.
- Trainor, LJ, Shahin, A & Roberts, LE 2003, 'Effects of musical training on the auditory cortex in children', *Annual of the New York Academy of Science*, vol. 999, pp. 506-13.
- Trainspotting* 1996, motion picture, directed by Danny Boyle, UK, Channel Four Films.
- Trigwell, K 2000, 'A phenomenographic interview on phenomenography', in JA Bowden & E Walsh (eds.), *Phenomenography*, RMIT University Press, Melbourne.
- Tucker, AW 1983, 'The Mathematics of Tucker: A Sampler', in *The Two-Year College Mathematics Journal*, vol. 14, no. 3, pp. 228-32 viewed: 06 February 2013, Stable URL: <http://www.jstor.org/stable/3027092>
- Turvey, MT, Shaw, RE, Reed, ES & Mace, WM 1981, 'Ecological laws of perceiving and acting: in reply to Fodor and Pylyshyn', *Cognition* vol. 9, no. 3, pp. 237-304.
- Ullman, MT, Corkin, S, Coppola, M, Hickok, G, Growdon, JH, Koroshetz, WJ & Pinker, S 1997, 'A neural dissociation within language: evidence that the mental dictionary is part of declarative memory, and that grammatical rules are processed by the procedural system', *Journal of Cognitive Neuroscience*, vol. 9, no. 2, pp. 266-76.
- The Unbearable Lightness of Being* 1988, motion picture, directed by Philip Kaufman, USA, The Saul Zaentz Company.

- Van Elk, M, Van Schie, HT, Van Den Heuvel, R & Bekkering, H 2010, 'Semantics in the motor system: motor-cortical beta oscillations reflect semantic knowledge of end-postures for object use', *Frontiers in Human Neuroscience*, vol. 4, art. 8, pp.1-21
- Van Overwalle, F 2009, 'Social cognition and the brain: a meta-analysis', *Human Brain Mapping*, vol. 30, no. 3, pp. 829-58.
- Van Overwalle, F & Baetens, K 2009, 'Understanding others' actions and goals by mirror and metalizing systems: a meta-analysis', *Neuroimage*, vol. 48, no. 3, pp. 564-84.
- Von Neumann, J & Morgenstern, O 1944, *Theory of games and economic behavior*, Princeton University Press, Princeton, NJ.
- Wallenstein, G 2009. *The pleasure instinct: why we crave adventure, chocolate, pheromones, and music*, John Wiley & Sons, Hoboken, NJ.
- Webb, G 1997, 'Deconstructing deep and surface: towards a critique of phenomenography', *Higher Education*, vol. 33, no. 2, pp. 195-212.
- Wenger, EC 1998, *Communities of practice: Learning, meaning and identity*. Cambridge University Press, Cambridge.
- Whitehead, AN 1929, *Process and reality*, Harper, New York, NY.
- Windahl, S, Signitzer, B & Olson, JT 1992, *Using communication theory: an introduction to planned communication*, Sage Publications, London.
- Windmann, S, Kirsch, P, Mier, D, Stark, R, Walter, B, Güntürkün, O, et al 2006, 'On framing effects in decision making: Linking lateral versus medial orbitofrontal cortex activation to choice outcome processing', *Journal of Cognitive Neuroscience*, vol. 18, no. 7, pp. 1198-211
- Winkielman, P, McIntosh, DN & Oberman L, 2009, 'Embodied and Disembodied Emotion Processing: Learning From and About Typical and Autistic Individuals', *Emotion Review*, vol.1, no. 2, pp. 178-190.

- Winston, JS, Strange, BA, O'Doherty, J & Dolan, RJ 2002, 'Automatic and intentional brain responses during evaluation of trustworthiness of faces'. *Nature Neuroscience*, vol. 5, no. 3, pp. 277-94.
- Withnail & I* 1987, motion picture, directed by Bruce Robinson, UK, Handmade Films.
- Wittgenstein, L (trans. Anscombe, GEM) 1953, *Philosophical Investigations*, Macmillan, New York.
- Wonderland* 1999, motion picture, directed by Michael Winterbottom, UK, BBC.
- Yantis, S 1992, 'Multielement visual tracking: attention and perceptual organization', *Cognitive Psychology*, vol. 24, no. 3, pp. 295-340..
- Yates, C, Partridge, HL & Bruce, CS 2012, 'Exploring information experiences through phenomenography', *Library and Information Research*, vol. 36 no. 112, pp. 96-119.
- Zahn-Waxler, C & Radke-Yarrow, M 1990, 'The origins of empathic concern', *Motivation and Emotion*, vol. 14, no. 2, pp. 107-30.
- Zahn-Waxler, C, Radke-Yarrow, M, Wagner, E & Chapman, M 1992, 'Development of concern for others', *Developmental Psychology*, vol. 28, no. 1, pp. 126-36.
- Zak, PJ, Kurzban, R & Matzner, WT 2005, 'Oxytocin is associated with human trustworthiness', *Hormones and Behavior*, vol. 48, no. 5, pp. 522-7.
- Zappavigna, MS 2005, 'Tacit knowledge in communities of practice', in E Coakes & S Clarke (eds.), *Communities of practice in information and knowledge management*, Information Science Reference, Hershey, PA.
- Zappavigna, MS 2013, *Tacit Knowledge and Spoken Discourse*, Bloomsbury, London, UK.
- Zebrowitz, LA, Luevano, VX, Bronstad, PM & Aharon, I 2009, 'Neural activation to babyfaced men matches activation to babies', *Social Neuroscience*, vol. 4, no. 1, pp. 1-10.
- Zamir, S 2000, 'Rationality and emotions in ultimatum bargaining', paper presented at *Conference Des Annales*, Paris, 19 June 2000, viewed 18 February 2013,

<http://www.ma.huji.ac.il/~zamir/paper43.pdf>

Zimmermann, MG & Eguiluz VM 2005, 'Cooperation, social networks, and the emergence of leadership in a prisoner's dilemma with adaptive local interactions'. *Physical Review E* vol. 72, no. 5 Pt 2, pp.1-15.

Zweig, J 2007, *Your money and your brain: How the new science of Neuroeconomics can help make you rich*, Simon & Schuster, New York, NY.

Ethics Application Ref: (5201200489) - Final Approval

Via email: 13/08/2012, at 9:43 AM

Dear Prof Millard,

Re: ('The words that make pictures move: identifying and evaluating an implicit model of viewer empathy in the tacit knowledge of screenwriting practitioners')

Thank you for your recent correspondence. Your response has addressed the issues raised by the Faculty of Arts Human Research Ethics Committee and you may now commence your research.

This research meets the requirements of the National Statement on Ethical Conduct in Human Research (2007). The National Statement is available at the following web site:

http://www.nhmrc.gov.au/files_nhmrc/publications/attachments/e72.pdf.

The following personnel are authorised to conduct this research:

Mr Steven Vidler
Prof Kathryn Millard

NB. STUDENTS: IT IS YOUR RESPONSIBILITY TO KEEP A COPY OF THIS APPROVAL EMAIL TO SUBMIT WITH YOUR THESIS.

Please note the following standard requirements of approval:

1. The approval of this project is conditional upon your continuing compliance with the National Statement on Ethical Conduct in Human Research (2007).
2. Approval will be for a period of five (5) years subject to the provision of annual reports.

Progress Report 1 Due: 13th August 2013
Progress Report 2 Due: 13th August 2014
Progress Report 3 Due: 13th August 2015
Progress Report 4 Due: 13th August 2016
Final Report Due: 13th August 2017

NB: If you complete the work earlier than you had planned you must submit a Final Report as soon as the work is completed. If the project has been discontinued or not commenced for any reason, you are also required to submit a Final Report for the project.

Progress reports and Final Reports are available at the following website:

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/forms

3. If the project has run for more than five (5) years you cannot renew approval for the project. You will need to complete and submit a Final Report and submit a new application for the project. (The five year limit on renewal of approvals allows the Committee to fully re-review research in an environment where legislation, guidelines

and requirements are continually changing, for example, new child protection and privacy laws).

4. All amendments to the project must be reviewed and approved by the Committee before implementation. Please complete and submit a Request for Amendment Form available at the following website:

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/forms

5. Please notify the Committee immediately in the event of any adverse effects on participants or of any unforeseen events that affect the continued ethical acceptability of the project.

6. At all times you are responsible for the ethical conduct of your research in accordance with the guidelines established by the University. This information is available at the following websites:

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Yours sincerely

Dr Mianna Lotz
Chair, Faculty of Arts Human Research Ethics Committee

Endnotes

1. For those who might find such things illuminating, I will provide here a brief background to my training and professional practice, and some indication of how this path has led to this thesis. It is by no means obligatory reading. Those who are less concerned with such things may return to the introductory chapter, post haste.

I came to writing first as an actor. From my training in this discipline (a three year stint at NIDA, Australia's premier acting school) I learned to seek incremental improvement of my creative work through iterative reflection and adjustment (blessed with the immediate feedback of a live audience as a barometer).

A core component of my training as an actor was textual analysis of dramatic works for performance. This involved a healthy dose of the classics - Shakespeare, Sophocles, Moliere - and the moderns - Chekhov, Miller, Shepard, Beckett. One quickly learns that what must be analysed and grasped in order for a performance (and a production) to truly come alive is somewhat more subterranean than the more overt socio-political thematics that one has learned to identify and discuss in university. There is a subtle current that ebbs and flows beneath the words and action, within the images and between the actors as they relate. This ephemeral and invisible current, one soon learns, is the life force of the dramatic performance work. It is the difference between a work that is resonant and alive and compelling, and one that is inert and dead and enervating. The current is not explicitly there on the page. And yet, somehow, it is there. It was my fascination with this phenomenon that led me to begin writing... to see if I too could perhaps create pages that contained this invisible current.

I studied first as a playwright (again at NIDA), and wrote several plays, one of which was performed by the NIDA company. But as an actor I also worked in, and loved, film. I wanted to learn to write for that medium. So I continued my training at VCA / Swinburne, a rather eccentric *conservatoire* course where students were given some antiquated equipment and set loose upon the world. I wrote and directed a short film, *Fishing*, a lyrical, non-linear piece exploring a political prisoner's memories of torture. Desiring some more rigorous insight into the craft of screenwriting, I enrolled in a Screenwriting course at AFTRS. This course regurgitated large chunks of undigested Syd Field, which was not to my taste. So I looked farther afield and enrolled (on a fellowship) in a number of screenwriting and filmmaking courses at UCLA, and inveigled myself into an internship as a script developer with Atman Entertainment - who would later produce *Fight Club* (1999). My observation was that the expert screenwriters and filmmakers with whom I came in contact had an understanding of the workings of narrative film that went far beyond the simple rubrics and platitudes offered by the screenwriting manuals. They seemed to be attuned to the subtle current I described earlier, and each in their own way had mastered some aspect of it. I also noticed that while some experts were conscious of this and spoke articulately about its workings, others seemed to be working almost completely intuitively and were unable, or unwilling, to put their thinking about practice into words.

While there I collaborated with writer Nick Enright (Oscar nominee for *Lorenzo's Oil* (1993)) on a screenplay based on his play *Blackrock*. I later directed the film of *Blackrock* (1997), which was critically well received, premiering at Sundance and being nominated for five AFI awards including best film. The screenplay also won the Australian Writers' Guild Award for best script in any category.

I also continued with my own writing during this time. In collaboration with screenwriter and actor Nicholas Hammond, I developed and wrote the mini-series *A Difficult Woman* (1998), which was produced by the ABC. The project was a political thriller / psychological drama about a woman coming to question her core beliefs. Our screenplay utilised a non-linear / magic realist narrative strand, but this was cut from the final release version. Nevertheless, this project was also critically well received and went on to win the Silver World Medal for best mini-series at the New York Festivals.

Wishing to continue deepening my understanding of how narrative film works, I next turned to film theory. Any theory underpinning my practice at that point was inchoate. But I found little in film theory that clarified it for me... until I started reading the cognitive film theorists (Bordwell, Carroll, Grodal). Their approach to narrative film opened up a whole new way of looking at my practice. This in turn led me to the cognitive neuroscientists (Damasio, LeDoux, Montague). This was the real light bulb moment. Here was a way of illuminating the implicit theory that I now recognised as underpinning the practice of expert screenwriters. And yet, the more I read the cognitive film theorists, the more I realised that they seemed to shy away from the full implications of the ecological approach of the cognitive neuroscientists. They had galloped, gloriously free, through the fields of neuroscience... only to balk at the last fence. It was at once exhilarating and frustrating. This thesis was born of that exhilaration and that frustration.

2. This may go some way towards explaining film theorists' reluctance to engage directly with screenwriters' own accounts of their process; the film theorist who explores a screenwriter's understanding of how narrative works, hoping to find a neat computational model, is likely to be met instead with a messy connectionist account of a flexible and contingent process that is governed to an inconvenient degree by unconscious cognitions (Zappavigna 2005; Brede 1994; Hotton & Yoshimi 2011).

3. The dualist stance adopted by the cognitive film theorists surveyed for this project is not strictly Cartesian - which implies a kind of substance dualism. It is more accurately categorised as a form of intentionalist property dualism. Garvey (2011, p300) notes that "since Cartesian ... dualism is widely believed to be indefensible, it is possible to speak in practical terms of the mind-body problem as a contest between some form of physical reductivism ... on the one hand, and, on the other, some form of property dualism". This summarises, fairly accurately, the disagreement between cognitive film theorists (intentionalist property dualism) and neuroscientists and expert screenwriters (materialist monism). It is beyond the scope of this research project to explore this philosophical schism to the extent that it deserves. It remains as a tantalizing avenue of possible future research.

4. Collins dictionary [online] defines scientism as: "the uncritical application of scientific or quasi-scientific methods to inappropriate fields of study or investigation". This research project does not attempt to adjudicate on the question of whether cognitive film theory is scientistic. My present point is simply that when cognitive film theorists selectively apply some of the findings of neuroscience and choose to disregard others on the basis of a philosophical rather than a neuroscientific argument, they blur disciplinary boundaries in a way that is arguably "quasi-scientific" (Lefebvre 2013).

5. For an explanation of the sample size and criteria, see Chapter Two.

6. It is also a logically flawed *argumentum ad populum*. By this logic, in the mid 1980's when there was a greater number of academic interpreters who, like Ines Hedges, agreed on a Freudian interpretation of narrative films, then that interpretation was correct. This Freudian interpretation continued to be correct until there were a greater number of cognitivists who agreed on a constructivist interpretation, at which time it became incorrect. Of course, at some point there must have been an equal number of Freudians and constructivists... at which moment we must

accept that both interpretations - although mutually exclusive - were equally correct. Is it not simpler, and more logical, to accept that an author has intentions which she may imperfectly understand or realise? Polanyi argues that it is. And he gives us tools with which we can identify those intentions and assess the degree to which they have been understood and realized by the practitioner.

7. Stating the structure this way (as the practitioner acting upon the prompting of two questions, *why to proceed* and *how to proceed*) also highlights the communal nature of tacit knowledge within communities of practice, as both questions are ultimately informed to a significant degree by the beliefs and traditions held by the community of practice in which the practitioner is situated. The practitioner's understanding of context and their beliefs about the purpose of the end product (*why to proceed*) are influenced by and absorbed from shared tradition within a particular community of practice. And the practitioner's methods and means (*how to proceed*) are commonly passed on from person to person in a master-apprentice tradition within communities of practice (Baumard 1999). This indicates that Polanyi's model is congruent with the notion of tacit knowledge as a communally held asset embedded in tradition.

8. This notion corresponds to Bourdieu's (1977) 'habitus' and Csikszentmihalyi's (2014) 'systems model of creativity', which I discuss later in the thesis.

9. Investigation of the degree to which these conceptions and practice are socially constructed will have to await some other researcher. However, it should be noted that the approach and methodology adopted by this research study is entirely compatible with the notion of habitus (in both its interpretations). Indeed, the Dynamical Systems approach offers a promising research framework for integrating declarative knowledge, tacit know-how and habitus. The value of the Dynamical Systems approach is that it allows the researcher a conceptual framework "for how qualitatively distinct states or events may emerge from continuous processes, for how there may be multiple possible causes for the emergence of such qualities, and for how all contributions to a system may matter" (Schoner 2007, p4).

10. Relaxation System and Dynamical Systems also provide a comprehensive and accurate model of the cognitive processes through which a viewer of narrative film perceives, evaluates and conceptualizes the salient pieces of data in the torrent of information and experience of the unfolding cinematic narrative.

11. It is my hope that this study will inspire other similar studies by demonstrating the value of explicating and evaluating tacit knowledge of filmmaking practitioners. Such studies need not be restricted to screenwriters. Studies of directors, producers and cinematographers could all be conducted along similar lines, and contribute to a truly inclusive cross-disciplinary investigation of how the experience of viewing narrative film is created. Methodologies for eliciting and evaluating tacit knowledge could be refined, and collaboration between researchers across multiple disciplines of theory, practice and science could be explored.

12. Other graduates of the Arts Institute Bournemouth include VFX artist Paul Campion, screenwriter Joe Cornish, and directors Edgar Wright, Sara Sugarman, Bille Eltringham and Suri Krishnamma.

13. Actually the film starts with Jamal successfully answering a question on a game show - and *then* cuts to him being tortured. But this juxtaposition, I would argue, serves to augment the mystery rather than diminish it.

14. Frank Daniel was a Czech filmmaker-turned-teacher who founded the film school at Columbia University, and for many years was head of the USC film school. Daniel identified three main "tensions" that may be created by the screenwriter within the audience, which serve as the

basis of the audience's engagement with the narrative: The Tension of Mystery / Curiosity, Dramatic Tension and Ironic Tension. These three tensions are still taught as an essential part of the Sequence Approach to screenplay structure, based on Daniel's work (Gulino 2004).

15. A brief note on the use of the word "model" throughout this thesis. The term "model" is commonly used in various disciplines, including film theory, psychology, and philosophy, to refer to a hypothetical structure proposed to explain the workings of an entity or phenomenon. According to the Stanford Encyclopedia of Philosophy, a model is "a representation of a selected part of the world (the 'target system')", employed as a tool "to find out about the causal relations that hold between certain facts or processes" within that system (Frigg & Hartmann 2012, p1).

Within the disciplines explored in this research project, hypothetical models are routinely proposed to explain processes and predict outcomes within various "target systems". In this research study the target system I explore is viewer engagement with character in narrative film. As part of this exploration I compare the hypothetical structures of this target system that have been proposed or employed by film theorists, screenwriters and cognitive neuroscientists. Each of these groups approach the target system through the lens of a different discipline and thus at times use different language to refer to their descriptions. Film theorists and philosophers are inclined to use the word theory – although they also use the term model interchangeably. However, the Stanford Encyclopedia of Philosophy notes a crucial distinction between theories and models, pointing out that "A theory may be incompletely specified in the sense that it imposes certain general constraints but remains silent about the details of concrete situations, which are provided by a model". Cognitive neuroscientists, perhaps conscious of this distinction, tend to prefer the term model. Screenwriters rarely refer to the target system as either theory or model, for the simple reason that for them it is not hypothetical – it is a real and inherent part of the imperatives of their practice. Indeed, as their knowledge of this practice is largely tacitly held, they rarely formulate explicit representations of it at all. For the sake of consistency, and to avoid confusion, I believe it is desirable throughout this thesis to refer to all of these hypothetical structures by a single term. Given that the aim of this thesis is to specify 'details of concrete situations' (i.e. the forms and devices through which viewers engage with characters in narrative film) it is thus more appropriate for me to refer to the various competing representations of this target system as models. Further, the term 'model' is also commonly employed as a useful referent for a 'family' of theories that have substantial elements in common, while not being absolutely unanimous on every point (e.g. "computational models of cognition"). The term will be used in this thesis in that sense also, and should not be interpreted as an indication of homogeneity among the individual theories grouped into any such categories.

These uses of the word are consistent with the use adopted across these disciplines by authors including Grodal (2009), Bordwell (2007), Smith (1995), Plantinga (1999), Currie (2008) Damasio (2010), Ledoux (1998), Minsky (2007) Bourdieu (1977) & Csikszentmihalyi (2008).

16. An interesting side observation I noted while conducting my interviews is that as the processing becomes more explicit, so too does the screenwriter's articulation of their use of it in their creative practice. It is poetically apt that the first phase of unconscious, visceral processing should be apprehended and applied predominantly through intuition and gut feeling, while the higher order, rational pre-frontal cortex processing of social / ethical concerns should be understood explicitly and applied in a rational and calculated manner.

17. This theory of emotion holds that emotions are caused by our interpretation of *physiological* (bodily) reactions. James and Lange concluded separately that, when an event occurs (e.g. seeing a bear), physiological responses, such as increased heart rate, muscular tension, etc. occur first, followed by a gross motor reaction (e.g. running away) from which the subject then interprets an emotion (e.g. fear). Thus according to this theory, we are afraid because we run. This theory is a distant precursor to current theories of embodied emotion and

thought. While similar, it is as distinct from current theories as a Model T Ford is from a Lexus.

18. Carroll's problematic thought experiment is inspired by an equally problematic study on undifferentiated affect by Schachter and Singer (1962) which I critique later in the chapter.

19. Of course we may distinguish between emotions which are conscious and non-conscious. (Just as we may distinguish between basic and social emotions, positive and negative emotions or those which provoke action and those which do not.) But this distinction is imposed from without. It is not inherent within the emotions themselves. Consciousness of the cause of an emotion may precede or follow the experience of the emotion, it may be misattributed or it may be absent altogether. But in any case the physiological manifestation of the emotion and the phenomenological experience of it remain unaltered.

20. It seems to me that cognitive film theory's project to compile a "full theory" of screen narrative that genuinely "deserves the name ecological" cannot be achieved until this conundrum is resolved. Perhaps a viable middle ground could be found in something like Searle's stance of "biological naturalism" (Searle 2002).

21. So thorough is Grodal's neglect of his own model of empathy in *Embodied Visions*, that a search of his key term "Cognitive Identification" returns zero matches. And a search of his key term "Empathetic Identification" returns just one match – a passing reference to Berys Gaut's definition of 'identification' (in Plantinga & Smith 1999).

22. Indeed, if we wished to more accurately reflect the dual / recursive nature of cognitive processing, as pointed out by Adolphs (2003) and LeDoux (1996) we should call the model the "PEMA / CEMA flow model" to reflect the reality that the pathway of Perception, Emotion & Motor Action is followed by the pathway of Cognition, Emotion & Motor Action. Actually, if we were to be thorough, we should also include the motivational system (MS) – which is also recruited in both pathways and is crucial to how we experience and behave in the world, and how we experience and engage with visual fictions... so the name of the model ought really be extended to become the "PEMAMS / CEMAMS flow model". This would be more accurate. But not quite so catchy.

23. This refutation of simulation is incompatible with Grodal's PECMA flow model. In the light of this refutation it is difficult to be certain how one is meant to interpret Grodal's unqualified citation of Smith's model in *Embodied Visions* (Grodal 2009, p201).

24. Murray Smith is not alone in making this claim. Other cognitive theorists, including Plantinga and Carroll make similar assertions: "it is because we perceive... characters as virtuous – that we cast our moral allegiance with them" (Carroll 1999, p45).

25. Smith's model also raises problems when considering the single character drama. According to his model, in the absence of "other characters within the fiction", the character exists in a moral vacuum, and the viewer should be incapable of making any "evaluation" "on the basis of" which we could "adopt an attitude of sympathy" (Smith 1995, p188).

26. It is well documented that ASD sufferers characteristically have greater than normal difficulty comprehending narratives - so positing such a model of cognition as the basis of how we comprehend narrative is doubly problematic (Baron-Cohen 1999, cited in Davis et al 2006).

27. This sequence seems to be something of a staple reference among film theorists, and as such presents an opportunity for a range of interesting experiments. It would be instructive to recut and remix the sequence in a number of versions, each removing or minimising the element claimed

by a particular theorist as the prime mover of empathy – and then to screen the adjusted sequence and measure the viewer's response.

28. The Oxford Dictionary distinguishes empathy from sympathy: "*People often confuse the words **empathy** and **sympathy**. **Empathy** means 'the ability to understand and share the feelings of another' (as in both authors have the skill to make you feel empathy with their heroines), whereas **sympathy** means 'feelings of pity and sorrow for someone else's misfortune' (as in they had great sympathy for the flood victims).*"

29. This notion, commonly accepted among cognitive theorists, that some form of Theory of Mind identification must precede empathic identification, does not stand unchallenged. The standard test for Theory of Mind, the "False Belief" test, demonstrates that children do not develop Theory of Mind until the age of 3 or 4 years. However, other developmental psychology studies show that children as young as 2 years demonstrate pro-social empathetic behaviors: "they show (a) the cognitive capacity to interpret, in simple ways, the physical and psychological states of others, (b) the emotional capacity to experience, affectively, the state of others, and (c) the behavioral repertoire that permits the possibility of attempts to alleviate discomfort in others" (Zahn-Waxler & Radke-Yarrow 1990)

30. This notion is problematic. Consciousness is like a torchlight in a darkened room. It is capable of illuminating only a narrow set of objects at any one time. A wide range of factors determine whether any particular object will be illuminated at any particular time. The nature of an object itself does not determine that it will be illuminated. And the nature of an object is not changed simply because it is illuminated. Objects (internal and external to the organism) exist in their own right. The nature of their existence is not fundamentally altered by our consciousness of them. Yet this is precisely the process that cognitive film theorists insist occurs when we become aware of one particular class of object - our own emotions. We would not accept such an extraordinary claim being made regarding any other object. Why must we stand for emotions to be thought of and discussed in this shoddy way? The qualities of things (internal or external to our organism) are inherent in the things themselves. Their nature is not changed by our awareness or lack thereof.

31. Plantinga (2009) argues that because these processes are recursive and piggy-back and ultimately blend, that it is unhelpful to make any distinction in the first place. I believe that he is mistaken. Only by making the kind of "fine distinctions" that he eschews (p101) are we able to dissolve the chicken-and-egg paradox that plagues his model – in which character engagement is reliant on narrative concerns, which is reliant on character engagement, which is reliant on narrative concerns, which is reliant on ... well, you get the point.

32. It is important to note that while Adolphs' flow chart breaks up into four phases and the Perception-Action 'Russian Doll' Model divides into just three levels, the two models are not contradictory. They simply apply different criteria to identify demarcation. As Adolphs is at pains to point out, these phases are not entirely discrete: the boundaries are blurred, and processes overlap and recursively fold back on each other. In Adolphs' model divisions between phases are dictated by the brain regions involved in each phase of processing, while in the Perception-Action model the divisions are dictated by the level of cognitive penetrability. Several processes in Adolphs' model contain natural subdivisions within them where processing becomes increasingly recursive – allowing for a higher level of reappraisal. It is at these junctures of increasing recursiveness that the Perception-Action Russian Doll model places its demarcation between levels.

33. Grodal's argument here is also logically flawed, employing a 'false dichotomy'. Just because a cognition is non-conscious, it does not follow that it must be "just an illusion". It is disappointing that Grodal, who argues so cogently against post-structuralist theory's misapplied

notions of illusion, should use the term so carelessly here.

34. Such apparently altruistic action is not exceptional. De Waal (2008) reports anecdotal evidence of bonobos and chimpanzees exhibiting altruistic behaviors towards conspecifics and out-species individuals in distress, including birds and human infants.

35. The subject (in this case the observing monkey) experiences activation of the same brain areas as the object (the monkey receiving the shock) with the sole exception of the pain receptors (Singer 2006). So I do not literally feel your pain.

36. Psychopaths symptomatically exhibit the same kind of “emotion blindness”, not just for disgust but potentially for the full spectrum of emotions. The psychopath may witness the most vivid display of another's fear, pain, disgust or distress yet fail completely to recognise it (Blair, Mitchell & Blair 2005).

37. “Blindsight refers to remarkable residual visual abilities of patients with damage to the primary visual cortex (V1). Recent studies revealed that such residual abilities do not apply only to relatively simple object discriminations, but that these patients can also differentially categorize and respond to emotionally salient stimuli” (Hamm et al 2002)

38. Studies confirm that even high-functioning individuals with autism (who by definition experience a deficit in the ability to empathise) characteristically display extremely poor narrative comprehension. Davis, Dautenhahn, Nehaniv & Powell (2000, p1) report that “Research has shown a deficit in the comprehension and creation of narrative in children with autism”.

39. Von Economo (spindle) neurons are also implicated in processing social awareness, empathy and self awareness. Neurologist William Seeley studied the brains of patients with fronto-temporal dementia - whose symptoms include loss of social skills, empathy and self-awareness – and discovered that over 70% of the spindle neurons in the ACC had been destroyed, while other types of neuron remained unscathed (Seeley et al 2006).

40. In game theory all participants are called players. Games may explore single players (“non-cooperative”) or groups (“cooperative”). They may explore a single “once and-for-all” decision (“Strategic” games), or throughout a series of decisions (“Extensive” or “Iterated” games). In addition, games may model situations in which players possess complete information about the other player's moves (“perfect information”), or situations in which their information is incomplete (“imperfect information”) (Osborne & Rubinstein 1994). Games may be “simultaneous games” in which players make their decision at the same time, or “sequential games” in which players make their decisions by turn (McNulty 2009). Games may be “symmetric” in which players have the same options, or “asymmetric” in which each player has different options (Prisner 2009).

41. The fleeing man is African American. Walsh is Caucasian. Ethical considerations aside, the strategy employed by the filmmakers here is an effective one. Out-group members are more likely to be perceived as a threat. (Cunningham et al 2004, cited in Frith & Singer 2008, p3883) In chapter six I introduced studies demonstrating that course categorisation of face features such as gender and emotion can take place at latencies as short as 100ms (Adolphs 2003). These course perceptual routes are largely automatic and thus not predominantly subject to self regulation.

42. The viewer mirrors the character's movements at a level below the threshold that creates actual movement. From this below-threshold mirroring, we recognize others' intentions. If these intentions are driven by a motivated desire for an outcome that is relatable to the viewer, then the viewer's motivational dopamine system will be triggered – mirroring the desire of the character. In the example cited of Walsh ducking away from the shotgun blasts and pursuing his assailant,

both are familiar motor repertoire actions driven by a relatable desire. We have all flinched away from a danger, and chased after a fleeing opponent (albeit probably in less dramatic circumstances).

43. This dissonance can be used effectively to provoke the viewer to be curious about the character's response. But as this is an intellectual rather than an affective provocation, it is used sparingly by expert screenwriters. Dissonance can also be used effectively to provoke viewers to question their own responses - however, their bias is towards their existing response so for the viewer to shift affective response to realign with the character requires that a strong empathetic alignment with the character has already been created. This strategy is typically used late in the narrative and, again, sparingly.

44. In support he cites a study by psychologist Steven Yantis, which tested the ability of subjects to keep track of a subset of shapes in a moving array. Yantis found that subjects were able to accurately track three objects, could manage less successfully to track four, and consistently failed to track five (Yantis 1992).

45. That framing effects apply to interpretations of narrative is ably illustrated by the simple fact that most studies of framing effects use narratives to frame the options for which subjects' preferences are being tested. For example, the classical problems demonstrating this phenomenon the 'trolley problem' and the 'epidemic problem' are presented as a narrative recount of the problematic scenarios (Kahneman 2011).