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Triangulation Revisited

Murray Smith

Whenever a new paradigm, research program, or methodology enters the scene, sparks are apt to fly – there might even be blood. So it has been with the emergence of *neurocinematics*, the study of cinema using the tools of neuroscience. In this essay I will try to make sense of some of the controversies arising from the emergence of this new approach, and reconcile at least some of the views of the disputing parties. My primary strategy will be to look at Vittorio Gallese and Michele Guerra's *The Empathic Screen* (2019) from the perspective of *triangulation*, the interdisciplinary framework that I introduce and defend in my *Film, Art, and the Third Culture* (2017/20).

The framework of triangulation quite explicitly incorporates neuroscientific evidence as one form of evidence that might enrich our understanding of cinema, and quite explicitly engages with the work of Gallese and Guerra (though mostly in the form of articles preceding *The Empathic Screen* – partly because the book was not available in translation at the time that I was working on *FATC*, but also in order to engage with the neuroscience on its own terms). How do the arguments of *The Empathic Screen* appear in the context of efforts to triangulate cinematic experience, through the integration of phenomenological, psychological, and neuroscientific evidence?

To answer that question, I need first to say something more about triangulation as a method. It goes like this. Whenever we want to achieve an understanding of the workings of the human mind, we have three sorts of evidence at our disposal:

- phenomenological evidence pertaining to the felt character of particular types of mental state
- psychological evidence pertaining to the role or function of particular types of mental state (for example, perceiving, recalling, imagining, planning, etc)
- neuroscientific evidence pertaining to the brain activities that materially underpin the psychological role and phenomenological feel of mental states

Each of these types of evidence is matched with one of the three complementary levels of analysis of the mind that the model of triangulation posits: any given mental state can be characterized in terms of its role in the psychological architecture of the mind, its neural underpinning, and its phenomenology. (It's important to acknowledge, of course, that by no means all mental states have any kind of feel; a great many mental states – perhaps even the majority – are non-conscious. But since many states *are* consciously experienced and thus have a qualitative character – not least those at stake in our experience of films and in aesthetic experience more generally – we need the phenomenological as a dimension in the model.)

Any one of the levels of analysis and their attendant types of evidence might be the starting point for an enquiry into or hypothesis about some mental phenomenon, and none have absolute priority over the others. Rather, the point of the method of triangulation is to assess the extent to which the different types of evidence converge with one another. As I put it in *FATC*, "Triangulation involves locating or 'fixing' the [explanandum, or phenomenon to be explained] in explanatory space by (to follow the metaphor) projecting lines from each body of evidence, and following them to see where they intersect" (2020, 78). In positive cases

where we find such mutually supporting intersection, we have *consilience* – the "jumping together" of separate bodies of evidence that increases our credence in each of them taken individually. In this way triangulation goes beyond weaker forms of pluralism which accept different types of evidence and methods of enquiry, but without any systematic attention to the way in which those strands of evidence hang together (or fail to do so).

Gallese and Guerra don't cite or explicitly sign up to triangulation as a method, but as I note in my foreword to their book (2019, vii), it is certainly possible to view *The Empathic Screen* through the lens of triangulation. And there is significant overlap and resonance between one of the core arguments in *The Empathic Screen*, concerning the role of embodied simulation in film viewing, and a similarly salient argument in *FATC*, concerning the kind of imagining prompted by film, and the idea of 'imagining from the inside' in particular. Looking at these parallel arguments, then, will allow us to explore a case study in triangulation.

Before diving into the detail of this case study, it might be helpful to say a little more about the role of neuroscience within the method of triangulation. Consider the case of facial recognition – a perceptual process integral to film viewing as well as ordinary social intercourse. Neural evidence that the emotional networks of the brain are active during facial recognition supports the hypothesis that 'emotional tone' plays a role in facial recognition – that facial recognition is not just a matter of the 'cold' computation of the size, character, and relations among facial features, but involves an overall judgement as to whether the face as a whole (emotionally) rings true. The condition of *prosopagnosia* – the inability to recognise familiar faces *as* familiar, as possessing the right emotional tone – involves dysfunction of the brain networks underpinning facial recognition. In turn this lends initial support to the hypothesis that character recognition, of which facial recognition is typically an important

element, also involves an integral emotional dimension. Character recognition is not merely a frosty cognitive prelude to the real emotional action occurring at the levels of alignment and allegiance.

We might also consider the history of the concept of empathy, and the role of neuroscience in relation to it, especially given the salience of the concept in Gallese and Guerra's project – their book, after all, is called *The Empathic Screen.* In one of the earliest theoretical elaborations of *Einfühlung*, Theodor Lipps noted that "We do not know how or why it happens that a glimpse of a laughing face, or a change in that contour of the face, especially the eyes and mouth, which we associate with the phrase 'laughing face' should stimulate the viewer to feel gay and free and happy; and to do this in such a way that an inner attitude is assumed" (quoted in Smith 1995/2022, 98-9). Mirror neurons provide part of the answer to Lipps' question, identifying one of the neural mechanisms that underpin the felt experience and psychological process that is empathy – or more modestly, mirror neurons plausibly "contribute to (though they cannot magically accomplish) an understanding of the actions and intentions of other agents" (Clark 2014, 106) . In schematic terms, the discovery of mirror neurons – in which, of course, Gallese played an important role – answers the mechanistic "how" question, while an evolutionary argument might tell us "why" that psychological capacity and neural architecture evolved at all: what selection pressures in the environment of human evolution was it a response to? It this just this kind of concilient convergence that triangulation seeks to identify.

One of the most visible and vocal advocates for consilience between the humanities and the sciences has been Steven Pinker, who makes an important point about *the way* in which we ought to bring to bear the fruits of scientific knowledge and methodology on questions and

phenomena traditionally addressed in the humanities. "[T]he promise of science is to enrich and diversify the intellectual tools of humanistic scholarship, not to obliterate them," writes Pinker. "[T]here can be no replacement for the varieties of close reading, thick description, and deep immersion that erudite scholars can apply to individual works" (2013, xx). I imagine that all parties to the neurocinematics debate would assent to Pinker's claim. The trickier question is to specify how, exactly, the scientific methods are to come together with the humanistic ones. Developing Pinker's argument, what I will focus on in what follows is the ineliminable role of close critical analysis in the process of triangulation.

This is an issue to which I pay some attention in *FATC*. There I argued that

> a film is constituted by the artistic choices and decisions— the acts— of the filmmaker. In that sense, a film is evidence of the filmmaker's behaviour, behaviour from which…we can reasonably— if not always straightforwardly or infallibly— infer their intentions, beliefs, and attitudes…In this way, attention to artworks, though apparently at a remove from the levels of triangulation, always takes us back to them. Artworks are the products of feeling and thinking human agents; it should be no surprise then that our understanding and appreciation of them is shot through with the language of the mind and may draw upon the resources of phenomenology, psychology, and neuroscience" (2020, 79-80).

The emphasis here is on showing how the levels of triangulation, singly or in combination, are typically implicit in critical analysis. But here I want to reverse this emphasis, by asking: what does detailed critical analysis *add* to triangulation? Instead of focusing on the way in which phenomenological, psychological, and neuroscientific assumptions are implicit in an

analysis, this question invites us to consider how critical analysis amplifies, sharpens, or in some other way augments triangulation as a method. And by tackling this question we can test the hypothesis that at least some of the work being done by critical analysis in this respect is irreducible – we cannot obtain the benefits of close critical scrutiny while circumventing it.

A further reason for thinking about the role of critical analysis within, or in relation to, triangulation is that close critical analysis forms something of bridge connecting disparate approaches to film otherwise separated by very different assumptions. Not all enquiries into film treat close analysis as an important method, but a great many do. Cognitivists, semioticians, phenomenologists, psychoanalysts and even some Deleuzians might all agree that close attention to the formal and stylistic details of films plays a crucial role in grasping the way they work.

One way of thinking about the contribution of neuroscience to triangulation is as providing the "gross anatomy" of the psychology of cinema. For example, Gallese and Guerra's neuroscientifically-grounded theory of embodied simulation provides a general account of human perception of and action in the world, including our interaction with other human agents, one which (on their view) inescapably informs the way films are made and consumed; they write of 'an incorporated continuity [that] exists between our reality and what we see on the screen,' notably adding that '[film] style serves this kind of continuity (or, sometimes, what programmatically counteracts it)' (2019, 90). In this respect their argument resembles a range of other arguments about the psychology of cinema made across the history of film theory, including psychoanalytic arguments about the "apparatus" of cinema (Metz 1977), the "New Look" psychology which underpins David Bordwell's approach (Bordwell 1985), the

Gibsonian psychology adopted by Joseph Anderson (1994), the phenomenological framework employed by Julian Hanich (2018), and the nascent "predictive coding" account of the mind (Clark, 2015), which has begun to attract the attention of scholars in the arts, if not film per se (Kukkonen, 2020). The same may be said of other neurocinematic approaches, such as those associated with Uri Hasson and his colleagues (Hasson, 2008), and with Talma Hendler and Gal Raz (Raz et al, 2012). In each case, a general perspective on the nature of cognition functions as a foundation for an understanding of how cinema works on and with our minds. And in the particular accounts of cognition that we are most interested in here, neuroscience plays a starring role.

On each of these accounts, what we stand to learn from the background psychological theory (whether or not it is informed by neuroscience) is an understanding of those aspects of the mind which are activated when we watch films, or more particularly, what perceptual and cognitive capacities are evoked by specific filmic techniques or clusters of technique. Thus, we can illuminate how the mechanisms of perceptual attention respond to certain patterns of composition and cutting, deepening our understanding of a practice like continuity editing. Gallese and Guerra's experiments on camera framing and movement fall into this category. What they argue is that, all other things being equal, different kinds of camera movement – with fixed framing regarded as a kind of zero-degree camera movement – have differential effects on our experience of the action represented. '[W]e took as the starting point the idea that each different type of movement by which a camera films an action implies a particular type of physical relationship between what appears on the screen and the person observing it,' Gallese and Guerra write. 'According to our hypothesis, these specific relationships are essentially motor related; the presence of the camera and how it induces different responses

from the embodied simulation mechanisms produced by the activation of the mirror neurons in the observer's brain' (2019, 105-6).

How the contrasting effects of different kinds of camera movement on our experience are to be characterized is a delicate matter, and one of the sources of controversy in the debates around neurocinematics. But, to stick to the present point, the role of the neuroscience (within the method of triangulation) is to provide one source of preliminary, defeasible evidence that – again, all other things being equal – different choices in framing and camera movement make a difference to our experience, and to suggest *how* our experience varies with different kinds of framing and movement.[1] The answer that Gallese and Guerra offer, in brief, is that camera movement generally, and especially Steadicam movement, taps into our propensity for embodied simulation – in particular, our embodied simulation of movement. Shots exhibiting genuine motion cues are more likely than zoom shots and shots with fixed framings to elicit embodied simulation, in the form of motor mimicry of the motion implied by such shots, experienced by the spectator as an imagined movement within and through the space of the action. That is how I understand the notion of 'immersion' in this context.

But a gross anatomy of cinematic psychology will not deliver a histology – a micro-anatomy – of cinema. In other words, no amount of psychology or cognitive neuroscience will substitute for the detailed exploration of cinematic technique, whether focussed on practices characteristic of certain traditions, genres, or directors, or on the specific features of particular films. Some of the commentaries on *The Empathic Screen* are instructive in this respect. Both David Bordwell and Malcolm Turvey query the generality of Gallese and Guerra's claims regarding camera movement, arguing that powerful emotional effects can be generated by sequences, and entire films, which eschew camera movement. Detailed analysis

plays a vital role in both essays. In Bordwell's analyses of *Summer at Grandpa's* (1984) and *River of No Return* (1954), which aim to show that camera movement is not essential to affective impact or cinematic craft, all the heavy-lifting is done by the close critical analysis. Within these analyses, the New Look psychological assumptions – concerning, for example, the pervasive role of inference, from perception to higher-order cognition – play a background role; an important background role, but a background role nonetheless. The analytic part of triangulation as a method can't be replaced by the psychological theory, whatever the content of that theory (and whether or not it is informed by neuroscientific considerations).

On a theoretical level, Gallese and Guerra seem to assume that what Gregory Currie labels the 'Imagined Observer Hypothesis' (1995, 167) is correct – that our basic engagement with films takes the form of imagining seeing the sights, sounds, and events of the storyworld from a vantage point, defined by the position of the camera, of an imagined observer within that world. On this hypothesis, then, while empathy can be generated with fully-fledged characters, its most basic and pervasive form is with the camera-conceived-anthropomorphically – as a perceiving agent situated in the storyworld. As Bordwell suggests, however, even if such empathic mirroring plays an important role – and he notes that he has in fact assimilated a version of this idea within his own theory – it cannot be the whole story, since in addition to simulating the states of characters in the story space, we must also be processing that story space through the design of the film, as an observer outside the diegesis rather than within it. Of *River of No Return*, for example, Bordwell holds that '[t]he image is a visual display we search, not a space we imagine ourselves interacting with' (Bordwell 2020). On Bordwell's view, this holds more generally for our encounters with film; even where empathic mind-reading and related forms of 'imagining from the inside'

play a role, they must do so as one part of the spectator's work as a surveyor of a composed moving image display.

Nonetheless, it is plausible to think that as we watch films, we move between these modes of imagining constantly and sometimes rapidly, now imagining from the inside, now from the outside – the exact rhythm of this movement varying with the design of the film. Note that this is distinct from the Imagined Observer Hypothesis, according to which the spectator's activity and experience is wholly defined by imagining seeing the action of the film as if from the vantage point of an observer, whose field of vision is represented by the camera's perspective. On the view being defended here, while films *can* prompt us to imagine seeing, or more generally perceiving and experiencing, the action in the diegesis, they may not do so, and any such imagining must take place in the context of an 'external' imaginative grasp of the action – 'imagining that' certain events have taken place without imagining perceiving them – and an understanding the work as an artefact.

We might be reminded, at this juncture, of Turvey's concerns about the mirror neuron theory of understanding and the conception of empathy attached to it. He points out that, in a number of ways, our understanding of action or an agent depends on a great deal more than a simulation of their occurrent cognitive and affective state can plausibly provide. In a nutshell, a deep understanding of an action or an agent relies on contextual knowledge, some of which the agent themselves might lack (such that, in some ways, an informed observer might have a richer understanding of an agent's actions than the agent themselves possesses) (2020b, 29, 34). Turvey in general assimilates my account of 'imagining from the inside' with other accounts of film spectatorship inspired by mirror neuron theory, including Gallese and Guerra's. But my account, at least, is perfectly consistent with his emphasis on the

importance of context, as derived from an external perspective, for the full understanding of agency. For example, in *Film, Art, and the Third Culture* I argue that "basic emotion expressions are not hermeneutically self-sufficient, since any such expression can only be fully understood in context; to understand an expression of anger properly, we have to know the object of the anger" (176). And, still more pertinently, I conclude "Imagining from the Inside" with the statement: "The emotions of central imagining [≡ empathy] add yet more zest to the already emotion-laden broth of acentral imagining [≡ sympathy] in which they float, *though they do not make a soup alone*' (426, emphasis added here).[2] Imaginings "from the inside" never stand alone in my account; I've always positioned empathy as an element *within* a wider framework of understanding – "the structure of sympathy" – rather than as the exclusive or foundational form of engagement with and experience of film fictions.

For this reason, the role of mirror neurons (and at the psychological level, embodied simulation) is more minimal in my theory of character engagement than it is in Gallese and Guerra's account of embodied simulation.[3] Note also that in addition to the "mindreading" role of the mirror system emphasized in Turvey's exposition of the theory of embodied simulation – its role in contributing to our understanding of the actions and emotions of other agents – I also distinguish and emphasize its "mindfeeling" role. Even where we are able to (or in some ways, can only) *understand* an agent's state of mind through other routes, the mirror system doesn't become 'redundant' (as Turvey argues, 2020b, 28, 32) to the extent that it serves this distinct role in allowing us to *feel* the agent's state as "an imagined, self-directed emotion…[in *Dead Man Walking* (1995), for example] imagining being on death row and dreading one's own execution" (Smith 1997, 426), rather than simply imagining and understanding such a situation "from the outside". Mirror neurons may be neither necessary nor sufficient for the understanding of characters, and some narrative works will in any case

eschew it, as Turvey suggests. But neither of these facts undermine the significance of empathic "mindfeeling" as a distinctive type of emotional response central to and typical of mainstream narrative filmmaking.

Summer at Grandpa's in fact offers a nice example of the alternation between imagining from within and without: [more set up of the scene] immediately prior to the rescue of the young girl by the older woman comes a moment where one of the boys looks back, nervously wondering about the whereabouts of the girl that he and his pals have spurned. His anxious look is rendered by a moving POV shot – a wobbly handheld shot moving left and then right, the train suddenly appearing from screen right at this point. Cut to a reaction shot of the boy looking on, wrapping the appearance of the train within a POV structure, and stressing its significance for the boy. In other words, the sudden and startling appearance of the train *for us* – emphasised by Bordwell – is mediated by the sudden and startling appearance of the train *for the boy*, with whom we are aligned at this moment (Smith 1995/2022).

This kind of structure is apt to elicit our 'imagining from the inside' the boy's experience, or so I've argued (Smith 1997, 2017/20). The claim might very well be put in terms of Gallese and Guerra's account of embodied simulation, a theory which puts particular emphasis on the embodied nature of the response, and buoys up the account with neural evidence not available at the time that the early accounts of mental simulation were formulated. (Note that the claim here is that the discovery of mirror neurons provides defeasible evidence for empathy – evidence that functions alongside the existing phenomenological and psychological evidence for empathy, within the framework of triangulation – not definitive proof of empathy.) On this view, the panning camera and POV structure draw us into this character's state of mind – via embodied simulation – at this point in the film, and the film is

designed to elicit such a response. The filmmakers want us to experience a jolt of the boy's fear for the girl. Affective empathy with the boy is a significant ingredient here, if not the foundation and dominant flavour of our experience – an overtone if not the principal effect of the montage of the sequence. And, to return to my key emphasis in this paper, close analysis of technique plays a crucial role in showing how the background (neuro)psychological theory gets traction on specific acts and instances of filmmaking, concretising and precisifying the way in which the theory applies to and sheds light on the film.

In his initial, online commentary on *The Empathic Screen*, Malcolm Turvey (2020a) discusses the famous crosscut sequence from *Strangers on a Train* (1951), in which Robert Walker as Bruno strains to retrieve a cigarette lighter from a storm drain while Farley Granger as Guy strives to conclude his tennis match. The role of this analysis in Turvey's account – to demonstrate that powerful affect can be created by film sequences without recourse to camera movement – mirrors the part played by Bordwell's analysis of the sequence from *Summer at Grandpa's* in his argument, for this sequence from *Strangers on a Train* too uses only minimal camera movement, and yet it is a paradigm of gripping suspense. Turvey is surely right that the dramatic impact of this sequence 'relies largely on still shots of Bruno's grimacing face as he reaches into the grate…and the faces of the referees and spectators at the tennis match' (2020). And so the sequence appears to act as a counterexample to Gallese and Guerra's claim that certain kinds of camera movement are the privileged tools for affective immersion in film, acting as the most powerful prompts for embodied, emotional simulation.

Perhaps Turvey underplays the significance of the subtle camera movement that is present in the sequence, however. Along with the unobtrusive reframings of the tennis players that he

mentions, there is what appears to be a handheld shot which pans rapidly between the two players – a rather unusual shot for the period – as well as two small but significant movements within the storm drain: a pull-out as the lighter slips from Bruno's fingers to a lower level, and a matching push-in as Bruno's hand edges closer to the lighter. Whether or not these camera movements work by triggering embodied simulation, their function is clearly expressive – the rough-edged handheld panning shot conveying the hectic pace of the tennis match, the pull-out and push-in mimicking Bruno's felt proximity to the lighter, as it first eludes him and then slowly comes within his grasp. In this way, the push-in towards the lighter in *Strangers* resembles the much more ostentatious track towards the key in *Notorious*, the star exhibit in the opening section of Gallese and Guerra's chapter on camera movement in *The Empathic Screen*.

The scene from *Strangers* also features a number of extended shots of Bruno's grasping fingers – redolent of the earliest mirror neuron studies, in the early 1990s, featuring macaque monkeys grasping objects while their peers observe them doing so (Di Pelligrini 1992; Gallese and Guerra 2019, 3). Indeed, I have analysed that very sequence in the light of the theory of embodied simulation (the earliest published version of that analysis appearing in Smith 2008). Relatedly, *The Empathic Screen* also includes a chapter entitled "Faces and Hands," devoted to exploring the ways in which embodied simulation might be elicited by facial expressions and bodily gestures of humans. (The opening still and analysis in *The Empathic Screen*, of the donkey Balthasar's eye in close up in *Au Hasard Balthasar* (1966), additionally hints at the possibility of currents of empathy running between members of different species.) Recall also the important role of the reverse shot of the boy's face in the sequence from *Summer at Grandpa's* in my analysis above – the cut from the shot of the fast-

moving train to the boy's stricken face being key to the way that sequence aligns us with the character and invites us to imagine his state of mind from the inside.

Taking all of this into account, then, it's important to acknowledge, on the one hand, that Gallese and Guerra's theory is not narrowly tied to camera movement. On the other hand, to return to the central point in the present discussion, detailed critical analysis plays a vital and ineliminable role in pinpointing *how* film technique may work to elicit embodied simulation. One of Gallese and Guerra's case studies in "Faces and Hands" is Jean-Luc Godard's *Une femme mariée* (1964), a film which showcases, in certain key sequences, immobile framings of faces and limbs. But Godard's deployment of these expressive appendages is very different to Hitchcock's, and that difference can only be fully grasped by careful critical analysis. Gallese and Guerra proceed on the basis that close-ups, especially of hands and faces, in general intensify 'the multimodality of our interaction with the movie' and reinforce 'the spectator's haptic and tactile resonance vis-à-vis the image on the screen' (2019, 140 and 150). But as their discussion suggests, the 'resonance' in Godard's film is as different from that created by Hitchcock as it is from that created by Jan Švankmajer – another filmmaker they examine – even though close-ups are important to all three filmmakers. Critical analysis is fundamental to establishing how the underlying resource of 'haptic and tactile resonance' in response to close-ups is exploited very differently by the three filmmakers.[6]

All of this has a bearing on Turvey's argument that "Gallese and Guerra's theory at best explains our sense of involvement in the camera movement [in *Notorious*], not the scene it films" (2020). An alternative construal of *The Empathic Screen*'s theory of camera movement, which connects the camera movement with the dramatic content of the scene, is available however. To see this, we first need to connect Gallese and Guerra's arguments

about camera movement with their larger account, which considers embodied simulation in relation to cinematography, editing, and as we've seen, aspects of performance. And second, we need to stress that Gallese and Guerra's descriptions of the effect of the tracking shot posit a deep connection between the action of a film and the techniques which together represent it. In narrative films, we can hardly speak about these techniques without acknowledging their principal function, namely to represent the action.

Against this backdrop, the most charitable interpretation of Gallese and Guerra's claim about the tracking shot in *Notorious* is that it represents Alicia's anticipated movement through the room towards the key, which in turn acts as a prompt to us to 'imagine from the inside' Alicia's experience of her situation and this projected action. In other words, the tracking shot is a sophisticated elaboration of standard mobile POV, and it performs an equivalent function to the panning shot representing the boy's POV in *Summer at Grandpa's*. In each case, the filmmakers weave a subjective thread into the larger fabric of the design. In neither case is it plausible that we experience the sequence as a whole exclusively from the point of view of the agent whose experience is given special emphasis at a particular moment in the scene – Alicia, and the boy, respectively. But it is highly plausible that we are prompted to simulate the most salient movements, thoughts, and feelings of these characters in an embodied fashion – courtesy of the design of the film working with our mirror mechanisms – and that these imaginings form part of the mosaic of responses prompted by the sequences. And it is in turn by courtesy of detailed critical analysis that we are able to see how, exactly, the theory of embodied simulation – with its constituent neuroscientific, psychological, and phenomenological layers – illuminates and is illuminated by the design of the film. Such analysis provides, almost literally, the cutting edge of triangulation.[7]

Close analysis avoids – is a brake on – mischaracterizations of artistic practice (Turvey) – work into concluding paragraph?

Abstract: What is the relationship between detailed critical analysis, and the background assumptions made by a given theory of film spectatorship? In this essay, I approach this question by looking at Gallese and Guerra's *The Empathic Screen* in the light of the method of *triangulation* – the co-ordination and integration of phenomenological, psychological, and neuroscientific evidence, as set out in my *Film, Art, and the Third Culture*. In particular, I examine Gallese and Guerra's arguments concerning the role of camera movement in prompting immersive, embodied simulation, as well as critiques of these arguments from Bordwell and Turvey. I focus on the special, irreducible role of critical analysis in these arguments. Detailed analysis of film form and style plays an essential role, I argue, in demonstrating the plausibility (or otherwise) of the thesis advanced by Gallese and Guerra. Such analysis is where the rubber of theoretical assumptions meets the road of the material work.

Keywords: camera movement, critical analysis, embodied simulation, empathy, imagining from the inside, neuroscience, triangulation

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Wollheim

[1] I stress that the evidence is preliminary and defeasible to acknowledge that research into mirror neurons is ongoing, and debates on their character and function are far from settled. Gopnik (2007) presents a clear and concise argument for caution with regard to claims for and about mirror neurons; Turvey (2020a and 2020b) reviews some of the sceptical literature.

[2] 'Central' and 'acentral imagining' are terms of art drawn from Richard Wollheim, roughly equivalent to empathy ('feeling with') and sympathy ('feeling for') an agent. See Wollheim…and Smith (1995/2022, xx-xx).

[3] Perhaps, then, there is a problem with my incorporation of mirror neuron theory, to the extent that I don't adopt it fully, on its own terms. Or perhaps not; it seems there must be scope for types of exchange and

interaction between theories beyond wholesale endorsement and outright rejection. I leave aside that complex question about the nature of 'theory building' for another occasion.

[6] Turvey makes a related point regarding anthropomorphic camera movement in Godard's *Weekend*, noting how very different the effect of Godard's long tracking shots in this film are from similar shots used by more conventional narrative filmmakers (2020b, 42-3).

[7] My thanks too Michele, Vittorio, Ted…