

Film studies and the experimental method

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Abstract

Kuleshov's montage experiments have arguably been a key impetus for inauguration of film theory. Yet, although cognitivists – and even some continental film philosophers – have long appreciated the importance of neurological and psychological studies for understanding film, they rarely undertake experiments themselves. Instead, the work is primarily done by psychologists with special interest in film. This paper advocates for a deeper engagement with the experimental method in film studies, through design and/or criticism of specific experiments. First, to dispel the longstanding disciplinary skepticism against the method, I propose that arguments against cognitivism as methodologically imperialistic conflate the methods of analytic philosophy and scientific experiment. I then retort to strong (D.N. Rodowick) and moderate skepticism (Malcolm Turvey) about the experimental method. Against the former I argue that 1) some questions in film studies demand experimental answers, and 2) these experiments do not transform film studies into a science of film, and 3) inferences drawn from experiments are not incommensurable with humanistic inquiry. In the latter case I point out that although there is a difference between humanistic and natural phenomena and the principles behind them, there are some principles behind humanistic phenomena which are discoverable through experimental method. Second, to illustrate the importance of the experimental method I draw attention to the fact that a key assumption in film studies – that fiction films change our beliefs about the actual world – is an empirical claim still awaiting experimental proof. I specify how one experiment (co-developed with Ed Tan) testing this assumption might look. I also pay special attention to problems of replicability and representativeness at the crux of the current crisis in psychology. In conclusion, I invite film scholars to a close reading of the proposed experimental design

as a way of coming to grips with challenges, opportunities, and the potential blind spots of experimental work.

Keywords: belief, cognitivism, culturalism, empirical research, experimental method, fiction, humanities, scientific imperialism

It is well known that some of the earliest film theories owe a significant debt to the experimental method.[1] Hugo Münsterberg, author of *The Photoplay: A Psychological Study*, was a professor of experimental psychology at Harvard. Although Münsterberg did not conduct any experiments in the preparation for the monograph, by drawing attention to existing experiments he already then challenged the idea that the reason for the illusion of movement in cinema is the persistence of vision.[2] Only a few years later, Lev Kuleshov was conducting experiments of his own demonstrating unique psychological effects of montage.[3] Film scholars most often cite the experiment involving the juxtaposition of different shots with the neutral face of the actor Ivan Mozhukin and inducing what is known as the Kuleshov effect, i.e. the perception of different emotions in the target person's face depending on the emotional context of the paired shot.[4] But Kuleshov makes it clear that there were at least two other equally important experiments undertaken: the construction of a single body by splicing together close-ups of different women, and the establishment of creative geographies linking together disparate locales (say, Moscow and Washington) into a single place through eye-line shots.[5]

Despite these early strong connections, film studies would have to wait until the mid-1980s and the rise of cognitive film theory – which could be defined as focusing on cognitive aspects of film viewership – for the recourse to experimental method as a valuable source of knowledge to be recognised anew.[6] In a reaction to the then dominant Marxist-psychoanalytic-semiotic-inspired 'Grand Theory' of the era, in his pioneering work David Bordwell drew on experimental literature from psychology and cognitive science to prop up his model of a rational spectator engaged primarily in narrative comprehension.[7] Together with Bordwell, Noël Carroll followed up with a more general call for the best available science (together with analytic philosophy) to inform film theorising.[8] But it is not only cognitivists who have answered this call in their investigation of different mental phenomena including comprehension, attention, affect, emotion, empathy, perception, and embodied simulation alike.[9] Film scholars working in the tradition of

continental thought have also incorporated experimental findings in their writings. For instance, while Patricia Pisters builds on results from neuroscience to provide an explanation of the neuro-image as an addition to Gilles Deleuze's typology, Adriano D'Aloia and Ruggero Eugeni propose a discipline of neurofilmology, which should critically pair film studies and neuroscience.[10]

Yet even now despite more and more scholars recognising the value of scientific studies for film, film scholars themselves have rarely participated in experimental design and/or work. It is academics with interest in film but primarily trained as psychologists and working in related departments such as James Cutting, Vittorio Gallese, Uri Hasson, Tim Smith, Arthur Shimamura, and Ed Tan who have predominantly designed and conducted these experiments.[11] The involvement of film scholars has been much rarer. For instance, the emphasis of neurofilmology is in D'Aloia and Eugeni's own admission theoretical rather than experimental. In the same vein, out of six members of Hasson's team who proposed the new field of neurocinematics as the neuroscience of film only one comes from a film department.[12] Similarly, in an edited volume that outlines psychocinematics as the science of film aesthetics only one chapter boasts a collaboration between psychologists and film scholars, but even that partnership produces theoretical rather than experimental work.[13] Critically engaging with experimental studies and/or offering alternative interpretation of the studies' results rather than only citing the studies' conclusions as evidence of proposed theories is no more prominent among film scholars either.[14]

Murray Smith has recently made perhaps the most detailed case for naturalised aesthetics of film, a view which starts from the idea that humans are a part of a natural world and that therefore natural sciences must have a role in explaining film viewing.[15] Yet as Stacie Friend argues, even in Smith's case too great an emphasis has been placed on how natural sciences can help humanities and arts scholars.[16] A true collaboration, by contrast, would involve humanities and arts scholars engaging with scientists also on the scientists' turf, contributing back to sciences by playing at least some role in the design and interpretation of experimental studies if not in their execution. Perhaps exemplary of this type of work has been the collaboration between Vittorio Gallese, a psychologist involved in the discovery of mirror neurons, and Michele Guerra, a film scholar with a background in Italian cinema, who have jointly developed a theory of the importance of embodied simulation for film.[17] But again, this type of partnership is an exception rather than the

norm. It would certainly be difficult to find among film scholars somebody like Winfried Menninghaus, a literary scholar by training who has gone on to serve as the managing director of the Max Planck Institute for Empirical Science and to produce a string of co-authored experimental studies.[18]

It is in this context that this paper calls for a greater engagement with the experimental method in film studies both by arguing for the epistemic value of such work and by giving a practical example of what form such work might take. First, I tackle strong scepticism about the use of scientific method in film studies. I argue that recourse to the experimental method is neither methodologically imperialistic, reductive, nor incommensurable with competing paradigms. Second, I consider more moderate scepticism which rests on the division of non-normative natural and normative humanistic phenomena and categorises cinema as the latter. Although the natural/humanistic division can hardly be denied, and despite the existence of numerous humanistic phenomena which involve norms, I propose that there are still a number of film phenomena which deserve both empirical and experimental investigation.[19] Third, I present one such phenomenon – a widely held key assumption in film studies according to which fiction films change audiences' beliefs about the actual world. This assumption is not only empirical, but it also demands experimental confirmation. I conclude with an example of how practical cooperation with the scientific community might look like. Specifically, I outline how an experiment which answers the question whether fiction films influence real-world beliefs might be designed. It is such work, I suggest, that can not only bring clarity and deeper understanding to film scholars grappling with their disciplinary questions but also contribute to non-humanistic research and scientific knowledge in a true interdisciplinary spirit.

Strong scepticism

The most influential criticism against recourse to science in film studies derives from the dominant strand of continental philosophical tradition which has regarded science with a sceptical eye and as susceptible to ideology critique. In fact, much of film theory to this very day can still be called culturalist insofar it is primarily interested in some form of ideology critique. It is no surprise, then, that in film studies the scientific method and cognitivism as

its main proponent have been primarily accused of scientific or methodological imperialism. Next to *ad hominem* and ethical accusations based on negative connotations 'imperialism' evokes, scientific imperialism denotes a couple of distinct but interconnected epistemic charges, three of which I will focus on here.[20] First, scientific method is applied indiscriminately. Second, film theory is reimagined as science of film. Third, scientific method is not recognised as incommensurable with competing paradigms. These charges often appear in tandem. Take Warren Buckland's criticism of Carroll's work:

Because Analytic philosophy presents itself as objective, rather than acknowledging itself to be relatively autonomous, it is open to the charge of scientific imperialism, for its own norms and values are presented as the absolute standard against which to interpret the norms and values of other paradigms. [...] The radical opposition between Carroll and the contemporary film theorists is largely the result of this extreme interpretation of their arguments totally in terms of the norms of scientific reasoning.[21]

Other commentators echo the sentiment, emphasising specific charges. According to John Mullarkey, 'that so many voices have maintained a similar position [to Bordwell's cognitivism] (despite certain, relatively small internal differences) is a testament to the scientific method advocated for it by all'.[22] Robert Sinnerbrink, similarly, argues that for cognitivists 'film studies needs to be based on the best available science, preferably grounded in a philosophical naturalism, and capable of demonstrating cumulative results'.[23] D.N. Rodowick argues in the same vein that for cognitivists "theory" becomes indistinguishable from scientific methodology'[24] and that,

natural sciences inspire [the cognitivist] approach [...] [which] assumes there is an ideal model from which all theories derive their epistemological value. In turn, the value of film theory is measured by its historical progress toward commensurability with this ideal model.[25]

That this strong scepticism of the scientific method is by no means a minority view within film studies but that it rather resonates strongly within the discipline is evinced by the prizes – Katherine Singer Kovacs Essay Award and Katherine Singer Kovacs Book Award – bestowed in 2009 and 2015, respectively, by the Society of Cinema and Media Studies for the two Rodowick works cited here. The issue with strong scepticism, however, is that it is misplaced.

First, cognitivist film theory does not apply the scientific method indiscriminately. Already Buckland's comments should draw our attention to the

fact that cognitivists have other tools at their disposal in their theoretical work, including analytic philosophy. Contrary to the claims of strong sceptics, analytic philosophy is not the same as the scientific method and the latter is, as Malcolm Turvey reminds us, easily distinguishable from the former.[26] While both put great stock in testing hypotheses based on empirical evidence, and while both develop thought experiments, it is only the former that extensively deploys mathematical formulas, laboratory experiments, and predictive models. In short, the scientific method is usually assumed to mean the development of 'empirically falsifiable hypotheses that offer causal explanations of natural phenomena, testing those hypotheses, and refining them successively until one approaches an approximately true generalization that, if correct, will successfully predict the outcome of future experiments'.[27] By contrast, analytic philosophy devotes itself to conceptual analysis construed as the analysis of ordinary language phenomena in terms of definitions and/or identifying criteria while appealing to propositional factuality and the strict and often explicit observation of the rules of formally valid reasoning based on these propositions. In other words, although many analytic philosophers interested in film and partaking in the cognitivist project may cite scientific research in their theories, their primary mode of work remains conceptual analysis and hypothesis-testing through logical reasoning and the search for counterexamples.[28]

It is true that the cognitivists' goal is cumulative progress, but again such progress is not the exclusive provenance of natural sciences. Logic and mathematics have seen cumulative progress in the development of Aristotle's *Organon* and the invention of calculus, respectively. There has also been progress in philosophy. Not only has, historically, logic been a part of philosophy but so have natural sciences like physics, as the title of Newton's magnum opus evinces – *Mathematical Principles of Natural Philosophy*. Put differently, it was often the case that after the initial philosophical breakthroughs separate disciplines were established. Although it is the case that when it comes to big questions philosophy has stagnated as of late, this clearly cannot be because cumulative progress outside of natural sciences is impossible in principle.[29] And just to give one example from film studies, our theories of early film spectatorship have become increasingly more nuanced since the 1980s. Whereas traditional accounts invariably labelled the earliest film audiences as panicky and susceptible to believing that the recorded train was going to jump out of the screen, it has been convincingly and cumulatively argued

that the earliest audiences were far from naïve and that they actively participated in what has been termed a cinema of attractions.[30] Importantly, theories of early film spectatorship are not even predominantly cognitivist, demonstrating that other brands of film theory may produce cumulative results as well.

Second, cognitivists do not reimagine film theory as science of film. In perhaps the key programmatic statement of cognitivism, Carroll is clear about that:

I am presuming that what can be claimed for science may be claimed eventually for film theory. This does not mean that I think that film theory is a science, or that it can be or should be transformed into one, though I do think that there may be certain questions of film theory – perhaps concerning perception – that may be pursued scientifically.[31]

And this is far from mere posturing. Numerous analytic philosophers associated with cognitivism have produced work based solely on conceptual analysis and logical reasoning. George Wilson has, for instance, offered a systematic account of the status of fiction in cinema without recourse to the scientific method.[32] Other cognitivists, most notably Bordwell, have done the same for the history of film style.[33] Others still have theorised the status of fiction in early cinema by combining analytic philosophy and new film history.[34] In the same vein, Carroll himself has proposed a definition of cinema and argued against medium specificity without recourse to science.[35] And even in his critiques of competing theories helped by results from scientific experiments, his main method has remained what he describes as dialectical criticism: the critique of logical reasoning behind rival theories, the collation of as much empirical data as possible, and the proposal of explanations which account for more data than contending theories.[36] It is worth emphasising again that dialectical criticism so construed is by no means proprietary to natural sciences but can be found across the humanities.

The last type of imperialism I want to address here relates to the notion of incommensurability as articulated by the historian of science Thomas Kuhn.[37] Under this version of the charge, there is no way to decide between competing paradigms – let us call them cognitivism and culturalism – and therefore neither should even attempt to argue for the superiority over the other on any matter (something that cognitivism readily attempts to). As one film scholar puts it, '[e]ach paradigm wields a self-contained logic that the other cannot penetrate and each is therefore, ostensibly, as persuasive as the other'.[38]

We can immediately dismiss the more extreme version of this proposal under which the two paradigms are unintelligible to each other, for the above discussion demonstrates that representatives of both sides engage in debate and that, although they clearly disagree on many points, they recognise each other's key premises. We can also discount the literal reading of 'logic' in the above quote, for the strong sceptics and culturalist critics alike use standard norms of logical reasoning in their critique of cognitivism. Buckland, Mullarkey, Sinnerbrink, and Rodowick all write academic articles and monographs *arguing* against cognitivism by trying to demonstrate its epistemic shortcomings. They do not simply preach or order ethical injunctions like 'Thou shall not pursue cognitivism!'[39] The very fact that they describe cognitivism and the scientific method as imperialistic in various epistemic guises – indiscriminateness, disciplinary overtaking, and incommensurability – means that they are building a rational argument whose conclusion is that cognitivism is an epistemically problematic paradigm and whose implication is that culturalism should be preferred over it. In doing so they essentially partake in a form of dialectical criticism as outlined by Carroll. That their argument is invalid does not mean it is not an argument.

Alternatively, we can understand 'logic' more loosely to mean that these paradigms rest on premises which the other, although being able to conceptualise, dismisses a priori. According to the standard understanding, for the culturalist paradigm, or at least its Marxist-psychoanalytic-semiotic variant, it is that the subject is presumed to be irrational, whereas cognitivism assumes a rational subject.[40] Yet even this cannot be the case, for since the 1970s experimental research in psychology and behavioural economics has produced results which suggest that human behaviour is governed by cognitive biases in numerous cases.[41] Similarly, based on experimental results which point out the importance of emotional processes in decision-making,[42] cognitivists have moved away from 'cold cognition' modelled on computational information-processing to 'hot cognition' in which mental processes are understood to be affect-driven.[43] In other words, the experimental scientific method does not a priori assume either an irrational or a rational subject but strives to articulate the relationship between the two.

Moderate scepticism

In a more moderate sense, the talk of incommensurability may simply mean that not all questions of film theory can be answered by applying the scientific method. It is moderate sceptics who recognise that an a priori dismissal of the experimental method in film studies is untenable and allow that some questions may be answered with recourse to experiment. It is important to emphasise that some moderate sceptics are cognitivists, with Malcolm Turvey as perhaps the most notable film scholar among them. Where they differ from, let us call them science-enthusiasts such as Torben Grodal or Murray Smith, is in the classes of questions relating to film that science can hope to elucidate. We have already mentioned one class – questions concerning perception.

One influential idea in film studies has, for example, been the culturalist view that understanding photographic images and what they denote is something that has to be learned much like language.[44] An alternative cognitivist stance is that image recognition is a naturally endowed human disposition.[45] Framed like this, both claims are clearly falsifiable. And indeed, experiments have shown that children raised in an image-free environment readily recognised the referent of images when presented with them.[46] Similarly, it has been demonstrated that various animals including frogs recognise photographic images of referents and behave like they were real.[47] It is the experimental results, then, which provide data which can be used to decide between competing theories.

Then there are questions on which cognitivists of all colours, enthusiasts and sceptics alike, agree that experimental studies cannot help explain. These problems generally fall into three groups: ontological, evaluative, and interpretative. Ontological questions pertain to definitions of classes and categories: What is cinema? What is the distinction, if any, between moving images, cinema, and television? What are the conventions of different genres? What is the difference between fiction and non-fiction? What makes a film a work of art? Are features that make film a work of art common to other arts or specific to film? Evaluative questions concern the judgement of a work's artistic merits: What are the criteria, if any, for evaluating film's artistic traits? Are all evaluations merely subjective and thus equally valid? Should ethical considerations play a role in evaluation? Interpretative questions deal with

the work's meaning: What are the criteria for reconstructing a work's meaning? Are all interpretations equally 'right' and do they only differ in the level of persuasiveness or are there criteria to interpretative work?

The important thing about all these ontological, evaluative, and interpretative questions is that they are normative. For instance, we could conduct experiments to determine whether audiences construed *The Thin Blue Line* (Errol Morris, 1988) as documentary or fiction, whether they evaluated *The Birth of a Nation* (D.W. Griffith, 1915) positively or negatively, or whether they thought that Deckard from *Blade Runner* (Ridley Scott, 1982) is a replicant or a human. But these would only tell us about actual reception. The experiments would not be informative of what the *norms* are which determine whether something is fiction or not, whether something is artistically praiseworthy or not, and whether a film has this or that narrative meaning.[48]

Where moderate sceptics diverge from their cognitivist colleagues on the value of the experimental method is in the middle ground between ontological, evaluative, and interpretative questions on the one hand, and perceptual questions on the other. Turvey in particular makes two moderately sceptical points. First, some cognitivists' appeal to experimental method does not explain what it purports to. Second, the group of normative questions that experimental method will not help with includes significantly more than ontological, evaluative, and interpretative concerns.

In the first case, Turvey is sceptical that recourse to evolutionary psychology exemplified by Torben Grodal's approach and to mirror neuron theory, espoused most notably by Murray Smith and Gallese and Guerra, performs what it sets out to.[49] Grodal, for instance, predicts that because of evolutionary reasons men (who allegedly evolved relative promiscuity to increase their chances of procreation) prefer pornography while women (who supposedly evolved stronger emotional to increase their chances of securing a resource-providing mate for their offspring) prefer romantic films.[50] Yet Grodal produces little to no experimental evidence to support his prediction.[51] Concerning mirror neurons, Turvey points out that film scholars rarely address the fact that the scientific community has yet to reach a consensus on whether mirror neurons actually exist in humans, and if so whether they are responsible for understanding others' actions and emotions.[52] Importantly, these critiques do not claim that experimental method could not yield relevant results but rather that as it stands now more work needs to be done.

A related issue for the intersection of film and neuroscience, but one that Turvey does not address, is whether neuroscientific studies can yield much more than an 'implementation story'. According to sceptics, an account of how our mental responses to film are implemented in brain architecture of, say, how one brain system or region rather than another houses empathetic responses, does not tell us much about the experience and value of empathy in film viewing. In one version of this stance, David Davies argues that Murray Smith's understanding of empathy as conscious imagining of putting oneself in characters' perspective and experiences cannot be reduced to some underlying neurological mechanisms.[53] Smith responds that the a priori dismissal of neuroscientific studies is unwise because if our mental architecture rests on our brain architecture, 'we certainly cannot rule out learning things about the mind via its neural realization'.[54] Speaking generally, it is more sensible to refrain from a priori dismissals of the experimental method if there is at least a logical chance that the method might be useful.

This brings us to Turvey's second and bolder claim (echoed by Rodowick).[55] Turvey argues that one of the reasons why film theories unlike scientific ones are accepted without recourse to experimental results is because scientific theories deal with natural phenomena whereas film theories deal with humanistic ones:

Why is there a lack of systematic empirical research in film theory [...] [...] Considering the influence of Metz's and Bordwell's theories, why is it that so many of us so readily assent to them?

One reason, I suggest, is because unlike theories of the natural universe, film theories concern *what human beings already know and do*, and this points to a major difference between natural phenomena and cinema.[56]

Natural phenomena like photosynthesis or human vision are operational and independent of the knowledge of principles which govern them, and these principles are hidden from view. Humanistic phenomena like cinema or social conduct, by contrast, are partially constituted through principles which govern them – norms – and these norms are known. Moreover, we can properly engage natural phenomena without the knowledge of their principles. We do not need to know anything about how our visual and aural systems work to watch a film. But, according to Turvey, we cannot properly engage humanistic phenomena if we do not understand their norms: 'we cannot watch the same film if we do not know (as opposed to having a fallible hypothesis about) what a film is' including numerous of its aspects like 'what a cut as opposed to a dissolve is'.[57]

First, an empirical (as opposed to an experimental) point. Early film history has revealed that prior to the development of the continuity editing system dissolves were used much like normal cuts. Only during the Classical Hollywood era would they generally come to denote change in time and location. I suspect most viewers do not know much about early film history, meaning that for them dissolves generally denote time/location changes. However, if presented with early era films these films might at first be problematic, but with time viewers would gradually come to understand that dissolves are used much like normal cuts (that was at least my experience of familiarising myself with early cinema). It is difficult to see how this change does not count as revising what we thought we knew about the cut/dissolve distinction, i.e. as falsifying what turned out to be a hypothesis rather than knowledge. What we know we do is in this example acquired empirically. This is distinct from already having all the relevant information and then clarifying it in Turvey's vocabulary.

Second, although there is clearly a difference between natural and humanistic phenomena, and although this difference may have been the *historical* reason behind the lack of strong engagement with the experimental method in film theory, it is not a good *epistemic* reason for the situation to remain the same. It is true that despite having provided systematic experimental proof that the main mode of engagement with fiction film is formation, testing, and rejection of hypotheses and filling in informational gaps, many accept Bordwell's theory of fiction film spectatorship. And the acquiescence is most likely, as Turvey suggests, because it seems like a good description of what we know and do.[58] But whatever the reasons behind its acceptance, Bordwell's thesis is a falsifiable one about behaviour. For it to be accepted it should be experimentally tested whether audiences indeed primarily engage fiction film through hypotheses formation and narrative information seeking. In other words, unlike with ontological, evaluative, and interpretative questions, Bordwell is not speaking about norms, i.e. about how audiences *should* engage fiction films, but about how they actually engage fiction films. If it turned out that most viewers in fact were attuned to the fiction film only when their favourite actor was on-screen, spent the screening counting the number of cuts in the film, or generally daydreamed about unrelated matters throughout its duration, Bordwell's thesis would be disproved.

That humanistic phenomena have a normative dimension does not mean that their other dimensions fall outside the purview of experimental method.

Turvey admits this when he speaks of visual perception and neural decision-making centres playing a role in cinema practices. But considering that he gives a pass to film theory's general non-experimental approach to the film spectator and more importantly our acquiescence to it without experimental proof, he does not seem to accept that the value of experimental method also extends to more complex dimensions beyond looking at the screen or the binary decision on whether to go to the cinema or not. This more intricate domain could be termed viewer behaviour and would include questions like: What is the audiences' main form of engagement with film? Why do audiences watch films in the first place? Why do many audiences spend non-negligible amount of time and income on film? Within Turvey's framework of cinema as a humanistic phenomenon none of these questions would seem to deserve an experimental answer because, allegedly, we already know and do much about these things, so we only need to clarify what we know and do. My main point, however, is that oftentimes what we already know and do, or better yet think we know about what we do, is falsifiable. It seems reasonable to say that we watch films because they are enjoyable and that we spend our resources on them because they also provide opportunities for socialising, but however common-sense these claims sound we can (and should) still empirically test them against potential alternatives like films are in fact disagreeable, and most of paid film-viewing is a solitary activity.

To make a more general point, if Turvey's view of humanistic phenomena were right, then there would also be no need for experimental studies in sociology and social psychology, some of the key disciplines investigating humanistic phenomena, i.e. social behaviour. Just to give one famous example: Milgram experiments started from a common-sense hypothesis (what we already know and do) that Americans would not obey authority figures when asked to perform actions contrary to their personal conscience. Yet, the experiments showed that most experimental subjects readily complied with orders and administered electric shocks which, were they real, would be fatal.[59] In other words, there are humanistic phenomena (assumed) knowledge of which is falsifiable.

Because in his later work Turvey does allow for experimental studies of viewer behaviour such as genre-preference or the influence of anthropomorphic camera movement on immersion,[60] perhaps all he wants to say is that these studies are merely statistical much like analyses of average shot lengths. What they reveal are only general percentages of participants (not) obeying authority figures, finding films (dis)agreeable, watching films alone

or with others. They do not disclose any natural principles or laws. From this perspective,

while the method of statistical analysis may enable many important generalizations about cinema, as it does in the study of history, economics, and society, such generalizations are not akin to the explanatory principles discovered by natural theorizing.[61]

But why would it be important that what is discovered is like a natural principle? The claim of the experimental method in film studies need not be that it will find universally applicable natural laws but rather that it will provide replicable generalisations, and therefore, predictions. If experiments showed 80% of viewers primarily engaged narrative film through storyline hypothesis formation while the remaining 20% mostly daydreamed, would this be any less valuable for our knowledge of cinema than scientific meteorology is for weather forecasts when it predicts 80% chance of rain for tomorrow?

Moreover, why would we not describe findings of some studies of viewer behavior as undiscovered humanistic principles? If we discovered this 80%-20% split in narrative film engagement why could we not describe the finding as a principle – call it the ‘narrative film hypothesis-formation principle’ – in the sense that we can speak of the principle of obedience to authority revealed by Milgram experiments? Remember that for Turvey the key difference between principles governing natural and humanistic phenomena is not in whether they are universally applicable but whether they are discoverable or already known. But as we should readily admit, we do not already know what generalisations and/or principles obtain for viewers’ narrative film engagement, yet we seem to properly watch films regardless.[62]

An assumption in need of an experiment

As a final argument for a greater engagement with the experimental method, including experimental design and critical reading of it, I would like to conclude with not only a demonstration of how a core assumption in film studies has not been experimentally verified but also of how little interest within film studies there is for doing so. Moreover, this will also be an opportunity to outline how such an experiment would look like and, in turn, an illustration of one form of possible cooperation with scientists on a more equal footing.

The experiment, importantly, has not been undertaken, so there are unfortunately no results to discuss. Nevertheless, this will allow us to focus on the design – a step no less important than the interpretation of results.

One of the key questions in text-oriented film scholarship is that of representation. There is no shortage of works analysing the representation of sexuality, gender, race, ethnicity, minorities, disability, class, etc. in fiction film. The reason behind this extensive interest is the widely held assumption that ‘images of people on film actively contribute to the ways in which people are understood and experienced in the “real world”’[63]. Or, to quote Richard Dyer: ‘how social groups are treated in cultural representation is part and parcel of how they are treated in life’.[64] In short, then, one of the key assumptions in film studies is that film representations influence audiences’ attitudes, intentions, beliefs, and even behaviours relating to those representations.

The issue is that when it comes to fiction film, this assumption flies in the face of the ordinary understanding of fiction, which construes fiction precisely as something that, as opposed to nonfiction, generally speaking neither produces beliefs nor leads to action. For example, it is reasonable to claim that having seen *Citizen Four* (Laura Poitras, 2014) the audiences are to believe what is recounted in the film (how the director and other journalists met Edward Snowden in Hong Kong in 2013 to plan the revelation of US government secrets) and the film’s message (that the US government is spying on its own citizens) and that they should at least consider acting in line with these beliefs. Simultaneously, having watched *Inglorious Basterds* (Quentin Tarantino, 2009) it is also sensible to say that the audiences are *not* to believe that the events represented actually occurred *nor* that all Germans are Nazis, let alone act on these beliefs and stereotypes.

Yet despite these contradictory assumptions, film scholars have for the most part not been interested either in experimentally deciding between the assumptions or in the existing work on the problem. Interestingly, the latest meta-analysis of narratives’ persuasive effects evinces that while narratives in general are effective means of changing attitudes, intentions, beliefs, and behaviours the results for *fictional* narratives are less clear.[65] Put differently, the study concludes that further experimental work is required for establishing actual effects of fictional narratives and especially whether they generate beliefs or not. Furthermore, the study of fictional narratives does not say what role, if any, the medium plays in potential belief generation because it does not distinguish between video, audio, theatre, and verbal text narratives.

Moreover, in focusing only on the immediate effects the meta-analysis does not determine whether the effects persist over a longer period – another point assumed by film scholars.

I am not arguing that film scholars should be obliged to undertake experiments or meta-reviews of this type. But I am proposing that at the very least it should be acknowledged that some key disciplinary assumptions are precisely that – assumptions requiring experimental vindication.[66] Moreover, given film scholars' and theorists' expertise they are perfectly placed to engage in a fruitful conversation with scientists working on film. The following outline of an experiment is a result of one such conversation with the psychologist Ed Tan.[67]

Next to the outcome of the discussed meta-analysis that existing experimental work on fiction and beliefs is inconclusive, it should also be pointed out that these studies only focus on *changing* already held real-life beliefs on matters such as abortion or the environment.[68] There exists no research on the possibility of film fiction *creating* real-life beliefs. The idea, then, is to choose films about social groups which are not widely known to see whether information about these groups provided in the context of fiction film will generate real-life beliefs. The experiment, importantly, will not involve any scanning or recording of brain activities to secure that viewing conditions are as close as possible to standard spectatorship (including the screening of the whole film as opposed to clips and the absence of bulky scanning equipment).

We propose a two-group post-test only experimental design, meaning there are two subject groups (control and treatment) where only the latter is exposed to the relevant intervention and data is collected following the intervention. We measure for belief generation about a real-life indigenous group (the Tupinambá of Brazil) hitherto unknown to participants. To eliminate potential participants who might have knowledge of the Tupinambá we conduct a pre-test. The subjects are then randomly assigned to a control and a treatment group. Whereas the treatment group sees the fiction film *How Tasty Was My Little Frenchman* (Nelson Pereira dos Santos, 1971), presenting the Tupinambá as cannibals, the control group sees an unrelated fiction film. Both groups are informed they are watching fiction films. For the post-test both groups are presented with a questionnaire testing for any beliefs about the previously unknown indigenous group (question example: 'Do you believe that real-life Tupinambá are cannibals?'; answers offered: 'YES / NO / I do not know.').

In the second experiment we go further and compare narrative persuasion effects between fiction and documentary film. The idea is to apply the same design but this time for a documentary film about an indigenous group unknown to the participants. While the treatment group watches *First Contact: Lost Tribe of the Amazon* (2016) about the Tsapanawa tribe, the control group watches an unrelated documentary. Like in the previous experiments, at post-test both groups are presented with a questionnaire testing for any beliefs about the previously unknown indigenous group. Narrative persuasion effects are then compared across the two experiments to identify their relative strength.

The study should also seek to pre-empt standard methodological objections levelled against psychological experiments in a university setting as non-representative due to their small sample sizes and participants, which include only students. In two experiments by Hasson et al., for instance, all participants were college students, and the sample size was only 5 and 8, respectively.[69] In other words, the proposed study will ideally test at least 100 participants across adult age groups of varied ethnic backgrounds, and with approximately equal gender distribution, which should allow for a representative sample. We should also acknowledge the replication crisis in psychology and commit ourselves to periodically repeating the experiments to ascertain whether the results are one-off or whether they can be replicated (pedagogically speaking, attempts at replication can also be an excellent tool of introducing film students to the experimental method). There may be other concerns about this specific design. Perhaps we are naively assuming that there is such a thing as a new belief here, for it could be argued that any potential new beliefs are just variations of whatever beliefs are already held about indigenous tribes in general.[70] We can try to control for that with more pre-test questions such as: 'Is cannibalism in indigenous tribes typical?' Another objection might be that the chosen films are poor examples of films about not widely known indigenous tribes. In that case, we will ask the critics for better examples and use those. There may be further issues and blind spots, conceptual as well as ideological, ones that are difficult to address precisely because they are blind spots. But that is exactly the point. More film scholars engaging with the experimental method will help point out these blind spots to the designers and practitioners of studies.

This has hopefully been a taster in how an exercise in reading and critiquing experimental design might look like, as one form of engagement with the

experimental method. Even if it is critical, it is crucially not an a priori dismissal based either on the notions of scientific imperialism, mere implementation stories, or strict separation of humanistic and natural phenomena. In other words, such engagement does recognise at least the potential value of the experimental method for a range of film phenomena, something I hope this article will have demonstrated to be the case.

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Notes

- [1] To avoid potential ambiguity with the methods of experimental filmmakers, 'experimental method' here is meant as a shorthand for 'scientific experimental method'.
- [2] Münsterberg 1916.
- [3] Tsivian et al. 1996.
- [4] Prince & Hensley 1992; Smith 2017.
- [5] Kuleshov 1974, pp. 52-54. Given the lack of documentation on these studies it is admittedly unclear how close Kuleshov's experiments followed the scientific method. However, at least the first of these experiments is replicable: Calbi et al. 2019.
- [6] One notable exception is *Revue Internationale de Filmologie* 1954, special issue.
- [7] Bordwell 1985.
- [8] Bordwell & Carroll 1996; Carroll 2003.
- [9] Currie 1995; Bordwell & Carroll 1996; Grodal 2009; Plantinga 2009; Shimamura 2013; Nannicelli & Taberham 2014; Smith 2017. When I speak of 'cognitivists' I mean 'cognitivist film theorists' rather than cognitivist theorists of art more broadly.
- [10] Pisters 2012; D'Aloia & Eugeni 2015.

- [11] For a sample see Cutting et al. 2011; Hasson et al. 2008; Smith 2012; Shimamura 2013; Tan 1996.
- [12] Hasson et al. 2008.
- [13] Shimamura 2013.
- [14] For exceptions see Poulaki 2015; Smith 2017; Turvey 2020.
- [15] Smith 2017.
- [16] Friend 2018.
- [17] Gallese & Guerra 2020.
- [18] <https://www.aesthetics.mpg.de/en/the-institute/people/prof-dr-winfried-menninghaus.html>.
- [19] Experimental data is here construed as a subclass of empirical data. Historical archival research, for instance, yields empirical information but does not involve experimentation.
- [20] Slugan 2019b, pp. 25-28, 79-89.
- [21] Buckland 1989, p. 81.
- [22] Mullarkey 2009, p. 30.
- [23] Sinnerbrink 2011, p. 31.
- [24] Rodowick 2007, p. 97.
- [25] Rodowick 2014, p. 67.
- [26] Turvey 2007.
- [27] Nannicelli & Taberham 2014, p. 16.
- [28] Cf. Carroll 2008; Gaut 2010; Wilson 2011.
- [29] Chalmers 2015.
- [30] Gunning 1989; Tsivian 1994; Bottomore 1999.
- [31] Carroll 2003, p. 382.
- [32] Wilson 2011.
- [33] Bordwell 1997.
- [34] Slugan 2019a.
- [35] Carroll 2008.
- [36] Carroll 2003.
- [37] Kuhn 1970.
- [38] Geal 2015, p. 265.
- [39] For the discussion of the culturalists' ethical objections to cognitivism and the allegation of political conservatism see Slugan 2019b, pp. 23-28.
- [40] Mullarkey 2009, p. 97.
- [41] Kahneman 2011.
- [42] Damásio 1994.
- [43] Nannicelli & Taberham 2014.
- [44] Andrew 1984, p. 25.
- [45] Currie 1995; Carroll 2008.

- [46] Hochberg & Brooks 1962.
- [47] Bordwell 2015.
- [48] Admittedly, there are neuroscientists who make wild claims of discovery of 'laws of aesthetic experience': Ramachandran & Hirstein, 1999, p. 15. To my knowledge, among film cognitivists only Murray Smith (2018) suggests the importance of empirical studies for understanding norms.
- [49] Turvey 2014, 2020; Grodal 2009; Smith 2017; Gallese & Guerra 2020.
- [50] Grodal 2009, p. 56.
- [51] Turvey 2014, p. 53.
- [52] Turvey 2020. For criticism of mirror neurons see Hickok 2014.
- [53] Davies 2018.
- [54] Smith 2018, p. 126.
- [55] Turvey 2005; Rodowick 2007. I discuss Turvey's version because it is articulated in more detail.
- [56] Turvey 2005, p. 25, italics in the original.
- [57] Ibid.
- [58] Ibid., pp. 25-26.
- [59] Milgram 1974.
- [60] Turvey 2014, 2020.
- [61] Turvey 2014, p. 29.
- [62] It is true that, as Turvey puts it, there are intentions behind humanistic but not natural phenomena. But that we can and should further explain the principle behind the humanistic phenomena with recourse to intentions does not mean that the discovery of the principle is not useful knowledge, or that we need to analyse the intentions to use the discovered principle as a stepping stone for new knowledge.
- [63] Benshoff & Griffin 2011, p. 3.
- [64] Dyer 2013, p. 1.
- [65] Braddock & Dillard 2016.
- [66] Furthermore, film scholars also lack a theory of how fictions relate to real-life beliefs. Cf. Slugan 2021.
- [67] Tan has clearly provided much guidance here. Any remaining mistakes in the proposed design are, of course, solely mine.
- [68] Cf. Braddock & Dillard 2016.
- [69] Hasson et al. 2008.
- [70] I thank Winfried Menninghaus for this observation.