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Realism, Radical Constructivism, and Film History

Abstract

As a technology and an art form perceived to be capable of reproducing the world, it has long been thought that the cinema has a natural affinity with reality. In this essay I consider the Realist theory of film history put forward by Robert C. Allen and Douglas Gomery from the perspective of Radical Constructivism. I argue that such a Realist theory cannot provide us with a viable approach to film history as it presents a flawed description of the historian's relationship to the past. Radical Constructivism offers an alternative model, which requires historians to rethink the nature of facts, the processes involved in constructing historical knowledge, and its relation to the past. Historical poetics, in the light of Radical Constructivism, is a basic model of research into cinema that uses concepts to construct theoretical statements in order to explain the nature, development, and effects of cinematic phenomena.

1. Introduction

According to Robert Stam: 'In relation to the cinema, the issue of "realism" has always been present.'¹ As a technology and an art form perceived to be capable of reproducing the world, it has long been thought that the cinema has a natural affinity with reality. In this essay I consider the Realist theory of film history put forward by Robert C. Allen and Douglas Gomery from the perspective of Radical Constructivism. Radical Constructivism is an unconventional theory of knowing, in which knowledge is actively built up by the cognising subject and serves the organisation of experience rather than the discovery of a mind-independent reality. From such a position, I argue that such a Realist theory cannot provide us with a viable approach to film history as it presents a flawed description of the historian's relationship to the past, and I propose an alternative definition of history.

2. Realism and Film History

Acknowledging the confusion yet another application of the term 'realism' brings to the field of film studies, Allen and Gomery propose a Realist approach to film history that they claim, 'offers the prospect of fashioning an approach to history which preserves the notion of an independently existing past, while taking into account the necessity and complexity of theory in historical explanation.'² They define film history as a project that '*attempts to explain the changes that have occurred to the cinema since its origins, as well as account for aspects of the cinema that have resisted change.*'³ They argue that the Realist approach is 'particularly applicable' to the history of the cinema as film is,

a complex historical phenomena (an art form, economic institution, technology, cultural product) which, since its inception, has participated in many networks or relationships. In

other words, film is an *open system*. It is not just a set of components forming a whole, but an *interrelated* set of components that condition and are conditioned by each other.⁴

Allen and Gomery view history as being torn between the opposing poles of empiricism (the collection and arrangement of data) and conventionalism (the theoretical explanation of historical events). Though they acknowledge the importance of each of these approaches to historical research, they consider neither as a suitable approach to history in its own right and seek to negotiate an intermediary position for Realism. They take the fundamental principle of empiricism to be the existence of a world independent of the historian, and that the goal of historical inquiry is the exploration of that world. Theories must be assessed by reference to the *real* world. Realism departs from empiricism over what constitutes explanation of the real world. Empiricism, according to Allen and Gomery, conceives of reality as the one-dimensional realm of observable phenomena, and ends with the observation of regularities among those phenomena. Realism seeks to go further than this in order to explain how and why regularities emerge over time, to reveal the *generative mechanisms* that cause observable phenomena.

Realism joins with conventionalism over the role of the historian as an active theoriser and interpreter, and takes theory to be not the ‘unnecessary intervention of subjectivity,’ but the ‘indispensable application by the historian of discernment, judgement, and reasoning to the raw data of historical evidence.’ Realism recognises that theories are value laden, and carry with them implications and assumptions derived from culture, language, and the dominant theoretical paradigm at a given time. Realism diverges from conventionalism on the grounds that it does not follow that we must assume an ‘anarchistic theory of knowledge,’ and presume that one theory cannot be more *valid* than another. Realism argues that a theory should be internally logical, coherent, and consistent, but that this does not guarantee the success of a theory; that success may only be established by testing a theory against external criteria.⁵

Allen and Gomery base the validation of their historiography on the *principle of non-contradiction*.

Frequently the same phenomenon will be investigated by scientists with differing philosophical orientations, theories, and methods. On most points we would expect the resulting explanations to differ as well. Where they do not, where there is non-contradiction among them, there is evidence of a finding that is valid: one not merely a product of the theoretical model imposed by the scientist.⁶

They cite Terry Lovell in arguing that where differing theoretical positions agree we find ‘a residue of theoretically grounded “observations” which may be taken as the testing ground for any given theory at any given point in time.’⁷ As Realists, they insist that historical explanations ‘can and should be tested by reference to both historical evidence and to other, competing theories.’⁸

3. Radical Constructivism

Radical Constructivism is the insight that we cannot transcend our experiences, and has been defined by the school’s founder, Ernst von Glasersfeld, in the following terms:

It is an unconventional approach to the problem of knowledge and knowing. It starts from the assumption that knowledge, no matter how it is defined, is in the heads of

persons, and that the thinking subject has no alternative but to construct what he or she knows on the basis of his or her own experience. What we make of experience constitutes the only world we consciously live in. It can be sorted into many kinds, such as things, self, others, and so on. But all kinds of experience are essentially subjective, and though I may find reasons to believe that my experience may not be unlike yours, I have no way of knowing that it is the same. The experience and interpretation of language are no exception.⁹

Radical Constructivism is not concerned with knowledge *per se*, but with the mechanisms of knowledge construction. Radical Constructivism puts forward two main claims: that the cognising subject actively builds up knowledge; and that the function of cognition is adaptive and serves the organisation of the experiential world, not the discovery of ontological reality.

Radical Constructivists argue that all knowledge is constructed. However, Radical Constructivism is not solipsistic: it does not deny the existence of a mind-independent reality, but states that our knowledge is not knowledge of such a reality. As we cannot transcend the limits of our experience it is impossible to tell (and therefore unnecessary to know) to what degree our knowledge reflects a mind-independent reality. From the perspective of Radical Constructivism both ontology and epistemology are redundant, and the school has been described as both 'knowing without metaphysics' and 'post-epistemology.' Although Radical Constructivism states that all knowledge is constructed, and that it cannot be known to what extent our knowledge is knowledge of an ontological reality it does not admit that 'anything goes.' Alex Riegler states that 'the construction network of the mind is necessarily non-arbitrary,' and describes constructions as historical assemblies. This historical aspect imposes a hierarchical organisation in which more recent additions build on older ones. Such a hierarchy creates mutual dependencies and thus canalisation among its components. As such it severely restricts the degrees of freedom of the way constructions can be accomplished.¹⁰

The principle of adaptation is derived from the work of Jean Piaget, who as a biologist imported the concept of adaptation into the study of cognition from the theory of evolution. Adaptation involves two complimentary and simultaneous processes: a cognising organism primarily seeks to organise experience in terms of the psychological structures (schemes) it already possesses, i.e., it seeks to *assimilate* experience; if the result of this process creates a perturbation the organism attempts to *accommodate* the error either by modifying an existing scheme or creating a new one. It is this balance between assimilation and accommodation that Piaget describes as adaptation. Knowledge is actively constructed and is adapted to fit the environmental constraints that act on an organism in order to avoid internal contradictions and achieve equilibrium. The key to evaluating competing knowledge claims, therefore, is not to seek to compare them to a mind-independent reality that cannot be known, but to assess their *cognitive viability* or *functional fitness*.¹¹

Form a Radical Constructivist perspective there are a number of problems with Allen and Gomery's Realist approach to film history:

a. *There exists a world independent of the historian.*

This principle is the foundation of the Realist approach to film history: the existence of a world

independent of the historian provides him or her with both the materials that are to be the subject of analysis, and a safeguard against epistemological anarchy. Without such a world, Allen and Gomery warn, the practice of history is reduced to 'little more than navel gazing.'¹² However, it does not follow that a rejection of Realism entails solipsism: Radical Constructivism does not deny the existence of a reality independent of the mind of the historian, but states that, as the historian is limited by his or her experiences, such a reality cannot be known. Allen and Gomery's theory of film history seeks to produce descriptive knowledge (knowledge of *what* happened), and explanatory knowledge (knowledge of *why* things happened); they do not demonstrate *how* the historian is to transcend his or her experiences, and in doing so gain access to an independently existing world. Traditionally, the burden of proof has been placed on those who reject the possibility of mind-independent reality to demonstrate that such a reality does not exist. However, no realist theory has ever put forward a compelling argument as to *how* it is possible for a human to know something independently of the human mind. Though Allen and Gomery are prepared to recognise that historians are, after all, only human,¹³ they offer no description of the operations that a historian may perform in order to derive knowledge from such an independently existing world. The humanity of the historian precludes the possibility of knowing a mind-independent reality and, as an observer,

has no operational basis to make any statement or claim about objects, entities or relations as if they existed independently of what he or she does.... In fact, once the biological condition of the observer is accepted, the assumption that an observer can make any statement about entities that exist independently of what he or she does, that is, in a domain of objective reality, becomes nonsensical or vacuous because there is no operation of the observer that could satisfy it.¹⁴

It may be a tautology to state that *knowing requires a knower*, but as Ludwig Fleck states: 'Of what should absolute reality be independent? If you want it independent of humans, you should consider that it would then be useless for humans.'¹⁵

Furthermore, it is not clear what Allen and Gomery mean by empiricism or what value is to be attached to it. They identify the existence of a world that exists independently of the historian as the 'fundamental principle' of empiricism, and appear to use 'empiricism' to refer to the observation of that world. However, this 'fundamental principle' is not necessarily an empiricist argument: for example, as an empiricist David Hume argued strongly against a relationship between object and experience:

It is a question of fact, whether the perceptions of the senses be produced by external objects, resembling them: how shall this question be determined? By experience surely: as all other questions of a like nature. But here experience is, and must be entirely silent. The mind has never anything present to it but the perceptions, and cannot possibly reach any experience of their connexion with objects. The supposition of such a connexion is, therefore, without any foundation in reasoning.¹⁶

Similarly, William James, who described himself as Radical Empiricism, stated that, 'ordinary empiricism, in spite of the fact that conjunctive and disjunctive relations present themselves as being fully co-ordinate parts of experience, has always shown a tendency to do away with the

connections of things, and to insist most on the disjunctions.’¹⁷ The fundamental principle of empiricism is, then, not one that would be accepted by John Locke, George Berkeley, Hume, James Mill, John Stuart Mill, or indeed many others who would be considered as empiricists.

The value of empiricism to the Realist project is also in doubt. The ‘fundamental principle’ is intended to ensure that Realism is an approach to history with a secure footing, yet, according to Allen and Gomery, empiricism is not an infallible approach to history in that it can only describe rather than explain observable phenomena. Here we re-enter the empiricism of Locke, Hume, etc., in which ‘historical’ phenomena (another concept Allen and Gomery do not define) is not ‘independently existing’ but must be observed by the historian in order to be recognised as ‘facts’ to be subsequently explained. To the extent that this implies that knowledge is necessarily mediated by the senses and cannot be thought of as representing phenomena, it represents an immediate abandonment of the ‘fundamental principle.’ In the absence of any method by which the connection between observed phenomena and an independently existing world may be established and where such a connection is supposed rather than proven it is, therefore, ‘without any foundation in reasoning.’

b. *The nature of historical facts.*

Allen and Gomery are unclear as to what extent the historian’s knowledge should represent an independently existing world. Following E.H. Carr they distinguish between ‘facts of the past’ and ‘historical facts:’

Facts of the past do exist independently of the mind of the historian, but historical facts are only those data selected from the past that a historian finds relevant to his or her argument. The historian can never know the past “as it really was,” but only how it might have been, since our information about the past is partial and inevitably mediated.¹⁸

If there are no means for the historian to access a world that exists independently of his or her mind, then the ‘facts of the past’ that exist independently of the mind of the historian are similarly inaccessible and cannot become the ‘historical facts’ of the historian. Facts, as Allen and Gomery define them, can play no role in the historian’s construction of the past.

c. *A theory should be tested against historical evidence.*

There are two problems with this part of Allen and Gomery’s argument. First, if historical facts are constructed by a historian who has no means of accessing an independently existing past, then there is no method by which the historian can test his or her theory by matching it to objectively existing historical evidence.

Second, the role of historical evidence in the Realist approach to film history is confusing. The necessity for theory arises from the argument that although historical evidence is the ‘partial, mediated, yet indispensable record of the past’ that affords the historian access to ‘the facts of history,’ the events or facts of history in ‘no way speak for themselves.’¹⁹ It is for this reason that Allen and Gomery state that the objective of a Realist history of the cinema is to theorise about the generative mechanisms through which the events of history are brought about. And yet it is against

this 'partial' and 'mediated' evidence that the validity of our understanding of the objective past is to be tested. It is clear that if it is the historian's role to explain how and why the facts of history have emerged, these same facts cannot then be used to arbitrate between different theories. Furthermore, as historians we are faced with the question that if the historical evidence is robust enough to form the testing ground for competing historical theories, why does it need to be explained in the first place?

d. *A theory should be tested against competing theories.*

From a Radical Constructivist perspective the testing of a theory is a crucial stage in the adaptation of historical knowledge: if a theory is to maintain its usefulness for a historian it must be able to assimilate new evidence into the existing theory. Where this is not the case, where the historian's encounter with new data creates a perturbation, it is necessary to produce a new, improved theory. However, the refining of historical theories do not lead historians ever closer to the absolute truths of the past. Karl Popper claimed that the refinement and improving of scientific theories would lead scientists to a more and more adequate understanding of the real world, but was unable to conceive of any method by which this understanding could be tested.²⁰ Similarly, Allen and Gomery do not offer any method of establishing the validity of a historical theory. Stephen Hawking states that: 'A physical theory is always provisional, in the sense that it is only a hypothesis: you can never prove it.'²¹ This is equally true of a historical theory, and the historian does not enjoy the scientist's luxury of being able to conduct and replicate experiments under controlled conditions. The testing of one theory against another allows historians to develop historical theories that are more *viable*, but can never establish the truthfulness, the *validity*, of a theory.

e. *'where there is non-contradiction ..., there is evidence of a finding that is valid.'*

Allen and Gomery argue that where two theories are in agreement it is possible to produce an objectively grounded history. There are three arguments against this type of thinking. First, non-contradiction is no indication of a match; it merely describes the absence of discrepancies. While observer A may have reason to believe that his or her theory of a set of historical events is not unlike the theory of observer B, there is no means by which A can know B's theory. Therefore, there are no circumstances in which B's theory can validate that of A. Second, if it were possible to establish objective non-contradiction, historical theories become mutually self-supporting and tell us nothing about the past that is ostensibly the object of a historian's inquiry. In Allen and Gomery's description of the theory and practice of history, if two historians shared the same 'wrong' theory each would prove the other right by virtue of their non-contradiction. Historians, from this perspective, would become the Bellman of Lewis Carroll's 'The Hunting of the Snark,' who declares 'What I tell you three times is true;' but two fools in agreement do not miraculously become wise men.

Third, it is possible to go further than this to question the suitability of the principle of non-contradiction for writing the history of the cinema. The principle has a long history, and was first formulated by Parmenides of Elea: 'For never shall this be overcome, so that things-that-are-not are' (Plato, *Sophist*: 237a). Plato and Aristotle adapted this principle, restricting the circumstances in which it was applicable:

It is obvious that the same thing will never do or suffer opposites in the same respect in

relation to the same thing and at the same time (Plato, *Republic*: 4:436b).

The same attribute cannot at the same time belong and not belong to the same subject and in the same respect (Aristotle, *Metaphysics*: 1005b18-20).

In limiting the circumstances in which it applies, Plato and Aristotle preserve the principle of non-contradiction. However, in saying ‘at the same time,’ and ‘in the same respect,’ they limit the scope of the principle by breaking down a subject into smaller parts until contradictions disappear. James Danaher gives the following example:

When we say that life is full of joy and sorrow, we can eliminate that contradiction, or any such contradiction, by analysing life and dividing it into the joyous parts and sorrowful parts. That is, in one respect, it is joyous and in another it is sorrowful. If, however, we leave life whole and do not analyse it into this respect or that respect, we see myriads of contradictions because that is the nature of the reality in which we live.²²

Film, as Allen and Gomery characterise the object of their inquiry, is an ‘open system’ comprised of an ‘interrelated set of components that condition and are conditioned by each other.’ It seems scarcely credible, then, that the principle of non-contradiction, being preserved by breaking down a subject into smaller parts, is a suitable historical tool for dealing with such a complex historical phenomena.

4. History and the past

In *Re-thinking History*, Keith Jenkins sets out a postmodern historiography that shares a number of features with the Realist approach critiqued above. Jenkins describes history as ‘a discourse that is about, but categorically different from, the past.’

The past has occurred. It has gone and can only be brought back again by historians in very different media, for example books, articles, documentaries, etc., not a actual events. The past has gone and history is what historians make of it when they go to work.²³

Like Allen and Gomery, he argues that as historians can only ever recover fragments, ‘history’ is always less than ‘the past,’ and that this is the source of the discipline’s ‘epistemological fragility:’ ‘Epistemology shows we can never really know the past; that the gap between the past and history (historiography) is an ontological one, that is, is in the very nature of things such that no amount of epistemological effort can bridge it.’²⁴ As I have adopted a Radical Constructivist position, I agree that history is epistemologically fragile, but reject the relationship between ‘history’ and ‘the past’ that is a feature of Allen and Gomery’s Realist approach and Jenkins’ postmodernism. As the historian has no means of accessing the past it plays no role in his/her construction of a history: history is categorically different from, but is *not* a discourse about, the past.

What, then, is the relationship between ‘history’ and ‘the past’ from a Radical Constructivist perspective? Maturana presents the following argument:

Everything we do occurs now. Although human beings can speak about the past and the

future, and live in the ideas of past and future, humans exist in the present. We live in the past and the future, but we exist in the present.

We can claim that everything began with the Big Bang. But notice that this Big Bang is an invention of a history to explain the present. We use the coherences of the present to invent a Big Bang such that if it had taken place, then the present that we live in now would be the case.

... Consider what happens when we drop a pebble in a still pool and a wave begins to expand. Where does the wavefront occur? On the wavefront! The expanding wavefront is a continuous 'now.' If we select a couple of points on the wavefront, we can invent an origin, but the wavefront itself exists now.²⁵

In light of this argument it is possible to give a coherent definition of history and the historian's relationship to the past.

History is an attempt to explain our experience of the present by constructing a viable account of the past, such that if it had taken place then the present we live in would be the case. History is not an attempt to account for the way things *were*, but to account for the way things *are*.

The construction of historical knowledge in light of this definition involves four stages. First, it is necessary to define what a 'fact' is. As Giambattista Vico noted,²⁶ the word 'fact' is derived from *facere* – the Latin 'to make' – and the construction of facts involves work on the part of the observer, and facts, as Noel Gough states, are 'testimonies to experience.'

Historical facts are testimonies to the experiences of historians in actively constructing facts with their disciplined procedures of evidence generation and interpretation and their traditions of social relationships and organisation. Similarly, scientific facts are testimonies to the experiences of scientists as they actively produce facts with their specialised technologies of data generation and inscription, their rule-governed practices of interpretation, and their characteristic traditions of social relationships and organisation.²⁷

A fact is not an objective data of information waiting to be picked up by the historian – from a Radical Constructivist point of view, 'facts' are not a part of reality, but are elements of the observer's experience: 'Empirical facts, from the constructivist perspective, are *constructs based on regularities in a subject's experience*.'²⁸ The content of a historian's experience is not of the past but comes from his or her experience of historical artefacts (in the broadest sense of the term) in the present. Having selected facts from his or her experience, the historian places them into a context; that is to say, he or she *interprets* them. In doing so the historian constructs spatial, temporal, and/or causal links between facts in light of his or her prior experiences. On the basis of this interpretation, the historian *theorises* about the past in order to construct a viable explication that can account for his or her present. Each stage in this process requires an input of work on the part of the historian, producing a hierarchy of organisation: the construction of facts (observing), the construction of links between facts (interpreting), the construction of general explanations and historical concepts (theorising). Finally, the historical theories constructed by this process are subject to a process of *testing* in the light of newly constructed facts or alternatively constructed

theories.²⁹

Cornelius J. Holtorf has applied Radical Constructivism to archaeology, and has set forth two challenges that such an approach has for our understanding of the past. First, he states that if it is to be assumed that knowledge and meaning are constructed and diverse for the present, then it should be assumed that this was also the case in the past. He argues that the task of a ‘truly “cognitive”’ archaeology is to re-construct these past constructions and to come to terms with different forms of past knowledge. Secondly, he points out that our own knowledge of the past, and the significance we attach to such knowledge, reflect the conditions under which they have been constructed. He goes on to state that the concept of ‘past’ itself is a cognitive and social construction, and that ‘knowledge (about the past) and reality (of the past)’ are discreet entities. As we are unable to transcend the limits of our experience the ‘existence’ of a past cannot be denied, but we should not assume that our knowledge is knowledge of that past. For Holtorf, the second challenge of Radical Constructivism to archaeology overshadows the first because no reconstruction of the past can avoid being a reconstruction of the present.³⁰

In practical terms for film studies this means that ‘film history’ is an attempt to account for our experiences of the cinema, and the search for generative mechanisms in the cinema is an attempt to construct a viable history of the cinema such that if it had occurred, then the cinema that we experience now would be the case. This can be seen in David Bordwell’s historical poetics,³¹ which seeks to answer two broad questions: what are the principles according to which films are constructed and by means of which they achieve particular effects? How and why have these principles arisen and changed in particular empirical circumstances? A historical poetics of cinema focuses on three areas of inquiry. First, it examines the role thematic plays as an element in the construction of films. Although many film scholars primarily (and occasionally exclusively) examine themes in the cinema, historical poetics does not elevate theme above other constructional principles and effects. Second, historical poetics analyses film form: narrative, categorical, associational, abstract, and argumentative. Third, historical poetics focuses on stylistics, specifically cinematography, editing, mise-en-scene, and sound, and seeks to account for the emergence and deployment of stylistic features in films within a defined historical framework. In asking historical questions about the poetics of cinema we are asking why films are the way they are. Historical poetics, from a Radical Constructivist perspective, represents an attempt to account for why the cinema is the way we experience it. Bordwell remains wedded to a realist approach, in which he assumes that our constructions correspond to the real world, but if stripped of its realist ambitions, historical poetics provides us with a model for research that allows us to construct ‘the principles according to which films are constructed’ and to construct ‘their constitution, functions, consequences, and historical manifestations.’

5. Conclusion

Realism has long been the dominant paradigm in film studies, and there are always more scholars to leap to the defence of the real. However, as John Hill states:

There is probably no critical term with a more unruly and confusing lineage than that of realism. ... its continuing use-value as either a descriptive or explanatory concept would often seem to be in question. Amidst this plurality of uses, one consistent implication

does appear to survive: that the distinctive characteristic of realism resides in the ambition to, in some way or other, approximate reality, to show ‘things as they really are.’³²

It is the ambition of realism that is most problematic. No realist theory has yet proposed what operations may be performed by an observer – such as the cinematic spectator, or the historian of the cinema – to allow them to know a world that exists independently of the mind of that observer. If it remains trapped within a ‘critical realist epistemology,’ the history of the cinema will prove to be of limited use, unable to establish the validity of its most basic claims in its most essential particular. Radical Constructivism offers an alternative coherent model to the Realist approach to film history, which requires historians to rethink the nature of facts, the processes involved in constructing historical knowledge, and its relation to the past. Historical poetics, in the light of Radical Constructivism, is a basic model of research into cinema that uses concepts to construct theoretical statements in order to explain the nature, development, and effects of cinematic phenomena as the historian experiences them.

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Notes

1. Robert Stam, *Film Theory: An Introduction* (Oxford: Blackwell, 2000), 141.
2. Robert C. Allen and Douglas Gomery, *Film History: Theory and Practice* (New York: McGraw-Hill, 1985), 14.
3. Allen and Gomery, 5. Original emphasis.
4. Allen and Gomery, 16-17. Original emphasis.
5. Allen and Gomery, 14-16.
6. Allen and Gomery, 16.
7. Terry Lovell, *Pictures of Reality: Aesthetics, Politics, and Pleasure* (London: BFI, 1980), 22.
8. Allen and Gomery, 17.
9. Ernst von Glasersfeld, *Radical Constructivism: A Way of Knowing and Learning* (London: Falmer Press, 1995), 1.
10. Alex Reigler, “Towards a Radical Constructivist Understanding of Science,” *Foundations of Science* 6 no. 1-3 (2001): 6.
11. See Jean Piaget, *La construction du réel chez l’enfant* (Neuchatel: Delachaux et Niestle, 1937).
12. Allen and Gomery, 14.

13. Allen and Gomery, 9.
14. Humberto Maturana, "Reality: The Search for Objectivity or the Quest for a Compelling Argument," *The Irish Journal of Psychology* 9 no. 1 (1988): 30.
15. Quoted in Ernst von Glasersfeld, "Facts and the Self from a Constructivist Point of View," *Poetics* 18 (1989): 435.
16. David Hume, *Enquiry Concerning Human Understanding*, edited by L. Selby-Bigge (Oxford: Oxford University Press, 1975), 153.
17. William James, "A World of Pure Experience," in *Essays in Radical Empiricism* (New York: Longman, Green and Co., 1912), 43.
18. Allen and Gomery, 8. Original emphasis. See also E.H. Carr, *What is History?*, second edition (London: Penguin, 1987).
19. Allen and Gomery, 16.
20. See Karl Popper, *Conjectures and Refutations: The Growth of Scientific Knowledge* (London: Routledge and Kegan Paul, 1974).
21. Stephen Hawking, *A Brief History of Time* (New York: Bantam Books, 1988), 10.
22. James Danaher, "The Laws of Thought," *The Philosopher* 92 no. 1 (2004): 7.
23. Keith Jenkins, *Re-Thinking History* (London and New York: Routledge, 2003), 8.
24. Jenkins, 23.
25. Humberto Maturana, and P. Bunnell, "Biosphere, Homosphere, and Robosphere: What Has That to do with Business?" <http://www.solonline.org/res/wp/maturana/index.html> (accessed 2 October 2005).
26. Giambattista Vico, *On the Most Ancient Wisdom of the Italians Unearthed from the Origins of the Latin Language, including the Disputation with the Giornale de'letterati d'Italia*, trans. L.M. Palmer (Ithaca, N.Y.: Cornell University Press 1710/1988).
27. Noel Gough, "Narrative Theory and Educational Inquiry: Qualitative Research as Metafictional Storytelling," Paper presented at the Annual Conference of the Australian Association for Research in Education Fremantle, Western Australia, 22-25 November 1993, <http://www.aare.edu.au/93pap/gougn93087.txt> (accessed 1 October 2005).
28. Glasersfeld, "Facts and the Self from a Constructivist Point of View," 447. Original emphasis.
29. See Nick Redfern, "Communication and Meaning in the Cinema," *Constructivism in the Human Sciences* 9 no. 2 (2004): 39-48.

30. See Cornelius J. Holtorf, "'Object-orientated' and 'Problem-orientated' Approaches to Archaeological Research – Reconsidered," *Hephaistos* 15 (1995): 7-18.

31. See David Bordwell, "Historical Poetics of Cinema," in *The Cinematic Text: Methods and Approaches*, ed. R. Barton Palmer, 369-398 (New York: AMS Press, 1989).

32. John Hill, *Sex, Class and Realism: British Cinema 1956-1963*. (London: BFI, 1986): 57.

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