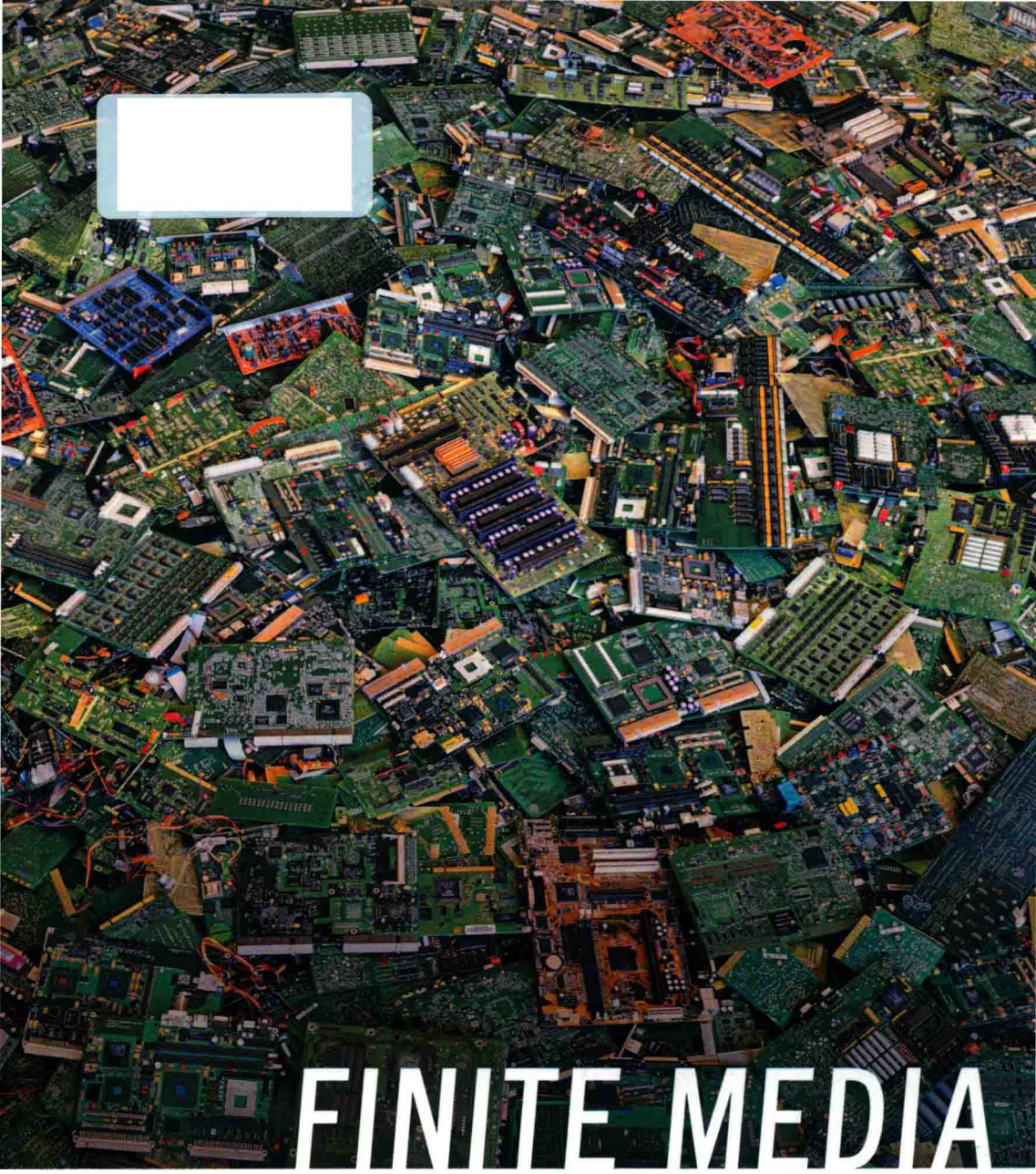

FINITE MEDIA

ENVIRONMENTAL IMPLICATIONS OF DIGITAL TECHNOLOGIES

SEAN CUBITT

WHILE DIGITAL MEDIA give us the ability to communicate with and know the world, their use comes at the expense of an immense ecological footprint and environmental degradation. In *Finite Media* Sean Cubitt offers a large-scale rethinking of theories of mediation by examining the environmental and human toll exacted by mining and the manufacture, use, and disposal of millions of phones, computers, and other devices. The way out is through an eco-political media aesthetics, in which people use media to shift their relationship to the environment and where public goods and spaces are available to all. Cubitt demonstrates this through case studies ranging from the 1906 film *The Story of the Kelly Gang* to an image of Saturn taken during NASA's Cassini-Huygens mission, suggesting that affective responses to images may generate a populist environmental politics that demands better ways of living and being. Only by reorienting our use of media, Cubitt contends, can we overcome the failures of political elites and the ravages of capital.

"Sean Cubitt has accomplished an astonishing feat of synthesis, reading across fields as varied as waste management, fiber-optic cable installation, semio-capitalism, and net neutrality. His wide-ranging and remarkable project extends beyond the reach of infrastructure media studies to show how global capitalism is remaking the planet in its own image. An innovative and dynamic book."—*NICHOLAS MIRZOEFF*, author of *The Right to Look: A Counterhistory of Visuality*

"Sean Cubitt offers the first theoretical analysis of how ecology in its original sense (and its related concerns for climate change and the environment) can not only inform media studies, but change what media we create and how we create it. Unique in its broad philosophical and social science perspective and full of fresh, original, and timely insights, *Finite Media* will find eager audiences in media studies, science and technology studies, and related fields."
—*LEV MANOVICH*, author of *Software Takes Command*

Sean Cubitt is Professor of Film and Television, Goldsmiths, University of London, and the author of several books, most recently, *The Practice of Light: A Genealogy of Visual Technologies from Prints to Pixels.*

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Finite Media

A CULTURAL POLITICS BOOK
Edited by John Armitage,
Ryan Bishop, and Douglas Kellner

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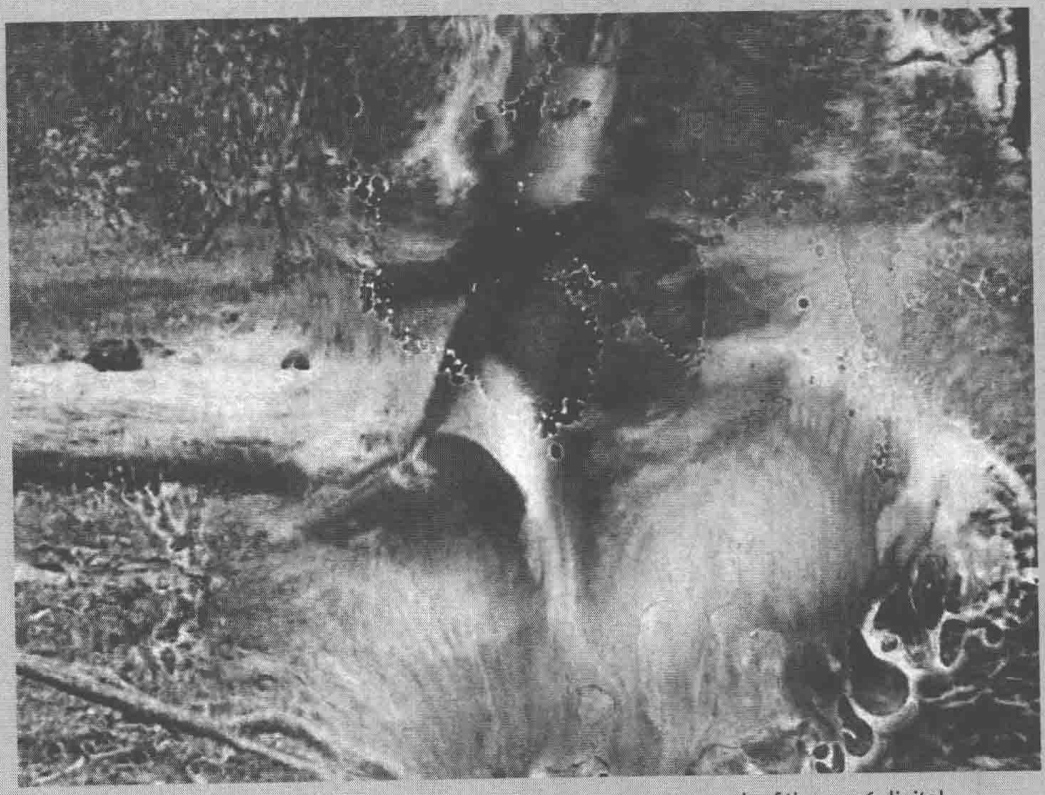
For Alison, forever.

Finite Media



The Story of the Kelly Gang, dir. Charles Tait, 1906; DVD screen grab of the 2006 digital restoration. Source: National Film and Sound Archive of Australia.

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INTRODUCTION **ECO-MEDIATION**

Say not the struggle naught availeth,
The labour & the wounds are vain,
The enemy faints not nor faileth,
And as things have been they remain.
—**Arthur Hugh Clough**

Of the original sixty minutes of *The Story of the Kelly Gang*, shot by Charles Tait in 1906, only seventeen minutes remain, much of it in the poorest condition. The film records a moment of colonial rebellion, the wild Irishman Ned Kelly refusing the yoke of his imperial masters. Often referred to as the world's first feature film, *The Kelly Gang* is a triumph of realism. We see again animals, plants, and geology now buried under roads and buildings. The nitrate stock, brilliant sunlight, and sharp lenses catch all the flickering of background leaves and grass, as characters approach or remove themselves from the scene. Even the armor is authentic: not Kelly's own, but the helmet and breastplate worn by Joe Byrne, a member of his gang, still a living memory at the time the film circulated, to considerable profit, through the Victorian and South Australian goldfields where the Kellys rode and met their end, and around the colonies. Tait's deep focus and his taste for authenticity place the film in a specific aesthetic tradition of pictorial realism, and enough remains for us to understand the main action. Yet what strikes twenty-first-century viewers is the developing chaos of the blistering support and the silver halides sitting on it, as well as the artifacts produced in the

archival process and its transfer to the web-ready MPEG-4 codec. *The Story of the Kelly Gang* is not in any simple way about ecology, but it is itself an ecological artifact, one that links human, technological, and organic worlds in the context of colonialism, and so acts as a talisman for the work undertaken in this book.

When we speak of film as a "living medium," we should take the term literally. The nitrate stock *The Kelly Gang* was shot on is formed by adding camphor as a plasticizer to nitrocellulose, also known as guncotton, a close relative of nitroglycerine (the foundation of the Nobel fortune). It is extremely flammable. Even without fire, the stock gradually outgasses, leaving a sticky and unworkable gel. Such decomposition is as much a fact of film as it is of any other living matter. The archivist's task is to preserve the film in a form as close as possible to an ideal master print at an ideal first screening, to conserve light passed from one time to another. Against this preservationist homage to the ideal, from the point of view of the film itself, the filmstrip is a slowly percolating chemical soup, a patch of molecular combination and mutation. The archival life of film (Fossati 2009) includes this struggle between the order of the archive and the entropy of what the archivist understands as decay, but which can also be understood as the evolution of a new artifact from the old.

In this instance, according to Sally Jackson and National Film and Sound Archive of Australia historian Graham Shirley,

> The surviving fragments were digitally scanned by Haghefilm Laboratories in Amsterdam using the DIAMANT digital restoration system. This allowed major cleaning to remove dirt, scratches and other blemishes, and eliminated the jitter characteristic of the original footage. This digital approach also allowed for the re-creation of frame content which had otherwise been lost through physical deterioration. To achieve this, the Haghefilm restorers copied and modified content from adjacent frames to replace missing information in damaged ones. The result is the cleaner, clearer and much more detailed film we have today. (Jackson and Shirley 2006)

This is interesting on two counts: First, commenting on a blog post about this film, Melbourne blogger Carl Looper suggested, "Some of that 'boiling' may be a function of the restoration algorithms"; and second, because it suggests an even closer correlation between chemical and digital intelligence at work in the clip. Such multiply nonhuman mediations raise with even greater urgency the question of mediation itself, the processes that mediate between

populations and environments, and in which environments, it now appears, play a significant role. The Diamant system works in precisely the opposite direction to MPEG and other codecs (compression-decompression systems for transmitting video), which compress video signals by removing anything that appears to the algorithm to be extraneous. The principle of capturing the maximum amount of detail is important for the master copy of a film, but for distribution codecs play on the psychological optics of the good enough, trusting the standard observer to skip over damage and fill in visual blanks. Archivists revert to the maximal principle, even at the cost of promoting probability over actuality.

A film, especially in deep focus, has a special claim to actuality in that it records actual motion, or fragments of actual motion. The actual always contains in itself the virtual: Every motion contains in itself the possibility of unforeseen development, only one of which becomes actual in the next frame, but all of which lie latent in the first. The Diamant algorithm, by dint of necessity, extracts from that virtual character of the individual frame an actuality that it interposes in the neighboring frames. The probable substitutes for the virtual in order to produce a new actual—the archival print—that is now what it must in some sense always be, since films as damaged as this cannot be projected. The *Kelly Gang* we see today (NFSA. 2016) is a representation of the film, an idealized representation of an idealized film. Thus, while the film itself slides toward the gel stage, the degradation of its materiality, its restorations migrate toward the Ideal. It is another ironic triumph of the Idea over the existent. It is as impossible to reconstruct the entropic chemistry of decay as to remake the original sixty minutes of *The Story of the Kelly Gang*. The fragments we view are a work of ongoing catastrophe, the work of humans, technologies, and natural processes: time and its space dissolving, the falling apart that is the pixel, the ordering power of reassembling what information we have across frames, the vector of this artifact moving on through time, now and forever pinned to migration from format to format. This is the work of an art which more than any that preceded it owns up to and embraces, if we learn to see, the effervescence of knowing and its perpetual evolutions. That effervescent commonality of human, technical, and natural processes is referred to in what follows as mediation.

Mediations are not communications (though all communications are mediated). Mediating does not require messages, nor even senders and receivers: It would be false to anthropomorphize the nitrate reaction or the semi-automated digital reconstruction as in some way capable of expression or intention. Mediation names the material processes connecting human and

nonhuman events—as the nitric acid catalyst mediates between molecules in the decay of nitrocellulose, and that mediation is mediated again by the Diamant algorithm. Mediation is the primal connectivity shared by human and nonhuman worlds.

Only in some limited and extraordinary cases does mediation become communication. Following Shannon and Weaver (1949), we might say that communication is about distinguishing the message as figure from noise as ground. The distinction prioritizes the distinct units of communication from the chaotic cosmic background. If, in Bateson's (1973, 351) aphorism, information is a difference that makes a difference, noise must be indifferent, and without effect. But then, why try to suppress it? Noise is defined by exclusion: It is what is not communication. But if we do try to grasp noise for itself, when we hear in the static the random burbling of the universe, we should recognize in it the basic flux of mediation, enthralling and distracting as the waves of the sea. Ecologies are not networks connecting previously separate things: Every element of an ecology mediates every other. Life mediates nutrients and sunlight, storing, changing, growing, passing, mutating, returning. *The Story of the Kelly Gang* mediates sunlight, lens, film, the chemistry of nitrate, the politics of archives, and the determinations of digital video. When we speak of the media, we tend to refer to the technological media of the last two hundred years; but everything that mediates is a medium—light, molecules, energy. This flux of mediation is logically prior to communication and to the objects we have learned, through communication, to distinguish from the background hum. The flow of mediation precedes all separations, all distinctions, all thingliness, objects, and objectivity. It precedes the separation of the human and the environmental.

And yet, everywhere in the human world, that flow is parceled out, delayed, amassed, ossified. The question is how, and to what purpose. It is not only that things appear to us as things instead of processes, nor that flux is without form or history. On the contrary, the inevitable mutation that necessarily accompanies mediation belongs to time's arrow, and to the increasing complexity of order as well as its opposite. Life is negentropic, perpetually constructing and defending order. The microcosmic density of ecosystems, human societies, and their interweaving moves toward the increasing mutual mediation of all lives, all deaths. The assertion that the world is composed of things is based on a rejection of this connectedness. Such an ontology of objects would be merely metaphysical were it not for the fact that it describes so accurately the way we see and understand the world. The question is how we, especially in the West, came to see the world this way. In turn, this raises