

*San Andreas* and the spiralling of the analogico-digital animated image.

Patrick Crogan

(Department of Arts and Cultural Industries) University of the West of England,  
Bristol, UK

Corresponding Author

Patrick Crogan, Department of Arts and Cultural Industries, University of the West of  
England, Bristol, Frenchay Campus, Coldharbour Lane, Bristol BS16 1QY, UK.  
Email: patrick.crogan@uwe.ac.uk

Biography

Patrick Crogan is Associate Professor of Digital Cultures at the University of the  
West of England, Bristol. He wrote *Gameplay Mode: War, Simulation and  
Technoculture* (2011) and has published work on Stiegler, video games, drones,  
animation, film and other aspects of digital technoculture. Attending his first Society  
for Animation Studies conference in 1999 (and both of ‘The Illusion of Life’  
conferences before that), he maintains an ongoing fascination with animation.

Abstract

This essay considers the contemporary state of mainstream Hollywood cinema as a  
profoundly animation-driven form of spectacular entertainment characteristic of  
global digital media in the era of what Bernard Stiegler calls hypercapitalism. With  
reference to the work of Esther Leslie, Dick Tomasovic and Stiegler, I develop a  
critical account of what Leslie calls the ‘petrified unrest’ evident in the deployment of  
animation techniques and technologies in contemporary mainstream film and media  
through analysis of the recent Hollywood blockbuster, *San Andreas* (d. Brad Peyton,  
2015). This film’s big budget, spectacle-driven narrative and extensive deployment of  
the latest digital ‘motion design’ tools qualifies it as an exemplary instance of the  
paradoxical form of contemporary mainstream digital cinema, one which is both  
innovative and utterly conventional at the same time in Leslie’s account. I will  
elaborate what Stiegler describes as the spiralling instability of the current,  
hypercapitalist dynamic in which this paradoxical but ultimately unsustainable  
‘petrified unrest’ manifests as a disorienting experience of technological and cultural  
transformation. For it is only in coming to terms with the profound connections  
between technological and cultural becoming that the potential can be found to move  
on from this disorienting condition of digital transformation under the prevailing  
hypercapitalist mode animating what Leslie terms our ‘dreamt reality’.

Keywords

Digital visual effects, contemporary Hollywood cinema, analogico-digital image,  
techno-intuitive intelligence, animation, automation, belief, Stiegler, Leslie.

EPIGRAPHS:

In such a perspective [on the possibility of a new epoch of ‘non-inhumanity’], the  
question of innovation must be taken very seriously – and not just treated as an  
ideological discourse based on the *storytelling* of marketing (*Automatic Society*, 100).

When a triggering factor is also an outcome, we find ourselves within a spiral. This can be very fruitful and worthwhile, or it can enclose us – *in the absence of new criteria* – in a vicious circle that we can then describe as a ‘downward spiral’ (*Automatic Society*, 28-29).

### **Introduction**

In her rich meditation on the nature of animation and the prevailing course of its development since its emergence in the late 19<sup>th</sup> century, Esther Leslie (2013) proposes that the technical heart of animation might be understood as a reversal of the natural process of petrification:

Things that once moved, but over time are stilled into stoniness, become petrified. In animation, the process is reversed: things that never moved by themselves are mobilized into movement. An originary petrification is jiggled into unrest. (p. 76)

This curious notion of an ‘originary petrification’ of things serves to establish the terms of Leslie’s critical reflection on the mainstream deployment of animation in Western media culture. Towards the end of her essay she cites a term of Walter Benjamin’s – ‘petrified unrest’ – to characterise the part played by animation in producing a mediation of social existence that lacks a vision of social change (p. 90). Contemporary audiovisual media, most of which incorporates digitally animated elements, is full of activity, spectacle, simulated worlds and realised fantasies but lacks any genuine historical development beyond a commodified, cyclical repetition of capitalist consumerism:

Animation’s petrified unrest is a formal sign of its ambivalent renderings of the real – it is stuck in a form of life and world simulation which can be read symptomatically – or critically – as an inability to move on socially, to sketch out new lives and worlds. (p. 92)

Leslie’s criticism implicates animation in the global extension and intensification of what other cultural theorists have variously analysed in terms of the cultural logic of late capitalism (Jameson 1991), capitalist realism (Fisher 2009), and 24/7 capitalism (Crary 2013). To these can be added a parallel with Stiegler’s account of hypercapitalism (Stiegler 2011a). Like Leslie’s evocation of a paradoxical immobilising of social progress amidst an intensifying animation of variations on a stagnating ‘dreamt reality’, these accounts each articulate a loss of historical and cultural orientation in the mediation of social existence. They equally share perspectives on how the mediation of experience becomes absolutely central to the continued growth of capitalism inasmuch as the coordination of consumption with production becomes central to the maintenance of profit in the wake of the mid-20<sup>th</sup> century global economic and military crises. In Stiegler’s recent book, *Automatic Society I* (2016) on the relations between automation and the Anthropocene, this condition of contemporary global hypercapitalism is shown to be accelerating towards its ultimate ecological and social-political limits. At the same time, the commercial implementation of an increasingly pervasive and automated regulation of experience driving its advance inhibits the potential for the development of the much needed critical reappraisal and collective cultural political response to the digital technological innovations that make the ‘automation of society’ and the ‘animation’

of its citizens possible. As I will explore in what follows, automation and animation are related inasmuch as any bringing to life (of images, objects, of the ideas or affects of consciousness, of collective views or values) involves a relation between exterior, automatic and technical processes that 'automate' the reproduction of the social milieu and interior, dis-automating, mental (or 'spiritual') processes that are the source of the modification of those automatic, unthought routines.

For Leslie, animation at its outset displayed 'something of the future possible' in its various experimental trajectories but this has tended to close off in its mobilisation in the service of this cyclical repetition of the same vision endlessly varied (p. 92). The 'petrified unrest' of contemporary digitally produced mainstream media figures a failure to realise the potential of animation's unique reversal of the 'originary petrification' of things by putting them in motion and bringing them to life in unprecedented and significant ways. In this essay I offer a perspective on this situation drawn from a reading of Stiegler's philosophical consideration of analogue and digital moving image technology. I hope to advance some propositions toward a diagnosis of the condition indicated by Leslie's symptom of 'petrified unrest'. From this perspective the conditions of the stalling of animation's capacity to open what Leslie calls the 'future possible' concern precisely the animation of relations between the technological and the cultural. The 'unrest' haunts the relations between the technical conditions of mediation and the knowledge of those conditions, returning in the petrifying repetition of contemporary Hollywood's big budget projects and indeed across the major modes of global digital media culture.

Permeated with digital animation techniques and processes, Hollywood's recycling of the spectacles and simulated fantasies of what Leslie acutely terms 'dreamt reality' across serialised, cross-media franchises in action, disaster, science fiction and superhero genres seems to be going nowhere fast (p. 92). This is only made more apparent in light of the incessant innovations in the technologies of digital imaging, compositing, simulation and animation. A short piece by Kara Oconnell in the 2015 conference proceedings of the 'Motion Design Education Summit' begins with the claim that 'new digital landscapes are emerging with lightning speed' (2015: 185). The MODE conference is the product of an international partnership between several leading university programmes teaching 'motion design' across the fields of 'graphic design, visual communication design, typography, cinema, theatre, animation and storytelling' (Murnieks et al, 2015: 1). Having cited Lev Manovich's influential account of the constitutively hybrid character of contemporary media production, Oconnell concludes with a familiar refrain:

Computerization, the merging of software tools and online resources are at our disposal like never before. It's up to us to define them as we find new innovative ways to put them to use.<sup>1</sup> (p. 187)

These new innovative ways, however, struggle to emerge in the prevailing commercially-oriented context of 'motion design' other than in the form of a

---

<sup>1</sup> Oconnell does include a brief discussion of the use of motion in the experimental narrative practice of Canadian artist Shane Koyczan which draws on surrealist aesthetic experimentation. Overall the sense of the field of 'motion design' one can garner from Oconnell and the MODE proceedings is, however, of a project of the incorporation of all of the resources of the artistic and media archives within the commercial digital animation engine.

spiralling intensification of existing techniques of hypercapitalist mediation. The kinds of developments in motion design mentioned by Oconnell chime with those explored across the volume of conference proceedings: modes of animating branding and logos, titles design, infographic presentations, mainstream narrative forms of film and digital media, video games, the application of motion design to revivify post-print newspaper media, and so on.

The point here is not to condemn individual designers or educators, or even tertiary educational partnerships promoting research into ‘motion design’ technologies. Their focus on modes of ‘creative innovation’ legible for the most part as animating the attention capture and channeling logics of ‘24/7’ hypercapitalism is both a symptom of ‘petrified unrest’ as well as an agent of its prolongation. My essay seeks rather to elaborate the prevailing conditions in which the rapid emergence and evolution of digital animation technologies and techniques seems to petrify the social and cultural dimension of their ‘use’ in animating experience even as their deployment spurs the next cycle of transformations in the ‘digital landscape’. As I have signalled in my epigraph, what Bernard Stiegler characterises as a ‘spiralling’, in which ‘a triggering factor is also an outcome’, takes on a problematic trajectory here of the exacerbation of ‘petrified unrest’ (Stiegler 2016: 18-19).

In developing a critical account of this spiralling it is important to acknowledge the hybrid character of media production identified by Lev Manovich. In ‘Understanding Hybrid Media’ (2007) Manovich lays out the changed default conditions of contemporary media production as involving the combination of disparately sourced sound and image elements that are recomposed in a digital synthesis. In mainstream cinema this combining and composition (that is, compositing) of audiovisual source elements is dedicated to the production of a synthesis of live action footage with digitally generated objects and image characteristics. This places it at one end – the most classically illusionistic end – of a spectrum of hybrid media incorporating motion design processes to synthesize engaging, analogue, experiential artifacts.

What Stiegler terms the analogico-digital image (and audiovisual form) is central to this engagement in mediated experience but it is also the field in which the spiralling of petrified unrest turns with each digital innovation. In Stiegler’s account the relations between the production of the digital technical synthesis and the knowledge of the image held by its spectator (who is also a user today) concerning its character both as technical artifact and as image of something have been put in flux by digitisation. The tension and uncertainty before the analogico-digital image is in need of careful reflection and critical assessment if one is to envisage the latter’s potential adoption as a viable form of cultural becoming beyond its devolution into the symptomatic ‘suspended animation’ (Cholodenko 1991: 21) that Leslie’s figure of petrification evokes.<sup>2</sup>

---

<sup>2</sup> It should be noted here that in his groundbreaking theoretical engagement with the then largely ignored history and concept of animation in *The Illusion of Life: Essays on Animation* (1991), Alan Cholodenko emphasised the ‘uncanny’ (p. 28) coimplication of life and death in the notion and the very process of animation: ‘And this is to suggest that animation cannot be thought without thinking loss, disappearance and death, that one cannot think the endowing with life without thinking the other side of the life cycle – the transformation from the animate into the inanimate – at the same time, cannot think endowing with motion without thinking the other side of the cycle of movement – of metastasis, deceleration, inertia,

For Stiegler belief in the image and its potential is always conditioned by the techniques and technologies of image-making. In the era of global digital communications the evolution of the relations between knowledge and belief is subject to a hypercapitalist channeling of its course that is both accelerating technological development and at the same time inhibiting the emergence of the critical, reflective phase of experimenting with the adoption of the image's new potentials. In what follows I will analyse this digital animation of the analogico-digital image of mainstream cinema through an account of the recent successful blockbuster *San Andreas* (2015) which is now in sequel production. Typical of the kind of film Leslie identifies with the petrified unrest of contemporary commercial media, *San Andreas* incorporates cutting edge digital and practical effects in synthesizing its disaster film experience. I will explore the strained relations between knowledge and belief in its analogico-digital animated image by examining aspects of its production history and marketing.

### ***San Andreas* and the 'petrified unrest' of contemporary cinema/animation**

A perfect exemplar of the 'petrified unrest' of contemporary cinema can be found in the recent Hollywood blockbuster *San Andreas* (d. Brad Peyton, 2015), a film which deploys a mix of advanced digital and practical effects to depict the destruction of Los Angeles, San Francisco and other sites along the San Andreas faultline. The film tells the story of epic destruction and loss of life by following the efforts of its hero, the helicopter rescue pilot Raymond Gaines (Dwayne 'The Rock' Johnson), to save his wife and daughter (and his marriage along the way) from the ruins of LA and San Francisco. *San Andreas* ends on a patriotic scene of the incipient reconstruction effort. A huge American flag floats over the first efforts to rebuild civilization on the West Coast of the U.S.A, presumably as an exact, petrified duplicate of that destroyed by the quake.

The film takes its place alongside numerous instances of this recycling of fantasies of spectacular apocalypse, conflict, destruction and resurrection in various generic registers from action and disaster to science fiction to the endless disinterment of comic book and earlier televisual and film superhero franchises. It is a continuation of what Dick Tomasovic (2006) calls the 'new type of blockbuster' that emerged in the early part of the new millenium, the most successful proponents of which he identifies as Sam Raimi, Peter Jackson and David Cameron. These three, having started out in the 1980s, sought to emulate the defining works of the 1970s by George Lukas and Stephen Spielberg in which spectacular action and effects were mobilised to 'revitalize' the narration of conventional, generic storylines found in classical Hollywood such as the serial action-adventure, and the unambiguous duel between good and evil. For Tomasovic, however, the influential blockbusters made by these directors in the new millenium evidence a breakdown in the integration of cinematic 'attraction' with narrative that reflects and adds to a broader, excessive consumerism that in cinematic entertainment privileges the ostentatious exhibiton of the apparatus

---

suspended animation, etc. – at the same time, and cannot think the life cycle without thinking the movement cycle at the same time' (p. 21). With this in mind the strange and troubling 'petrified unrest' of the contemporary application of digital animation technologies can be understood as a particular, toxic turn, a 'metastasis' – or spiralling as I am characterising it after Stiegler – of the constitutively composed (re)animating, suspensive and de-animating tendencies of the generation of the illusion of life/motion.

of spectacle to the detriment of the experience of an illusionistic fiction.<sup>3</sup> Extending Tomasovic's genealogy of blockbuster directors, one can identify Brad Peyton, whose first major film-directing credit was in 2010 (for *Cats and Dogs: The Revenge of Kitty Galore*), as the 'child' of the Raimi, Jackson and Cameron generation.

Supported by a typically massive marketing budget, *San Andreas* had grossed more than \$US155m at the time of writing and a sequel is currently in production (Internet Movie Database 2017).<sup>4</sup> One can sense in viewing *San Andreas* the increasing exhaustion of its capacity to impact its spectator, to create lasting memories or significance, even as it injects the most epic and state of the art special effects at great cost and technical inventiveness. In 2006 Tomasovic described a 'perpetual crisis' of the contemporary blockbuster caught in a never-ending 'overstatement' as it pursues a 'logic of self-consuming and incessant hybridization' (p. 318). A decade on this aesthetic 'logic' produces the experience of 'petrified unrest' and the 'perpetual crisis' is more the spiralling of a vicious circle. The film provides increasingly cataclysmic spectacles of destruction – of Hoover Dam, downtown LA, of a tsunami breaking over the ruins of San Francisco – without engaging the spectator in anything beyond Johnson's (or rather 'The Rock's') larger than life persona operating within an almost parodically clichéd melodramatic narrative frame. In this the film shares in what Daniel Ross (2015) calls the 'entropic' character of much 'apocalypticist' mainstream cinema which magnifies the scale and frequency of explosions, destruction and mayhem in a well capitalised war against the diminishing return on investment in consumerist spectacle.<sup>5</sup> The effects sequences function with something like a zero degree of narrative significance, presenting the restive animation of disastrous eventfulness to the spectator more or less for its own sake. Aside from consuming the spectacle as immediately consummable experience – and thereby becoming part of the rationale for producing the sequel – what is the

---

<sup>3</sup> Tomasovic draws a distinction between this 'new blockbuster' form and the more resolutely attraction-focussed films of directors such as Michael Bay. That Bay made the very successful *Pearl Harbor* (2001), a film whose subject matter required an investment in narrative 'sincerity' – to evoke here Jim Collins's (1993) use of 'new sincerity' to refer to the 1990s Hollywood trend towards exactly what Tomasovic identifies as the recovery of classical Hollywood within a rapidly digitizing and hybridizing cinematic mode of production – muddies the waters somewhat. In any event, the general thrust of Tomasovic's argument is that this 'new blockbuster' is advancing rapidly toward the collapse of this economy of narrative and spectacle and so the distinction tends to become moot as the argument unfolds.

<sup>4</sup> The sequel is typically rumoured to be even bigger with the star Dwayne Johnson said to be taking on the entire series of Volcanos around the Pacific rim known as the 'ring of fire' (Comingsoon.net 2016).

<sup>5</sup> For Ross the cinema was always a technological media form harbouring an entropic tendency to fantasies of excessive destruction of the world, emerging as it does as a mediation of the age of 'thermodynamics and petrochemicals' (2015: 5). If this tendency was balanced by the negentropic potential of the aesthetic and critical development of cinematic expression, this balance has been eroded in the early 21<sup>st</sup> century – the era of hypercapitalist mediation. For Ross, Michael Bay is the most entropic filmmaker today as is demonstrated by the fact that 'it was possible...to construct a graph [of Bay's films] correlating the profits of his various blockbusters with the number of explosions each one contains' (p. 12).

spectator to make of this endless re-presentation of innovation and inventiveness regarding the capacity of digital cinema to (re)animate disaster?

The strained relations between knowledge of and belief in the nature and potential of the analogico-digital image is readily apparent in *San Andreas*' entropic, 'petrified unrest'. A survey of the 'making of' media surrounding the release of *San Andreas* provides some insight into these relations between the knowledge of and the production of technologically mediated experience. Warner Bros. official 'making of' *San Andreas* video, entitled *Dwayne Johnson to the Rescue* (director uncredited, 2015), focuses on the practical effects incorporated in the film's various scenes of disaster and emergency.<sup>6</sup> These include the performance of abseiling (rappelling), underwater swimming and the driving of different vehicles by Johnson, the stunts performed by other principal actors and the work of the stunt crew and practical effects designers. This latter included the design and building of specialised sets in Warner Bros' Gold Coast, Australia studio lot for a collapsing restaurant at the top of an LA skyscraper and the interior of an office building flooded in a tsunami that hits San Francisco in the wake of earthquakes along the San Andreas fault. The narration is carried by clips of to-camera interviews with the actors and key members of the crew.

The 'reality' of the film's action is repeatedly emphasized in *Dwayne Johnson to the Rescue*. For instance, Johnson's helicopter rescue character abseils from his helicopter in an early sequence of the rescue of a woman from a car that has crashed over a cliff (see Figure 1 and Figure 2). In Figure 1 the vertical axis of the emergency is established with the rescue helicopter piloted by Johnson's Gaines shown in the middle ground halfway down the canyon as it hovers over the car containing 'damsel in distress' Natalie (Morgan Griffin). Figure 2 is a frame grab of the long take that tracks Gaines' entry into this space of emergency from the helicopter to accomplish the rescue of Natalie. Stunt coordinator Alan Poppleton states that Johnson was trained in the abseiling procedure that would be required and that he 'nailed it, as he does' (Warner Bros. 2015). In the 'making of' film incidental music from the film score is used to dramatise footage of the production of the stunt in a blurring of the production of the rescue stunt with the fictional reality of the film's narrative. Executive Producer Rob Cowan describes Johnson's feats as real: the production used a 'real helicopter' albeit suspended from a gimble (see Figure 3). This long shot from *Dwayne Johnson to the Rescue* of the Glendora canyon set constructed on the Warner Bros. L.A. studio lot makes it apparent that Johnson's 'real' performance of helicopter rescue did not extend to piloting a helicopter over the set before exiting to complete the rescue. Johnson does indeed rappel from the suspended helicopter 'for real' and in the film a long take captures the action in a 'great real shot that is not a visual effect or a special effect; it is actually done for real' (Warner Bros. 2015. See Figure 4).<sup>7</sup> In Figure 4 the steadicam tracking Johnson's 'real' rappel is visible screen-right, mounted on a digitally controlled camera crane apparatus.

The realism of the film's sequences of fictional destruction and heroic rescue is the governing theme of this promotional video. It is mobilised largely in authenticating the heroic credentials of Johnson. The 'reality' of his performance works to defeat the lurking impression of the unreality of constructed effects. Fellow

---

<sup>6</sup> 'Dwayne Johnson to the Rescue' is available on the Daily Motion video sharing site at <http://www.dailymotion.com/video/x3bbyn> (accessed 1 May, 2017).

<sup>7</sup> For this account of the helicopter rescue sequence see from approximately 50 seconds to 2 minutes 40 seconds in *Dwayne Johnson to the Rescue*.

actors Matt Gerald (Harrison) and Kylie Minogue (Susan Riddick) lionise Johnson as a man who would be their choice as rescuer, a man with ‘ice running through his veins. There’s nobody I’d rather have in extreme situations than Dwayne’ (Warner Bros. 2015).<sup>8</sup>

This promotional insistence on the authenticity of the film’s production of destruction acquires further significance (and relevance for this inquiry) when the discreet avoidance of the profoundly digital character of the film’s production is taken into account. Not only is Johnson’s heroic performativity heavily circumscribed by the rigorously controlled conditions of the production of practical effects – downplayed as they are in *Dwayne Johnson to the Rescue* – the profoundly digital nature of the film’s production is the ‘elephant in the room’ of this affirmation of the authenticity of the film’s spectacle of disaster and heroic deeds. Other accounts of the production of the film make apparent the status of the live action material as a necessary but nonetheless single element in the complex composition of analogue and digital elements constituting the finished film image. Since the arrival of DVDs and subsequently with online blogging and video sites, ‘making of’ films and other published documentation of production have routinely showcased this ‘hybrid media’ character big budget movie making.

The production process of *San Andreas* is typical of big budget movie projects in that it entails the global coordination of geographically dispersed live action shoots with multiple digital effects production houses producing audiovisual material ingredients for what will eventuate as the finished analogue ‘film’ experience. These materials flow into and back and forth between stations in a pipeline designed to manage their gradual incorporation and combination in the formulation of the film’s sequences of digitally assembled images. Hydraulx, Method Studios, Cinesite (LA) and Scanline produced the majority of digital visual effects material for *San Andreas*. The hybrid, analogico-digital character of this production process is readily apparent when the various sources of the final image are acknowledged. The live action sequences are carefully prepared and shot in order to facilitate the selective incorporation of digitally animated elements. In addition, much of the work of creating the digital elements draws on analogue methods of the capture of rich, continuous detail from exterior reality to support the production of verisimilitude in the final combination of analogue and digital source material. For instance, Cinesite digitally created and animated the landscape (and the helicopter for some shots) in the helicopter rescue sequence with the aid of Agisoft’s photogrammetry software. This is a technology that uses multiple digital photographs of objects taken from different angles to produce a 3D digital model of the object with surface colours and textures from the photographic data. The software performs an automated adumbration of the original three-dimensional object by interpreting and extrapolating from the source photos. According to Cinesite’s Holger Voss (cited in Failes 2015) the canyon in which the helicopter rescue sequence takes place was ‘rebuilt and created’ from images acquired of a canyon near Glendora mountain in California. Cinesite used the photogrammetric modelling of vegetation in the real canyon to procedurally generate the foliage blowing in the winds of the helicopter rotor from ‘40 plants pre-cached that could be scaled and combined to assemble the variety of plants, without having to pull the data for 3000 plants that appear in the final shots’ (see Figure 1).

---

<sup>8</sup> At approximately 2 minutes 55 seconds in *Dwayne Johnson to the Rescue*. Minogue echoes the sentiment moments later: ‘I would want him to rescue me’.



Tasked with creating convincing shots of downtown LA and integrating the live action elements filmed on a specially constructed, moving soundstage on the Gold Coast, Australia, Method Studios deployed a variety of capture and image processing and generating technologies (see Figure 5). Figure 5 displays this integration of analogue and digitally produced elements. It is a frame grab from close to the end of a long, digitally animated tracking shot that begins on a wide, macro-scale framing of an L.A. cityscape suffering the effects of the earthquake that gradually tracks and zooms in to reveal – as digitally generated panes of glass shatter – the interior of one skyscraper containing the restaurant set built on the Gold Coast soundstage). The digital imaging technologies deployed by Method Studios included the use of (Light Detection and Ranging) – also known as 3D Laser scanning – of LA’s city centre from ground level and rooftops to assist in the building of detailed and accurate 3D models of LA’s high rise buildings. Originally developed for military purposes, LiDAR is a surveying technology that produces accurate and realtime data that is being adopted in a whole range of digital technological endeavours including in various kinds of media production from cinema to video games (LiDAR UK 2017). Method’s LiDAR scans fed data into the generation of 3D scenes of LA’s cityscape reeling from the earthquake (see Figure 6). Well-known LA landmarks, accurately scanned by laser, provide the geometrical reference data for their digital doubles that are made to tremble and fragment in entropic ecstasy as shown in Figure 6. Numerous photos of the area were also taken and the combined data enabled Method Studio’s VFX artists to ‘build CG environments, which were stitched with the live action plates shot in Australia, then added atmospheric effects such as smoke and pyroclastic clouds to bring everything together in a cohesive scene’ (Staff 2015).

The planning required for the acquisition of constituent elements of the envisaged ‘cohesive scene’ from a variety of sources in such projects has rendered the classic industrial organisation of filmmaking into pre-production, production and post-production obsolete: the film shoot is no longer approached as principal production following a preparatory stage but as part of the generation of elements (‘assets’) that will contribute to the construction of the film’s image. In this regard *San Andreas*’ lead cinematographer Steve Yedlin is described as a suitably ‘tech-savvy’ cameraman in a blog about the production because he regularly checks his shots on set for their potential suitability for this purpose with the aid of ‘Nuke’ node-based compositing software (Failes 2015). Yedlin was able to do his own pretrialling of the desired compositions of live action and digital elements to better ensure his work was able to flow effectively into the production pipeline.

The point of this discussion of aspects of the digital character of *San Andreas*’ production is not so much to give the lie to Warner Bros’ promotion of the realism of the film in *Dwayne Johnson to the Rescue*. As noted above, this is hardly necessary today. One does not need to be an industry practitioner or a digital vfx researcher to see ample evidence of the extent to which the mainstream cinema image is both subject to and the product of digital processes of image generation, manipulation and filtering, and spatial and temporal (re)composition. There are many more websites with articles about and video compilations of the production of *San Andreas*’ special effects in addition to those I have referred to, and it is a commonplace marketing strategy with the release of a major Hollywood film to showcase the expenditure made in producing the spectacle as widely as possible.

It is the coexistence of these two accounts of the film’s spectacle that interests me here inasmuch as it offers an intriguing instance of the tension in the contemporary apprehension of film as representational medium. Digital animation’s

place within film is at the heart of this tension. On the one hand the computer-animated and manipulated character of the live action film image seems to be the ground of the general sense of cinema today. The mainstream, big budget 'film' lives or dies on both its massive investment in cutting edge digital visual effects – all animated and/or composited with live action footage in a profoundly animatic production process – and on the effectiveness of its marketing of the experience they offer. The belief in the film's fictioning of reality retains, on the other hand, some residue of the conviction that the pre-digital cinema constructed of photographic, analogue images was able to compel. I am not proposing here that fiction films elicit a naïve belief that the film is reality but, as many accounts from various theoretical perspectives have argued, the 'suspension of disbelief' in the cinematic story's relationship to real life experience, history and events was sustained in part by the analogical resemblance of film to exterior appearance and to the 'credibility' granted the photographic medium. The aesthetic crisis of the blockbuster as live action spectacle Tomasovic announces and the stagnation of the possibilities of animating new fictions that Leslie evokes through the notion of 'petrified unrest' articulate this tension in belief in the image, in a settled 'sense' or knowledge of what the image is today. The imploding logic of the blockbuster and its stifled re-animation of forms of life articulate what after Stiegler I would call a disorienting 'suspension of belief' in what the mediated image is in general. Without belief there can be no suspension of disbelief, or any other knowledge of how to interpret, to question or to distinguish the image's relation to reality. 'Reality', which only appears to us through mediation, suffers in the spiralling disorientation. In the next section I turn to Stiegler's account of the 'analogico-digital image' to develop this analysis of the disorientation of belief in the mediated image. For Stiegler it is critical to grasp the digital transformation of the image as a question of animation in both the technical and the broader conceptual sense of the bringing to life of psychic and social existence.

### ***San Andreas* and the techno-intuitive knowledge of the image**

In 'The Discrete Image' Bernard Stiegler will designate this general sense of the image as digitally processed artifact as a transformation in the 'techno-intuitive' intelligence of the image (2002: 162). This hyphenated term is meant to signal the dynamic relations between perception and the technical means of perceiving that condition the habitual manner of understanding what images are. Images are fabricated artifacts that represent things. Stiegler sets out to analyse the irreducible relations between the understanding of the artifact as product of a technical procedure and the understanding of what the image gives us to see. In keeping with his philosophy of the technicity of human being, Stiegler argues that perception, experience and the knowledge of self and world are conditional upon the always evolving technical prostheses that materialise and mediate our existence. Writing in the mid-1990s, Stiegler envisages a major destabilisation of this techno-intuitive apprehension of the image's relation to the exterior world and to perceiving subjects through the digital transformation of the conditions of image production. If 'in a general way, a technical development suspends or calls into question a situation which seemed previously stable', the emergence of 'analogico-digital technology' opens up a phase of 'intense evolution... of the conditions in which our beliefs are constituted' (p. 149).

The digital opens up new possibilities of manipulation, animation and the composition of elements in the construction of images. Manipulation becomes the 'rule' of digital imaging (p. 150). Stiegler discusses the difference between analogue

and digital photography to elaborate this notion of the rule as a default mode of belief in the nature of the image. He contrasts digital image production to the analogue photographic basis of pre-digital image production with reference to Roland Barthes' classic account in *Camera Lucida* of the *noeme* or 'essence' of photography:

The *noeme* of the photo is what in phenomenology would be called its intentionality. It is what I see *always already, in advance*, in every (analog) photo: *that what is captured on the paper really was*. (Stiegler 2002: 150)

The phenomenological analysis of a photograph is concerned with how it manifests itself to a perceiving viewer's consciousness. The 'intentionality' of the object of consciousness – in this case the photograph – is a function or structural condition of this coming into view as phenomenon for or of consciousness. The classic phenomenological project seeks to establish eidetic, that is invariable or 'ideal' forms valid across the individual phenomenal instances analysed.<sup>9</sup>

In *Camera Lucida* (2000) Barthes deployed the terms of phenomenological investigation in his intensely personal and reflective account of his relation to photographic images. He offers for instance a compelling discussion of his experiences of finding and viewing photographs of his recently deceased mother, which culminates in a rumination on the complex temporal dislocation experienced in seeing the indexical, photo-chemically registered traces of his mother as a young child long before she was to become his mother (Barthes 2000: 67-72). In another well known passage Barthes reads a photograph of Lewis Payne, the convicted attempted assassin, that is taken shortly before his hanging in 1865 in terms of the shock of seeing the living, condemned man shortly before his death long ago (94-97). For Stiegler the force of Barthes' mobilisation of phenomenology is in forcing it to confront the historical, technical conditions of the phenomenality of images.<sup>10</sup> In

---

<sup>9</sup> See Stiegler's analysis in *Technics and Time 2: Disorientation* (2009) of the phenomenological project of its 'founding father', Edmund Husserl. Stiegler summarizes Husserl's aims as follows: 'Husserl's *Logical Investigations* asserts that all consciousness is consciousness-of-something, constituted out of its object of consciousness. The phenomenological, which for Husserl cannot be constituted in advance, must neutralize all hypotheses of existence and its objects: the phenomenon is constituted in lived experience whose intentional goal is always that of an *eidōs*' (p. 191-192).

<sup>10</sup> Barthes has this to say about his project: 'In this investigation of Photography, I borrowed something from phenomenology's project and something from its language. But it was a vague, casual, even cynical phenomenology, so readily did it agree to distort or to evade its principles according to the whim of my analysis. First of all, I did not escape, or try to escape, from a paradox: on the one hand the desire to give a name to Photography's essence and then to sketch an eidetic science of the Photograph; and on the other the intractable feeling that Photography is essentially (a contradiction in terms) only contingency, singularity, risk: my photographs would always participate, as Lyotard says, in "something or other": is it not the very weakness of Photography, this difficulty in existing which we call banality?' (Barthes 2000: 20). The other dimension of Barthes' 'cynical' application of phenomenology was his 'compromise with a power, *affect*' (21) in reading the experience of photographs. In these two ways Barthes avoided or refused what Husserl described as the suspension or reduction of everyday modes of experiencing the world, claiming in

Stiegler's account all images bear ghosts of the past that inasmuch as they are forms of mediation that record and communicate experiences, reflections, impressions and so on from the past of the living and the no longer living. These ghosts are transformed with photography in a way that produces the particular disorienting and traumatic shock of the overlapping of temporal instants Barthes reflects on as his chief theme.

The ghostly character of media artifacts is a central claim of Stiegler's account of the role of 'mnemotechnical' forms in human ethnocultural becoming since their inception with practices such as rupestral art (Stiegler 2013). Mnemotechnical artifacts emerged as a specific development of the general capacity of technical artifacts to function as an exterior record of the gestures and intentions of those who fashioned them. Stiegler's philosophy of technicity identifies this memorious capacity of technics as what enables the decisive transformation of human evolution from a biological (phylogenetic) process to an ethno-cultural, 'epiphylogenetic' dynamic where the composition of biological and technological drivers are weighted in favour of the technological. In 'The Discrete Image' he has this to say about how our very conception of the image is haunted by the artifacts that stay with us from the past moment of their fashioning:

If without the mental image, there is not, has never been, and will never be an image-object (the image is only an image insofar as it is seen), reciprocally, without the objective image, despite what one might think, there is not, has never been and will never be a mental image: the mental image is always the return of some image-object, its remanence – both as retinal persistence and as the hallucinatory haunting or coming-back (*revenance*) of the phantasm – an effect of its permanence. (p. 148)

Stiegler describes the rule concerning what is already seen, which is to say, what is anticipated, in seeing an analogue photograph as the accepted, habitual mode in which it is received by the viewer. It is based on a widely assumed knowledge of its chemical inscription of light rays emanating from the object in front of the camera. Of course the photographic image could be manipulated, and the analogue photo (and the mainstream cinema which put the photographic image in motion), like all technically produced images, was constructed through a deliberate and complex technical process whose 'reality effect' is produced on the side of the spectator (Stiegler 2002: 155). Nonetheless the epoch of the analogue photographic image was one in which the photo came to be taken 'techno-intuitively' as the medium of a 'this was' once present before the camera. The manipulation of this objectivity was understood as the exception rather than the rule.

The promotion of the realism of *San Andreas*' live action in *Dwayne Johnson to the Rescue* solicits the spectator to engage in the film's 'reality effect' as if nothing has changed with this rule of the photographic realism subtending the credibility of cinematic storytelling. We know, however, that with the digital comes the capacity for

---

fact that 'affect was what I didn't want to reduce; being irreducible, it was thereby what I wanted, what I ought to reduce the Photograph to...' (21). Barthes' 'wilful' appropriation of phenomenology is not only, then, as is perhaps too common today, a hijacking of its terms and analytic power to describe experience, but a critical, 'post-phenomenological' gesture, one which finds a rigorous and systematic elaboration in Stiegler's work.

the systematic processing of the image that Stiegler describes as the ‘diacritical manipulation of the light and of all the elements which are differentiated therein in order to constitute the image’ (Stiegler 2002: 154). The knowing I just signalled in this ‘we know’ is the default, collective, conventional apprehension of what technical artifacts provide ‘us’ by mediating our existence. As a rule, it amounts to a routine anticipation of the image’s nature and significance – on the basis of which the encounter with actual images can proceed as its habitual confirmation, as refinement, or as disruption prompting surprise, denial, uncertainty, critical reflection and reevaluation, and so on. Stiegler will describe this techno-intuitive apprehension as a synthesis on the side of the spectator(s) that forms in relation to the technical synthesis producing the ‘image-object’:

The *image in general* does not exist. What is called the mental image and what I shall call the image-object (which is always inscribed in a *history*, and in a *technical history*) are two faces of single phenomenon.<sup>11</sup> (p. 147)

In Stiegler’s account the rule of the image is a techno-intuitive negotiation of these two faces of the historical and material phenomenality of images. It is always a question of the relations between the mental and the technical synthesis. With the digital revolution in photographic and video imaging that emerged in the 1990s and manifested in the transformation of mainstream audiovisual media production and consumption – from digital cameras to the emergence of video games and interactive media to the digitisation of cinema, radio and television – the altered conditions ‘in which our beliefs are constituted’ destabilised the ‘mental image’ that is synthesised in the reception of the prevailing varieties of the ‘image-object’ (Stiegler 2002: 149). The digital enacts a ‘discretization’ of the image (p. 156). Discretization transforms the conditions in which images, graphics, and inscriptions of all kinds record human experience and allow its preservation and transmission. It is important to note that, for Stiegler, the ‘image is always discrete’ inasmuch as it is always composed through a technical process of assembling marks or traces (p. 156). Digitisation intensifies and mobilises this discrete character through a total computational transformation of the processes of image (and audio) production, manipulation, storage and transmission.

An account of all of the processes of the digital differentiation of the image into elements for analysis, processing and reassembling is beyond the scope of this essay. In order to elaborate the sense in which digital discretization enacts a systematic reconstitution of the production of the image in contemporary cinema such as *San Andreas* I will briefly discuss the employment of Autodesk’s Maya software in the modelling and animation of elements in the destruction of downtown LA by Method Studios (see Figures 5 and 6). Maya is an industry standard 3D animation package for generating 3D objects and environments and facilitating their distribution around the production network for further processing and incorporation with other digital assets. It was used in the ‘synchronized pipeline’ for ‘layouts and tracking’ of this and other segments in the film (Staff 2015). Layouts refers to the task of converting 2D image resources to 3D models and plotting the stages of their animation, while tracking concerns the task of converting video footage with moving

---

<sup>11</sup> In subsequent texts Stiegler will develop this notion with reference to what Husserl the ‘passive synthesis’ that governs the routine, ‘natural attitude’ toward phenomena that phenomenological investigation needs to suspend in order to analyse the phenomena of consciousness more rigorously. See Stiegler 2009 and Stiegler 2011b.

camera shots to digital information to enable the combination of video and digitally animated elements in the finished moving image sequence. Among other things, Maya was used in the building of CG environments in the LA scenes. The modelling mobilised data from the 3D laser scans and photographs which data was then incorporated into the the discretizing operations of Maya deployed in the photo-realistic animation of LA's cityscape.

As Aylish Wood's study (2014) of professional users of Autodesk Maya demonstrates, animating with Maya involves a process of negotiation with the highly complex system of algorithms governing the automation of its various image-generating, modifying and animating processes. The 'deep structure' of Maya is accessed by industry practitioners through the software's user interface which Wood argues holds together, not without tension, 'two sets of logics rather than transitioning from one to the other' (2014: 322).<sup>12</sup> The animator's sense of designing 3D shapes and imparting them with believable motion encounters the systematic, interconnected relations between the various elements of the objects defined by the software's object-oriented programming. His or her agency is experienced in relation to the 'envelope of the software' (2014: 326). The software's complex of algorithms configure relations between the operationally defined elements of image making and animating through various dialogue boxes for specifying the interactions of the elements at key nodes:

The primitive shapes visible and accessible in the viewport [of the user interface] sit alongside dialog boxes that could include the channel box/attribute editor, the outliner, the graph editor and the script editor. On such dialog boxes the schema reveal relationships between packets of data that constitute a scene, a contrast to the viewport that shows relationships between co-ordinates along lines of geometry, in other words, shapes. (p. 327)

These schema enable and entrain the animator to manage the programme's production of objects through the operational interactions between several nodes comprising the object's design and animation. These nodes are points enabling user input into the multitude of attributes, values and transformations that govern the software's operation. One of Wood's examples is of the production of a curved surface of an object:

A NurbsCurve node has an attribute that contains a NURBS curve, essentially a numeric description of the shape of a curve. The attribute can be connected to the input of a revolve node. The connection 'tells' the software to transform the curve in ways that are defined by parameters of the revolve node. The revolve node also has input attributes describing the sweep angle and the axis it would revolve around. (p. 329)

These operations are all ordered in sequences that amount to chains of nodes in hierachical relations of dependancy. Artists working with Maya and similar animation programmes navigate between this most abstract and schematic level of their work

---

<sup>12</sup> Wood takes the term 'deep structure' from a text by the designers of Maya's user interface, George Fitzmaurice and Bill Buxton, who described their task as finding 'ways of exposing the deep structure to the user in ways that are compatible, intuitive and efficient' (Wood 2014: 329).

within the digital envelope of production and the viewport's analogue presentation of the provisional output of their labours. The deeper they go into the operational schematism governing the complex of manipulations for each defined element of variability, the more engaged they are in piloting the diacritical, discretized synthesizing of the moving images contributing to the production of the 'cohesive scene' of the analogico-digital image of mainstream film and media.

### **The chance of the analogico-digital image**

Wood's examination of the digital animator's negotiation with the digital discretization of the image's elements in Autodesk Maya examines an important dimension of the artist's involvement in advancing the technical synthesis of the analogico-digital image. Wood's interest in this text is in the animator's experience of the automated processes comprising the 'deep structure' of digital processing in and through her productive encounter with the abstract schemata of nodes, variables and object dependencies in the programme's user interface. She explores through her ethnographic research the ambiguous and sometimes ambivalent character of this experience articulated in the reflections of Maya users. Their sense of the craft and creativity of their work is expressed in terms of a negotiation and sometimes of a struggle with the complex algorithmic logics of the digital machine that animates the image in an always inaccessible, automated, 'behind the scenes' realm of computer processing (Wood 2014: 329).

As I have argued above with reference to Stiegler's account of the relation between the technical and the intuitive syntheses in conditioning our expectation of the image, knowledge of the digital transformation of imaging and animation has influenced the techno-intuitive intelligence of analogico-digital media today. While many or most people's encounter with digital image manipulation does not extend to the depth or complexity of the tasks occupying the users of software such as Maya, the widespread availability of photographic processing, video-editing, simple graphics animation, video game modification toolsets and so on have established the rule of digital manipulation today.

The conditions for the evolution of our knowledge of and belief in the image exist, then, alongside the massive investment in a photorealistic appeal to a traditional relation to the image in mainstream films such as *San Andreas*. In Stiegler's analysis this situation is characteristic of the de-phasing of technical and social/cultural evolution which plays a constitutive part in human historical becoming. As part of the wider digital revolution in communications and information processing, the analogico-digital image has destabilised previously established modes of understanding images and the part they play in the mediation of individual and social existences. In *Automatic Society* Stiegler characterises this as the 'techno-logical *epokhē*' that suspends the former 'automatisms' that constituted the habitual understandings and routines (the 'rules' as they are called in 'The Discrete Image') of the individual and cultural adoption of the possibilities of technical forms (Stiegler 2016: 12). Insofar as they have this 'social' character as routines that mobilise technical artefacts and processes in the mediation of individual and collective becoming, these automatisms were 'capable of producing their own disautomatization through appropriated knowledge', that is, by sustaining a dynamic of use accommodating their modification, review, critique, variation and innovation (p. 12). These automatic modes of understanding and acting play their part in the dynamic negotiation – that is, in the *animation* – of the established cultural programme

regulating and projecting the (social) meaning of existence. The ‘techno-logical *epokhē*’ is instantiated in an ‘asocial automatization’ of the synthesising of the artifacts that mediate individual and collective becoming (p.12). It is asocial to the extent that it suspends – or *petrifies* in Leslie’s terms – the previous dynamic of human ‘individuation’ without conjugating the technological shift with a new social programme for projecting a disautomating horizon for its adoption.

The disorientation (or ‘shock’ – which today is exploited in the asocial, neoliberal automatism of ‘disruption’) produced by this de-phasing of technological and social becoming opens the space for social and cultural transformation to emerge in response to this ‘asocial’ phase.<sup>13</sup> For Stiegler writing ‘The Discrete Image’ at the onset of the digital media revolution, the ‘chance’ of the digital discretization of the image is the opening up of the development of a new kind of belief in the image, a ‘more knowing belief’ (Stiegler 2002: 152). The image ‘may attain its properly critical stage’ engaging the spectator differently:

By discretizing the continuous, discretization allows us to submit the *this was* to a *decomposing* analysis. Essentially synthetic (for example, in the spontaneous synthesis of the *this was*), the spectator’s relation to the image thus becomes an *analytic* relation as well. (p. 157-158)

This analytic relation would incorporate something of the encounter with the automatisms of the ‘deep structure’ of discretized image-making that Wood explores in the work of animators working with Autodesk Maya. These artists – who are also spectators today in a digital cultural milieu in which the spectators are also enjoined to participate in the production and circulation of digital mediations of their social existence – these artists-spectators experience the suspension of the habitual knowledge of what it is to make images, including the maker’s sense of themselves as individual, autonomous producer. The potential of the analogico-digital image resides in this analytic, decomposing experience to open new relations between artists and spectators, users and collectives of users, to seed new knowledges of the image as animator-innovator of what can be known, seen, and experienced.

This is the chance of the analogico-digital image as it presented and continues to present itself in the epochal suspension of the analogue image. The cultural-political stakes of the ‘petrified unrest’ that has been maintained in the intervening twenty years of the digitally animated commercial global cinema emerge then as what Stiegler (along with Daniel Ross) characterise as the ‘asocial’ and ‘entropic’

---

<sup>13</sup> Attaining this phase of a re-coordination of technical and social becoming is the accomplishment of what Stiegler calls ‘doubly epokhal redoubling’: ‘We have developed the concept of the ‘doubly epokhal redoubling’ in order to try to describe how a shock begins by destroying established circuits of transindividuation, themselves emerging from a prior shock, and then gives rise to the generation of new circuits of transindividuation, which constitute new forms of knowledge arising from the previous shock. A techno-logical *epokhē* is *what breaks with constituted automatisms*, with automatisms that have been socialized and are *capable of producing their own dis-automatization* through appropriated *knowledge*: the *suspension of socialized automatisms* (which feeds stupidity in its many and varied forms) occurs when *new, asocial automatisms are set up*. A second moment of shock (the second redoubling) then produces new capacities for dis-automatization, that is, for negentropy to foster new social organizations’ (Stiegler 2016: 12).



inhibition of this attainment of a critical, analytic relation to the image. This kind of critical relation would open onto and be instantiated in the formation of more ‘social automatisms’ of audiovisual culture. Today, however, the ‘techno-intuitive’ knowledge of the digitally animated and composed live action cinema image is caught cycling between two kinds of belief in the ‘dreamt reality’ that Leslie evokes as the compulsively returning fantasy of contemporary hypercapitalism. These two beliefs and this fantasy are exemplified in the spectacle and the marketing of *San Andreas*. The governing logic of its massive investment in cutting edge analogico-digital technology is directed toward the photo-realist affirmation of the spectacular eventfulness of destruction and rebuilding that amounts to a petrified reanimation of America as the ‘dreamt reality’ of a globalised capitalist consumerism. The narrative vehicle for this spectacle re-cycles action and melodramatic clichés of individual heroism restoring the monogamous, heterosexual nuclear family in a cartoonish, sensori-motor schema of ‘action figure’ hyper-activity. The coordinated marketing release of the ‘how they did it’ (again) media serves to reproduce and reinforce the ‘asocial’, petrified repetition of this default mobilisation of the potentials of digital imaging and animation.

How to move this recycling on toward the negotiation of new knowledges of the image as composer and innovator of what can be known, seen, and experienced? The contemporary digital media sphere seems pervaded by a commercially induced voluntarism to remain in the mode of a consumerist synthesis before the analogico-digital image that rushes forward innovatively while petrifying time in a permanent recycling of the same old stories. This techno-intuitive synthesis plays its part in sustaining the unsustainable logics of what Crary has analysed as the 24/7 reproduction and recirculation of global capitalism through online circuits of prosumerist productivity. The ‘decomposing’, analytic potential of digital discretization retains its charge, however, within the disseminating practices of analogico-digital image production. The restive analogico-digital image is both symptom and agent of an entropic spiralling that can and indeed must transform itself into a ‘virtuous circle’ developing new social automatisms, new rules of the image and its animating capabilities.

#### CAPTIONS

**Figure 1.** Overhead shot of the Glendora mountain road helicopter rescue sequence in *San Andreas*. DVD frame grab from *San Andreas* (directed by Brad Peyton, 2015).

**Figure 2.** Raymond Gaines (Dwayne Johnson) abseiling down to the rescue. DVD frame grab from *San Andreas* (directed by Brad Peyton, 2015).

**Figure 3.** The studio set for the Glendora mountain road helicopter rescue sequence in *San Andreas*. Screen grab from *Dwayne Johnson to the Rescue* (director uncredited, 2015), available at <http://www.dailymotion.com/video/x3bbynx> (accessed 1 May, 2017).

**Figure 4.** Shooting the long take of Johnson abseiling from the helicopter suspended on a gimble on the the studio set for the Glendora mountain road helicopter rescue sequence in *San Andreas*. Screen grab from *Dwayne Johnson to the Rescue* (director uncredited, 2015), available at <http://www.dailymotion.com/video/x3bbynx> (accessed 1 May, 2017).

**Figure 5.** Towards the end of a long take in the LA sequence the broken windows in the skyscraper reveal the restaurant set constructed on a soundstage on the Gold Coast, Australia within the digitally generated image of the LA skyscape produced by Method Studios in LA. DVD frame grab from *San Andreas* (directed by Brad Peyton, 2015).

**Figure 6.** The LA skyscape with swaying buildings, smoke and fire effects. DVD frame grab from *San Andreas* (directed by Brad Peyton, 2015).

## References

- Barthes R (2000) *Camera Lucida*. Translated by Howard R. London: Vintage.
- Cholodenko A (1991) Introduction. In Cholodenko A (ed.) *The Illusion of Life: Essays on Animation*. Sydney: Power Publications, 9-36.
- Collins J (1993) Genericity in the 90s: Eclectic Irony and the New Sincerity. In Collins J et al (eds.) *Film Theory Goes to the Movies*. New York: Routledge: 242-255.
- Comingsoon.net (2016) San Andreas Sequel: Dwayne Johnson versus the Volcanoes. Available at Comingsoon.net, <http://www.comingsoon.net/movies/news/658357-san-andreas-sequel-dwayne-johnson-versus-the-volcanoes#/slide/1> (accessed 18 July 2016).
- Crary, J (2013) *24/7: Late Capitalism and the Ends of Sleep*. London: Verso.
- Failes, I (2015) Surviving San Andreas. In *fxguide*. Available at <https://www.fxguide.com/featured/surviving-san-andreas/> (accessed 1 May, 2017).
- Fisher M (2009) *Capitalist Realism: Is There No Alternative?* Ropley: Zero Books.
- Internet Movie Database (2017) Box Office/business for San Andreas. Available at [http://www.imdb.com/title/tt2126355/business?ref\\_=tt\\_dt\\_bus](http://www.imdb.com/title/tt2126355/business?ref_=tt_dt_bus) (accessed May 1 2017).
- Jameson F, (1991) *Postmodernism, or, the Cultural Logic of Late Capitalism*. London: Verso.
- LiDAR UK (2017) The Uses of LiDAR. Available at <http://www.lidar-uk.com/usage-of-lidar/> (accessed May 1 2017).
- Leslie E (2013) Animation's Petrified Unrest. In Buchan S (ed.) *Pervasive Animation*. New York and London: Routledge, 73-93.
- Manovich L (2007) Understanding Hybrid Media. manovich.net. Available at [http://manovich.net/content/04-projects/055-understanding-hybrid-media/52\\_article\\_2007.pdf](http://manovich.net/content/04-projects/055-understanding-hybrid-media/52_article_2007.pdf) (accessed May 1 2017).

Murnieks A et al (2015) *Motion Design Education Summit 2015 Edited Conference Proceedings*. New York: Focal Press Books.

Oconnell, K (2015) Time Compressed: The History and Future of Motion Design. In Murnieks A et al (eds.) *Motion Design Education Summit 2015 Edited Conference Proceedings*. New York: Focal Press Books, 185-187.

Ross D (2015) For a Neganthropology of the Cinematic. In Académie d'Été d'Épineuil-le-Fleuriel, Épineuil-le-Fleuriel, France, 12-15 August 2015. Available at [https://www.academia.edu/15142703/For\\_a\\_Neganthropology\\_of\\_the\\_Cinematic\\_2015](https://www.academia.edu/15142703/For_a_Neganthropology_of_the_Cinematic_2015) (accessed 10 August 2016): 1-19.

Staff (2015) Method Studios demolishes downtown Los Angeles in San Andreas. *Below the Line; Voice of the Crew*. Available at <http://www.btlnews.com/crafts/post-production/method-studios-demolishes-downtown-los-angeles-in-san-andreas/> (accessed 1 May 2017).

Stiegler B (2002) The Discrete Image. In Derrida J and Stiegler B, *Echographies of Television: Filmed Interviews*. Translated by Bajorek J. London: Polity Press, 147-163.

Stiegler B (2009) *Technics and Time 2: Disorientation*. Translated by Barker S. Stanford CA: Stanford University Press.

Stiegler B (2011a) *The Decadence of Industrial Democracies: Disbelief and Discredit, Volume 1*. Translated by Ross D and Arnold S. Cambridge: Polity Press.

Stiegler B (2011b) *Technics and Time 3: Cinematic Malaise and the Question of Malaise*. Translated by Barker S. Stanford CA: Stanford University Press.

Stiegler B (2013) The Organology of Dreams and Arche-Cinema. Translated by Ross D. *Screening the Past* 36. <http://www.screeningthepast.com/2013/06/the-organology-of-dreams-and-arche-cinema/>. Accessed 1 May 2017.

Stiegler, B (2016) *Automatic Society 1: The Future of Work*. Translated by Ross D. Cambridge: Polity Press.

Tomasovic D (2006) The Hollywood Cobweb: New Laws of Attraction (The Spectacular Mechanics of Blockbusters). In Strauven W (ed.) *The Cinema of Attractions Reloaded*. Amsterdam: Amsterdam University Press: 309-320.

Wood, A (2014) Behind the Scenes: A Study of Autodesk Maya. *Animation: An Interdisciplinary Journal* 9(3): 317-332.