

FCJ-176 A Skeuomorphic Cinema: Film Form, Content and Criticism in the 'Post-Analogue' Era

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Abstract:

Adopting an archaeological approach to digital cinema that helps us to recognise both the old in the new, and the new in the old, this article argues that a 'skewed' critical concept of the 'skeuomorph' can help us move beyond notions of remediation, convergence, and simulacra to better understand the complex entanglement of the familiar and the novel that currently defines contemporary cinematic form, content, and criticism. Using different examples to make our case, we maintain that audiences and filmmakers alike have not yet fully adapted to best read or understand the newly emerging digital forms, and are thus consequentially 'not quite seeing them for what they are, and always unconsciously trying to understand them in terms of the old and familiar' (Gessler 1998). By drawing attention to several contemporary blind spots, our detoured notion of the skeuomorph aims to make the new and novel features of digital film palpable.

In like manner a beginner who has learnt a new language always translates it back into his mother tongue, but he has assimilated the spirit of the new language and can freely express himself in it only when he finds his way in it without recalling the old and forgets his native tongue in the use of the new. (Karl Marx, 2000: 327)

In this essay we utilise a ‘digitally detoured’ notion of the ‘skeuomorph’ to better understand the ‘gaseous’ form and content of contemporary cinema, arguing in particular that this concept entails various nuances that make it a more fecund framework through which to consider the aesthetics of digital cinema. Looking in particular at digital cinematography and performance, we argue that because of its emphasis on concealed and/or misunderstood novelty, the skeuomorphic framework yields a more productive understanding of digital cinema than do other terms such as simulation (Baudrillard 1994), remediation (Bolter and Grusin 2000), and convergence (Jenkins 2007), which are characterised by their focus upon ‘pastness.’ Against these, we embrace a ‘skewed’ approach to contemporary cinematic artefacts and phenomena, which allows us to approach our various objects and loci of study obliquely, or side-on, so that we may perceive the complex entanglement of old and new, familiar and novel, pasts and future, bound up within the digitalization of modern cinema. Such an approach undoubtedly helps situate our project within a broader ‘archaeological’ approach to media, technologies, machines, techne, and dispositifs to be found in the works of scholars such as Walter Benjamin (2004), Gilbert Simondon (1958), Michel Serres and Bruno Latour (1995), Jean Baudrillard (2005), Michel Foucault (2002), Lev Manovich (2001, 2002), Mark B. N. Hansen (2004), Jussi Parikka and Erkki Huhtamo (Parikka 2010, 2012, Huhtamo and Parikka 2011), and Boris Groys (2014) amongst many others.

Like many of these forbearers, we too recognize archaeology as an art and practice that is always-already about the present; particularly as we aim here to tease out the old features lurking within the new, as well as the new features waiting to be re-discovered within the old. In taking inspiration from thinkers like Deleuze, Guattari, and Parikka, however, we also seek to pervert and to modify that which is nearest and furthest away, in order to reveal some of the untapped novelties, and futural becomings (or unbecomings) already apparent or latent within our present film technologies and practices. As such, the present project also necessarily departs from many of the aforementioned practitioners and their methodologies, particularly by foregrounding a ‘skewed’ and ‘skeuomorphic’ nature to contemporary filmmaking, films and scholarship—which we maintain can better account for the parallelism of past and future (qua actual and virtual) concomitantly operating within digital cinema and film going.

What is a skeuomorph?

The etymology of ‘*Skeu*’ stems from the Greek for vessel or implement. Anthropologist Nicholas Gessler thus defines a skeuomorph as an ‘element of design or structure that serves little or no purpose in the artifact fashioned from the new material but [which] was essential to the object made from the original material’ (Gessler, 1998). In other words, a skeuomorph is an object or form that anachronistically retains ornamental features or design cues from an earlier technological era or method of production—and which no longer have any functional purpose. Accordingly, skeuomorphs can be understood as ‘material metaphors instantiated through our technologies in artifacts’ that either light our paths by providing ‘familiar cues to an unfamiliar domain,’ or else serve to ‘lead us astray’ (Gessler, 1998). According to Gessler, when ‘yesterday’s functional features become today’s stylistic decorations,’ they either begin to constitute a special class of ‘self-deception,’ or offer a path into the new and unfamiliar (which, for Gessler, is better than no path at all). In this sense, the skeuomorph as a concept should be understood as being simultaneously deceptive and helpful.

We encounter examples of skeuomorphic design everywhere in our daily lives—as a stroll down any UK high street will amply demonstrate. For example, the modern bollard designs used to striate crowd or traffic movement retain skeuomorphic traces of a post-Napoleonic war design, wherein decommissioned or captured French cannons were cut and mounted with cannon balls in the street. There is no functional purpose for the modern design preference for a tapered cylindrical body and ball-top for a bollard, and yet they persist, for this is what bollards originally looked like. Passing a couple taking a photograph with a digital camera, we hear a shutter sound, an effect introduced via a digital clip when the button is activated, and which skeuomorphically mirrors the click of the shutter on older, analogue cameras. A car parked opposite displays a faux-walnut veneer on its plastic dashboard. And beyond that, a boat moored at the quay is proudly ornamented with fiberglass-ribbed planking made to look like wood.

Each of these skeuomorphs exists for different reasons. In time the bollard came to be a tool for controlling the direction of human and vehicular traffic; and while its design is today skeuomorphic, in that it need not be shaped in the way that it is, it perhaps retains elements of functionality because its dimensions and density are useful in discouraging drivers of modern cars who might otherwise drive over/through more flimsy equivalents. The digital camera’s shutter is not a necessity, but the sound cue enables both the photographer and their subjects (particularly if they are human) to know that the photograph has been taken (and that they can stop saying ‘cheese’). For diverse reasons,

then, we can recognise that skeuomorphs are common—including in the form and content of contemporary digital cinema.

As indicated earlier however, we are necessarily detouring the ‘everyday’ understanding of the skeuomorph in this outing to help concurrently account for the novel and new dimensions that arrive courtesy of new technological formulations. Thus, we aim to expand and modify the Greek prefix ‘*skeuo*’ to simultaneously house, or become possessed by, a modern (near homophonic) notion of skewed-ness; with this at once referring to the side-on orientation and approach we adopt towards our objects of study, and the skewed or oblique path that new skeuomorph machines forge into the unknown. Indeed, we might recall that, mathematically speaking, the term skewed means neither to run parallel nor to intersect, whilst in everyday parlance the term may also be applied to a part that diverges. As such, this concept allows us to approach our objects of study in a skewed chronopolitical and pragmatic manner, so that we may bring the past and the future into our peripheral vision, and simultaneously account for both the familiarity (pastness) and novelty (futura) of these technologies. Accordingly, our modified and doubly articulated notion of the skewed/skeuo offers an oblique polychronic enframing of our different objects of study, and makes palpable the latent futural dimensions or new territories opened up by their morphological evolution. Which is to say, a futural pole or dimension entirely lacking in many other approaches, including Baudrillard’s notion of simulacra, which is laden with the baggage of a pastness reworked in the present, or Michel Serres and Bruno Latour’s concept of the temporal foldings, or hidden ‘pleats of time’ in-folded into the latest technologies, making them appear contemporary only by assemblage.

To understand the different possibilities that arrive courtesy of our concept, we can briefly return to and update Serres’ famous example of the late model car. Indeed, today’s latest production line vehicle should be understood as an ensemble of different technologies and techniques that are contingently drawn together from, amongst many others, technologies emerging from or developed within Neolithic times (the wheel), the Nineteenth century (the combustion engine), the Twentieth century (the Air Conditioning Unit), and our own digital era (ABS and GPS); which is not to mention all the other sublimated and ‘forgotten’ historical technologies and techniques needed to extract and refine metals, build roads, vulcanise rubber, mould plastics and extract fossil fuels, which likewise become folded into today’s latest mechanised marketable assemblages. However, none of these past pleated features is necessarily simulacral or skeuomorphic. For the car’s wheels remain round because this is the optimal shape for driving, and not because they are familiar material metaphors for earlier wooden chariot or cart wheels. The ‘concrete’ combustion engine under the hood is likewise an evolution of its abstract forebears, rather than a skeuomorphic modulation thereof (see Simondon 1958).

In the following sections we hope to emphasise the often overlooked novel aspects of digital cinema by shedding light on why the paradigm shift engendered in cinema by digital technology—from actual to virtual, analogue to digital, object to simulation, humanist to post-humanist—has not yet appeared to be as radically transformative as typically promised. Indeed, many of the skeuomorphic features that contemporary digital cinema retains/displays highlight the aetiological or atavistic link between digital cinema and its twentieth century, analogue predecessor; these links being for reasons of ‘fashion’ rather than ‘function’. However, for this very reason, the skeuomorphic features of digital cinema are also deceptive in that they disguise the true nature and power of this precisely new medium as they diverge and diversify. We believe, therefore, that audiences and filmmakers have not yet learned fully to read or understand the newly emerging forms, and as a result, audiences and filmmakers encountering digital forms are still ‘not quite seeing them for what they are, and always unconsciously trying to understand them in terms of the old and familiar’ (Gessler, 1998).

In the following sections, then, we compare and contrast the ‘humanist’ features of twentieth century narrative cinema with their skeuomorphic guises in newer digital forms of films and filmmaking (terms with their own skeuomorphic implications). We shall therefore consider the role of the camera and camera effects, editing, and finally actors and acting as they appear in pre- and post-digital cinema, highlighting where and when skeuomorphic trends most overtly appear. We also attempt to keep one eye on theory and criticism, highlighting how it, too, is guilty of rhetorical anachronisms, and should increasingly strive to create more relevant skeuomorphic neologisms that better address, and adequately discuss, the reality of these new forms (or else account for their loosening shackles from older technological objects and production processes). Before looking at examples of cinematic skeuomorphs, though, we should contrast the skeuomorph with other concepts used to define digital cinema, including simulation and remediation.

Simulation, remediation, novelty

Jean Baudrillard (1994) has perhaps written most memorably about simulation, defining contemporaneity as being dominated by symbols and signs that have themselves ‘preceded’ reality. Digital images in cinema often simulate analogue photographs in terms of both form (framing and the retention of rectilinear perspective in particular) and content (objects that have what Stephen Prince (1996) would term a ‘perceptual realism’). The examples that we shall give of skeuomorphic moments in cinema can also be read as simulations that function, in the Baudrillardian sense, as signs or symbols, particularly

as signs of high production values, which in turn supposedly increases the probability of a film's profitability. However, simulation's emphasis on signs and symbols lends to the concept a sense of 'pastness' away from which we would like to move. That is, signs and symbols are by definition familiar to us, in that we know already the 'meanings' that they signify or symbolise. The 'precession of simulacra' that Baudrillard defines, then, is the process of inhabiting an increasingly legible world in which everything always already has an a priori meaning (see Baudrillard, 1994: 1–42). [\[1\]](#)

The element of pastness that characterises simulation also infiltrates the concept of remediation, as devised by Jay David Bolter and Richard Grusin (2000). In *Remediation*, Bolter and Grusin argue that all media (and not uniquely the contemporary digital media that are often (still!) referred to as 'new media') 'remediate' older media. That is, they consciously appropriate the forms of older media. With regard to cinema, they suggest that remediation is also a form of hypermediation; our belief that the dinosaurs in *Jurassic Park* (Steven Spielberg, USA, 1993) are realistic is based not upon our having actually seen a dinosaur against which we could measure the film's creatures, but against previous, mediated dinosaurs that we have seen in other films, television shows, comic books and drawings. [\[2\]](#) In other words, we understand media through other media, hence 'new media' having a 'double logic' of hypermediacy and remediation (see Bolter and Grusin, 2000: 147–158).

Grusin has gone on to argue that in addition to remediation, cinema in particular also functions via 'premediation' (2004). This does not mean that cinema simply predicts the future (whether or not it does so accurately), but it does mean that cinematic visions of the future help us a priori to understand the future: 'the future is remediated before it even happens... [and] the future is remediated at the very moment that it emerges into the present' (Grusin, 2004: 29). In other words, films like *Strange Days* (Kathryn Bigelow, USA, 1995) and *Minority Report* (Steven Spielberg, USA, 2002) function as a form of premediation by not only depicting future media technologies as remediations of current/past media technologies, but they also provide us with a means to understand the future, such that catastrophes such as the destruction of New York's World Trade Center in 2001, when they do happen, 'never catch us unawares' (Grusin 2004: 36). [\[3\]](#)

Like simulation, remediation and premediation are important and useful concepts for understanding digital cinema, but the element of 'pastness' involved in remediation tends to negate precisely what might be new about new media technologies. That is, new media technologies, with digital cinema here as our focus, might well simulate and/or remediate old(er) media technologies, but this does not mean that their novelty consists uniquely in their ability to remix what already exists. In other words, we contend that there is novelty in

digital cinema—and the concept of the skeuomorph helps to make this clear, because while skeuomorphic designs are understood consciously or unconsciously to make the new feel familiar or comfortable (at least initially), the skeuomorph also affirms positively that there is something ‘new’.

Cognitively speaking, humans at birth are exposed to sights – if not necessarily sounds (there is sound in the womb) – that are new to them, but which they quickly learn to recognise. Given that humans, as a supersaturated species once acculturated to the ‘songs’ and ‘rhythms’ of their highly technological environments, communicate with others and machines not just linguistically but also functionally – that is, by picking out the salient qualities of the world that surrounds us in a fashion similar to our peers/conspecifics – we could argue that perception itself is a matter of remediation. In her ‘schizoanalysis of contemporary screen culture’, Patricia Pisters argues that in our current era of ‘perception 2.0’, the proliferation of digital screens and images surrounding us formulate the external brains to and with which human brains naturally connect and nerve (Pisters, 2012: 305). Taking inspiration from Gilles Deleuze’s thinking about cinema, and updating his concepts to better account for our contemporary era, Pisters argues that the feature of the digital neuro-image that becomes most unusual is its positing a form of thinking from the future. Indeed, Pisters argues that ‘[i]f the movement-image is founded in the first synthesis of time of the present, and the time-image is grounded in the second synthesis of the past, the neuro-image belongs to the third synthesis of time, the time of the future’ (Pisters 2013: 303). From this vantage, both past and present become dimensions of ‘the (always speculative) future, with the third synthesis of time becoming ‘related to the creation of the new, to hope for the future, an eternal recurrence of “difference,” but also to death (death as the future for all of us, but a future that also calls for rebeginnings)’ (Pisters 2013: 304).

Briefly to touch upon wider discourses of difference and repetition, which are relevant but which we do not have space to investigate in depth here, we know that there is not just repetition. If there were only repetition, the world would itself become blinding, or invisible, because if everything were the same/repeated endlessly we would exist in a disorientating/disorientated *ganzfeld* in which we would be incapable of telling one thing apart from another. In the spirit of Deleuze and Friedrich Nietzsche, then, we would say that there is difference, and that the extension of difference manifests itself as novelty, even if we can only recognise difference through the support of repetition. In other words, when we say that digital cinema is novel, we acknowledge that our recognition of its novelty relies in certain respects on a kind of cognitive remediation. But where Grusin (and Bolter) do not look beyond re- or pre-mediation and at the novel itself, the skeuomorph hopefully allows us to push beyond simulation of pastness and to encounter a novel third synthesis of time qua a thinking from the future which is also immanently and virtually bound up within present digital technologies.

Cinema as old or new medium?

In addition to Bolter and Grusin's work on 'remediation', Lev Manovich has written about how digital cinema is in certain respects 'an old medium [passing itself off] as [a] new medium' (Manovich, 2002), while Jan Simons has discussed cinema as a 'new medium as old medium' (Simons, 2002). That is, Manovich says that digital special effects films 'aim to show us something extraordinary: something we have never seen before,' while both digital special effects films and films shot on digital video (DV) show us 'familiar reality in a new way' (Manovich, 2002: 212). However, while this may be their aim, 'the aesthetics of special effects and DV realism... are not new in cinema history' (Manovich, 2002: 217), in that both special effects and documentary-style realism have existed simultaneously since the earliest Lumière brothers' films. Writing in the era before cloud computing, Manovich argues that digital cinema is, therefore, both new and not, with cinema only truly destined to become 'new' when the unprecedented storage capacity of computers becomes utilised, and when users can 'interface' with all of the cinema uploaded on to these memory devices in novel ways (Manovich, 2002: 217). In our present era of prosumer slash-fiction, mash-ups, movie memes and fansubbing, it appears we have indeed taken one step closer to this reality.

Meanwhile, Simons argues that new media themselves do not necessarily remediate their predecessors, because '[n]ew media may simply not have been designed with such a purpose in mind' (Simons, 2002: 240). Simons also proposes that we recognise the metaphorical nature of the conceptual frameworks that we use to theorise films. This latter point is perhaps particularly useful, in that the skeuomorph is, with regard to film theory, a novel concept, but it is also a metaphor. The skeuomorph is not the perfect definition of digital cinema, but it functions as a lens to bring out what we perceive as the novel and, in accordance with Simons, the non-remediated aspects of digital cinema, even if these also follow on from the aesthetic traditions that Manovich identifies, and even if these persist within a cinematic institution that relies upon the traditional spectatorial model that Manovich seeks to overthrow.

Simons goes on to declare that digital cinema is neither a 'new medium as old medium,' nor an 'old medium as new medium,' but quite simply 'a new medium, bringing forth correspondingly new practices and new forms' (Simons, 2007: 51). With regard to special effects films, Chuck Tryon seems to concur with Manovich when he argues that 'the newness of special effects is recycled, reworked, and revisited' (Tryon, 2009: 39). In other words, we ought to recognise that discourses of the novel, together with concomitant backlashes against precisely the novelty of the effects that we see (Tryon, for example, highlights digital's continuities with, rather than its break from, analogue cinema; see Tryon,

2009: 171), have characterised much work in film studies over the last twenty years with regard to the digital and its effects on film. And yet, like Simons, we feel that digital cinema is (or was) new (even if we still refer to it—or remediate it—as, precisely, cinema, an ‘old(er)’ medium). Let us look, then, at how this is so.

From cameras to Skeuo-cam devices

Paleontologically speaking, and as many ‘media archaeologists’ have demonstrated (see Huhtamo and Parikka 2011), the evolution of the movie camera is long and complex, involving the assemblage and refinement of various technologies. These include the camera obscura, the camera lucida, the heliographic techniques of Nicéphore Niépce, William Henry Fox Talbot and Louis Daguerre, pre-cinematic forms of animation or light show, the proto-cinematic (photographic) experiments of Étienne-Jules Marey and Eadweard Muybridge, and the changing cinematic inventions (amongst countless others) that have taken place since Thomas Edison and Auguste and Louis Lumière respectively began to make films.

However, we can outline the movie camera as a ‘black box’ or technological device that mechanically feeds strips of photosensitive film through its apparatus to capture a series of still, indexical photographs. These motion cameras necessarily employ optical lens technology, fashioned through smoothed glass (after the biological precursors found in animal eyes), which serve toprehend, refract or transmit light into the darkened camera chamber where it is focused on to a mobile recording surface that advances several times/frames a second. This recording surface is typically composed of a thin layer of photo-sensitive chemical mounted on to strips of film stock (originally celluloid, but later polyester), which are subsequently processed and set to produce negatives (a footprint), and then turned into positives (or a cast) for the purposes of projection.

Early camera equipment was necessarily bulky and immobile, limited to framing only the objects or scenes set in front of its monocular gaze. Throughout the Twentieth century, however, cameras became ever smaller and more mobile, with mechanical automation replacing the original hand-cranked film advancement system. Film stock itself developed sprockets for a more smooth mechanical advancement, and reels gradually became longer (and wider) and able to capture images for greater periods of time. By the late 1920s, film stock also began to capture sound, which, after much experimentation, was eventually recorded on to a magnetic strip running along the film’s periphery. Concomitant to these technological developments were ever-new ‘languages’ or modes of cinematic expression.

With the development of lighter, more mobile cameras, for instance, came dolly techniques, hand-held shots, and the aesthetic of the Steadicam; and, latterly, SnorriCam tropes (shots taken with a camera attached to the actor).

Although by no means exhaustive, this brief history sketches out the main material/technological features of twentieth century 'mechanical movie cameras' with which we wish to engage here. However, while the beginning of the twentieth century witnessed the birth of mechanical movie cameras, as Barbara Creed argues, the end ultimately witnessed its death, at the point where digital and virtual cameras began to appear (Creed, 2000: 79). Similarly, for Manovich, the advent of digital cinema served to mark a paradigmatic shift from the predominantly indexical legacy of the kino-eye, to the new age of the kino-brush, which is more akin to animation, or 'painting in time' (Manovich, 2001: 302). Parikka takes issue with the metaphor of painting, however, particularly as the digital media moves us away from 'the gesturality of the painter, the hand and the use of colours on canvas' and more precisely belongs to a 'culture of coding and encoding colour intensities in a gridded pixel space' (Parikka 2012: 36). In his rendering of the same shift from an era of ocular-centrism to a new era of the embodied 'viewing' (and feeling) of digital images, Thomas Elsaesser (2008) suggests that the new digital era accordingly presents itself as a heuristic event, or a Foucauldian dispositif, which allows us to 'reflect upon one's present understanding of both film history and cinema theory' (Elsaesser, 2008: 232; quoted in Parikka, 2012: 22). What interests us here, though, is the manner in which this technological death or transubstantiation is initially (and still) disavowed, and how newly emerging digital forms skeuomorphically refuse, at least initially, to drop the design features of the earlier models, albeit whilst forging forwards into new, uncharted territories. We shall examine this issue by turning our attention to a recent film marketed as being the most advanced technologically in cinema history, *Avatar* (James Cameron, USA, 2009).

As is perhaps already well known, *Avatar* was made using a whole raft of expensive/experimental technological innovations and hybrid techniques, yet none appear more technologically skeuomorphic than the device James Cameron used for 'shooting' the film in/on 'location' inside a huge green screen stage platform, known as 'the volume'. Cameron was seen (and shown in countless publicity images) to retain the use of a physical camera-like 'recording' device for most of the film's shooting. Cinefex reporter Jody Duncan points out how a team at Technoprops had assumed that Cameron—as a twentieth century director—would be most comfortable with a camera device that 'seemed familiar' (Duncan, 2010: 86). Thus, virtual-production supervisor Glenn Derry was challenged to design a device that 'would look and handle much like a typical motion picture camera, complete with tubular eyepiece' (Duncan, 2010: 86). This prop-device, referred to as a 'swing-cam' (Thompson, 2010) or a 'simulcam' (Duncan, 2010), displays and records digital objects and environments rather than the actual reality (seen by humans) before it. By recording images

that are not before the swing-cam, the object appears ontologically distinct from previous models of photographic movie cameras, which relied on profilmic material in order to function. Skeuomorphically, however, we continue to conceive of the swing-cam through the vocabulary, design and functionality of traditional, analogue cameras.

This skeuomorphic object in certain respects only bears a superficial resemblance to an analogue camera, being a 'somewhat camera-shaped object' replete with a digital interface that can stream real-time motion capture and map it on to digital characters within their digital environments (Duncan, 2010: 86). Cameron dubbed this skeuo-cam device the 'swing-cam' due to its attached screen's ability to swing to any angle, thereby granting operators a greater (unlimited) freedom of movement (Thompson 2010). Although Cameron would point the swing-cam at his actors (who would be wearing Motion Capture suits on a green screen sound stage), much like he would were he shooting on location or in a studio, there the similarity between this skeuo-cam and the analogue cameras ends. For, as Anne Thompson illustrates, the swing-cam has no lens, but rather 'an LCD screen and markers that record its position and orientation within the volume relative to the actors' (Thompson, 2010). The position information built into the camera, like a modern GPS system, 'is then run through an effects switcher, which feeds back low-resolution CG versions of both the actors and the environment of Pandora to the swing-cam's screen in real time' (Thompson, 2010). By pointing this skeuo-cam object at Sigourney Weaver, say, Cameron could look into the eyepiece and see 'a videogame version of the avatar character, in real time, moving and acting as another being' (Thompson, 2010). Furthermore, as he moved the camera-object's 'recording end' around the stage, his viewfinder would present not a visual image of the stage, but rather the fictive digital world that the characters were supposed to be in (Duncan, 2010: 75). We have here, then, a complete reversal of traditional filmmaking: rather than build a set or find a location through which the camera then moves, Cameron instead moves his camera through low-definition images that are then made into high-definition images for the finished film.

What is more, the swing-cam also allowed Cameron to shoot a scene by moving through the volume, so that he 'could either pick up the camera and shoot actors photographically, as the performance occurred, or he could reshoot any scene by walking through the empty soundstage with the device after the actors were gone, capturing different camera angles as the scene replayed' (Thompson, 2010). In this sense, the swing-cam retains a three dimensional volumetric 'memory' of all movements within a digitally composited space, along with an infinite number of virtual views and vectors thereof (from all possible vantage points, including those impossible for humans to access unaided). In this way, multiple alignments and perspectives can be tried, tested, rejected and re-explored hours, days, weeks or even years after recording and acting are completed. The skeuomorphic dimensions of the technological object thus point to both a real and mediated dimension,

as well as a past and futural pole. Indeed, the familiarity of the object in its simulation of past technological artefacts is here counterbalanced by the introduction of a range of novel features that were not anticipated or remediated in the older form. The swing-cam thus becomes a camera-like object (a skeuo-cam) that boasts a fluid and continuous memory of recorded movement and action from within a supersaturated software-rendered volume.

The skeuo-cam also allowed Cameron to synthesise a variety of other ancillary cinematic techniques, which transcend the capabilities of all previous camera forms in radically new ways. Derry describes this new camera-object as a form of digital 'interface', feeding directly into a digital program known as MotionBuilder. He further outlines how this interface granted Cameron 'the ability to scale things, to fly around, to do everything a camera operator would do', such as zoom, replicate camera moves (like a dolly or crane shot), or even perform 'scale variations' from the microscopic to the macroscopic. In this manner, the operator can perform huge crane moves by adjusting 'the scale' of the view and moving the material-object with their hands. Derry explains how this offers the operator an ability to start a scene 1,000 metres above the diegetic world, 'and arrive at a close-up, say, at the exact moment an actor/character delivered a line' (quoted in Duncan, 2010: 86).

In other words, as per our brief discussion of cameras earlier, the technological developments involving the 'swing-cam' bring with them aesthetic possibilities heretofore impossible outside of (non-photorealistic) animation. If film history has been characterised by increasing the mobility of the camera, as well as by the possibility of recording for longer, now camera movement is entirely unconstrained, as are the time limits on shot duration. In part this is because there is no longer a physical camera needed for the making of a film like *Avatar*; the 'swing-cam' skeuomorphically resembles a camera, but in other, important, senses it is not a camera at all. Similarly, when a film cuts, it does so simply out of ongoing convention, and not, as per analogue cinema, out of necessity (as a result of a reel running out or the camera not being able to fit through a door). While Philip Rosen (2001: 331–332) is correct, therefore, to highlight how many filmmakers do not pursue the novel possibilities of digital cinema, in that digital cinema tends to look like analogue cinema, he also perhaps overlooks the very novelty that digital cinema does allow. Furthermore, while Boris Groys (2014) has offered a detailed analysis of how it is an old technique to promote the new, this does not mean that new things do not come into being. Ethically, we seek not to 'prefer' either the old or the new (see Groys, 2014: 7); we simply wish to identify that digital cinema does have novel aspects, and that we should recognise these (even if initially using 'old' frameworks) if we wish to understand it.

Various other visual effects and features visually hark back to the analogue era in a skeuomorphic fashion that recalls the physical reality of hand-held cameras, glass lenses and film stock. In *Beowulf* (Robert Zemeckis, USA, 2007), for example, many of the battle scenes employ a form of ‘hand-held shot’ that appears to invoke a humanist aesthetic: slight ‘camera shakes’ suggest the immediacy and authenticity of a human observer/operator, as per the (predominantly) analogue battle scenes of films like *Braveheart* (Mel Gibson, USA, 1995). Other camera ‘effects’ retain features that appear linked to a ‘surplus’ of information originally ‘captured’ by the older kino-eye technology. Lens flare, or the effects of direct sunlight shining through the glass lens of a camera is one example of such a surplus feature. The gathering of rain droplets, or blood, upon the camera’s glass lens provide other notable examples. Even though made using ‘cameras’ that do not have lenses, moments from films like *Star Trek* (J.J. Abrams, USA, 2009) have faux lens flare added to various images, while water/blood splatterings are increasingly painted into the digital frame in a host of contemporary (predominantly blockbuster) movies. In other words, these effects are skeuomorphs that simulate a familiar ‘cinematic view’ of ‘recorded’ events.

While both simulations and remediations of analogue cinema, these skeuomorphic moments also point to the novelty of digital cinema. Implicit in skeuomorphic moments, this novelty becomes explicit during the rain of ash that falls following the destruction of the Home Tree in *Avatar* and the falling snow sequences of *A Christmas Carol* (Robert Zemeckis, USA, 2009). In these examples, the lack of a lens on the digital ‘camera’ (and the lack of a screen border invoked by Digital 3D (D3D) projection (for a consideration of this, see Purse, 2013: 134–149) allows atmospheric information to flow freely between skeuo-cam and recording surface, between diegesis and auditorium. Such effects are part of the new language of digital cinema, and do not skeuomorphically translate back into the traditional language of analogue cinema.

Skeuomorphs, then, can be understood as connoting a ‘cinematic’ authenticity, reality, or familiarity that helps build the path into the new. On account of such features, scholars like Scott McQuire and D.N. Rodowick argue that industrialised standards of photorealism remain the ‘holy grail’ for CGI effects within the digital age, with CGI being judged against a ‘camera reality’ rather than any objective realism (see McQuire, 1997: 5; Rodowick, 2007). Thus, many digital effects are not so much concerned with creating a perfect image, but rather of reproducing an anachronistic camera-like image. As discussed, these digital forms deliberately incorporate fake ‘flaws’ like edge halation, motion blur, and even grain to appear humanist (McQuire, 1997: 5). For Barbara Creed, these phenomena suggest that a century of watching cinematic images has resulted in a perceptual shift, such that the cinema-going public’s cultural point of reference has shifted from the real world to ‘cinematic’ representations thereof, which have become our common ground of

comparison (Creed, 2000: 85). If this is the case, then it is only natural that early forms of digital cinema would so slavishly fashion the new through skeuomorphs of the old, the comfortable and the familiar as it discovers and un-conceals new possibilities.

Beyond camera-objects and skeuo-cam effects, there also persists a rhetorical use of the term 'camera' within critical discourses to describe the vantage point or perspective from within the diegetic universe, where essentially there is/was no camera at all. As discussed, programmers and directors increasingly decide where to position virtual framing perspectives and to play with their respective scales from within the digitised volume. They do not, in this sense, use any actual camera (or skeuo-cam object). These forms of digital perspective, which are commonly used to frame the diegetic action within the digitally composited worlds of, say, *Shrek* (Andrew Adamson and Vicky Jenson, USA, 2001) and *Wall-E* (Andrew Stanton, USA, 2008), are completely virtual entities, formulating virtual axes/potential lines of sight within the volume of rendered digital space. Now, we may argue that animation has always done this – and it is not our intention to suggest otherwise. However, the digital filmmaker can play around with and modify her images with ease as she navigates the 3D space of the film's diegesis with the skeuo-cam, while the traditional animator would not be able to do this except mentally and/or with impossible amounts of labour involved.

Edward Branigan (2006) further problematises these issues in his book-length exploration into the different critical uses of the term 'camera' within traditional film theory and history. Drawing a distinction between the nature of film itself and the language used by theorists to describe its various manifestations, he shows how the term 'camera' is often polluted or used as a stand-in for different things such as 'a shot, image, frame, motion, motion picture, motivation, point of view, and narration' (2006: xiv). The critical use of the term is also often falsely anthropomorphised, imagined as an objective tool for observing a profilmic reality, or endowed with a subconscious of its own. The term camera is thus used as an aid to implant meaning into a film, fluctuating in a 'twilight area between material object and interpretive subject, between world and language' (Branigan, 2006: 96). Exploring eight different critical uses of the term camera, Branigan also exposes how theorists have traditionally employed descriptions of camera movements, framings and effects as linguistic metaphors for how a film focalises, scrutinises, draws attention to, signals, highlights, or else grants significance to objects or things. Building on similar objections, Daniel Frampton (2006) moves forward to advocate an altogether new conceptualisation and description of what he calls 'film-thinking' and 'film-thought' to better describe how a film invites viewers to see and think through sound and images. For us, irrespective of the confusing baggage picked up over a century of uses and misuses, the terminology increasingly appears as a critical skeuomorphic trend, and to continue discussing any view into a cinematic world as belonging to, or emanating from a 'camera' becomes less

acceptable. Contemporary discussions of cameras must thus be recognised for what they are, critically and academically familiar and rhetorically comfortable.

Editing

In *Cinema 2*, Gilles Deleuze, after Robert Lapoujade, observes an aesthetic shift from montage to montrage in post-war cinema, which recalls André Bazin's predilection for the long takes and deep focus of Orson Welles and Jean Renoir over the montage cinema of Sergei M. Eisenstein (Deleuze, 2005: 40). In the post-war context, Deleuze observed that the new cinema was no longer defined by cuts, but rather continuity and showing ('montrer' in French). Pace David Bordwell (2006: 117–189), William Brown has argued that digital technology plays a key role in 'intensifying' the continuity/'montrage'/'monstrous' nature of contemporary cinema (Brown, 2009b). Elsewhere, we take this even further, introducing a Deleuze-inflected model of 'gaseous' virtual camera perception found in the digitally rendered filmic spaces of *Beowulf* (see Brown 2009b), *Fight Club* (David Fincher, USA, 1999) and *Enter the Void* (Gaspar Noé, France/Germany/Italy/Canada, 2009) (see Brown 2009a; Brown and Fleming 2011). Here, cinematic space and time are understood to be traversed and viewed by a purely digitally composited perspective, often marked by flowing perceptual passages 'through' psyche and physics (solid objects and the space between them). Again, such shots are not captured by any form of physical camera as we traditionally understand it.

In 'gaseous cinema', we argue, the free-form movement through digital time and space is marked by a conspicuous lack of cuts, and replaced by a continuous flowing mode of spatial and temporal perception. The skeuo-cam perspective offered in these filmic worlds increasingly becomes free to pass through memory and matter, time and space without recourse to any (apparent) cutting whatsoever. Although the option of using montage and/or continuity has long been available to filmmakers, the ability to pass through solid objects—in an unbroken flowing manner—is something both unique and effortless to new digital forms. In both *Fight Club* and *Enter the Void*, for instance, a virtual skeuo-cam is able to pass effortlessly through and into the human body, freely flowing into and out of a skull or uterus. These skeuo-cam moments also typically pass through solid walls and architecture that previously would have divided or segmented diegetic space (and require cutting to traverse). These gaseous perspectives also display an ability to change scale at will, to depict firing neurons within the human brain in *Fight Club*, or microscopic spermatozoa swimming up the fallopian tubes in *Enter the Void* during shots that later also feature, say, a whole human head that takes up as much of the frame as these other, 'microscopic' features. Furthermore, these films also seamlessly blend physics and psyche,

or gaseously pass through matter and memory/fantasy whilst actively refolding them as a single and continuous plane.

Admittedly, these tropes were often attempted within analogue films such as *Citizen Kane* (Orson Welles, USA, 1941) as is evidenced by the bravura takes that move through the neon lights outside the El Rancho bar and move 'inside' through the bar's skylight via a dissolve. These particular 'superhuman' perspectives were only achieved by hiding the cut and editing shots together, but they were not always hidden well. In digital cinema, new modes of spatial and temporal passage are increasingly marked by an intensified speed and a seamless continuity, which ultimately renders editing and cutting an expressive choice rather than a technological necessity. That is, editing techniques retain their own unique powers and forms of cinematic thought/expression, with the dialectical style remaining a useful tool within the filmmaker's toolbox. What is more, in its very nature, editing can express different, non-gaseous modes of perception. Stanley Kubrick's most famous montage cut from *2001: A Space Odyssey* (UK/USA, 1968), for instance, elides 150,000 years of human evolution in a single cut from a prehistoric bone-tool to a satellite orbiting Earth – and is powerful exactly because it utilises a cut, or an aesthetic interstice that simultaneously elides two vastly distinct moments in time and signals an ellipsis of information. It is the cut itself that gives this particular form of cinematic expression its affect, and no digital morph could claim to offer the same power or to reflect the film's themes as effectively – although films like *Russkiy kovcheg/Russian Ark* (Aleksandr Sokurov, Russia/Germany, 2002) do move through different time frames without a cut, as the film takes us from the era of Peter the Great to Catherine the Great to Nicholas and Alexandra and to the contemporary world in its 98-minute single-take duration. As *Russian Ark* implies, digital cinema retains cutting and editing as a skeuomorphic convention, which only hides the 'gaseous' spatial and temporal perception that digital technology can otherwise allow. The example of *Star Wars Episode One: The Phantom Menace* (George Lucas, USA, 1999) provides a good case in point here. Although Lucas ostensibly made this prequel using the latest (1999) technological and digital imaging devices, the form of the new film clearly echoes that of the earlier 1970s and 1980s trilogy, comprehensively conforming to their framing devices and cinematic grammar. In this sense, the more recent prequel films are guilty of translating new cinematic forms back into the familiar vocabulary of what Marx, in our prefatory quotation, might term the 'mother tongue', for purposes of continuity and familiarity. But we can extend this example beyond the Star Wars film cycle, and apply it to the digital film cycle more generally.

Skeuomorphic Actors

Critical discourses surrounding the appearance and development of digital actors usually focus upon the extreme cases of what have become known as synthespians, cyberstars, or vactors (virtual actors). Here, however, we wish to engage with how traditional carbon-based actors and CGI have increasingly moved into a formal relation, whilst critical discourses persist in retaining skeuomorphic allusions to previous traditions (for ease and comfort), by regularly attributing performance to a single star or actor—even if this increasingly seems unjust if we look at and below the surface. In the digital age, the traditional conflation of actors with character (or more specifically, the concept of actors as individual singularities external to the film), should increasingly be revised so that actors are seen as contributors to an internal digital multiplicity, and viewed as collaborators who contribute certain skills to the realisation of the final character or role.

D.N. Rodowick views the new ‘cyborg fusions’ of actors and digital information—wherein CGI is increasingly used to efface and even rewrite the actor’s body—as a part-human and part-synthetic ‘Frankenstein hybrid’ (Rodowick, 2007: 8). We take Rodowick’s ‘hybrid’ even further, however, as we recognise the multiplicity’s ability to fluctuate and intensively change throughout narrative time. Like a swarm, the multiple as actor can be viewed as a single organism (the character), or as a collection of smaller contributors at different times or under different forms of observation. In other words, new forms of human-digital performer are best understood as a multiplicity or assemblage, which incorporates countless human parts (and human-hours), heterogeneous forces, and digital features. We thus believe that critics should, when relevant, discuss actors as contributors to new digital forms that constitute complex and multifaceted trans-human assemblages. Actors and stars in the digital age should accordingly no longer be synonymous with, nor held fully responsible for, the role’s final performance, no more than the director should be held fully responsible for everything that appears within the multiplicity of the film.

Here we wish to offer three key examples to illustrate our point: Andy Serkis’ contributions to Gollum in the *Lord of the Rings* films (Peter Jackson, New Zealand/USA, 2001–2003), Brad Pitt’s contributions to the eponymous hero of *The Curious Case of Benjamin Button* (David Fincher, USA, 2009), and Sam Worthington’s work within Jake Sully’s Na’vi double in *Avatar*.

As a starting point, we would like to engage with an exclusively digital technique increasingly popular for generating roles within digital cinema: Motion Capture, or MoCap. Stephen Keane describes ‘motion capture’ as a procedure designed to capture an actor’s

physical movements as a 'reference point' for a digitally rendered character (Keane, 2007: 156). This is usually achieved by the actor wearing a mono-coloured suit adorned with motion sensors that allow a computer to track and store the performance as pure digital information. From a posthuman perspective, actors are not so much filmed any more, as tracked in what L. Marshall (2007: 3) calls their 'computer pajamas' (see also Brown, 2009b: 162). Computers are thereafter used to translate the captured motion of the performance into digital code, which is only outputted in a visual format resembling human perception in post-production (Brown, 2009b: 161). These techniques are increasingly supplemented by 'facial' and 'e-motion' capture to give the character expressive capabilities, with the combination of the two techniques termed 'performance capture.' Keane offers the character of Gollum from the *Lord of the Rings* films as an example, describing him as a 'combination of elements' that move beyond motion capture and pure digital imagery. Serkis originally wore a MoCap suit to contribute his performance to the Gollum role, both with other actors and alone on a sound stage. Later, Serkis was visually removed from the film and replaced by an animated creature that retained a trace of his earlier kinetic performance. The visual design of the creature was carried out by artists and digital animators using Serkis' face as a reference point, but their various contributions also add to the overall feel and performative effect of the final character/role. Serkis can here best be understood as a form of analogue puppeteer behind the virtual Gollum, whose expressive capabilities are also assisted by digital animators in their own right (above and beyond Serkis' performance capabilities). For Keane, Gollum thus physically, technologically and emotionally provides an example of what he describes 'as a very layered performance' (Keane, 2007: 72–73).

It is important to bear in mind Mark J.P. Wolf's argument that performance has, through the use of body, stunt and hand doubles, make-up artists, and more, long since been a 'technological construction' (Wolf, 2003). Nonetheless, motion captured digital performance can 'still matter' in a posthuman cinema, especially if considered through the Deleuzian lens of the *geste*. The *geste* is Deleuze's term for 'elements that are irrelevant to the narrative construction of the cinematic depiction', and which allow viewers to see the body not as simply a part of a story, but as 'a living entity, despite any digital make-up, transformation, or extreme disregard for nature laws' (Hadjoannou, 2008: 135; see also Brown, 2009b; Fleming, 2012, 2013). From this perspective, the corporeality of a performance is reasserted in digital form so that the digital body becomes 'a role.' Thus, there remains room for a re-emphasis of the body as a performative or even affective-performative force in motion capture cinema because there remains a continuity in performance. Indeed, if one actor is employed for the capture, the continuous 'physicality' of their performance can be 're-foregrounded in a theatrical way' (Brown, 2009b: 162). This view is somewhat problematised by a film like *The Curious Case of Benjamin Button* however, since here multiple actors provide the character's body throughout the film, digital animators contribute to its 'performance', a film star provides the raw data for its

facial movements, and yet a single role or *geste* is maintained (Fleming, 2012: 200–208). Accordingly, the continuous role of Benjamin was not asserted through a continuous body performance or ‘theatrical’ role, but rather emerged through a variegated galaxy of different performances and technologies (including editing) composited from different times and spaces. And yet, although this new technological capability was highly publicised on the film’s release, many reviews unproblematically focused upon Pitt’s lead performance, overlooking the fact that the actual role of Benjamin was ‘performed’ by an assemblage of different body actors, computer technologies, and digital animators above and beyond Pitt’s facial-performance capture. This photo-real character that is born old and fated to grow younger (and eventually to lose his memory) here surfaces as a material metaphor for the fate of the cinematic actor in the digital age (see Fleming, 2012). That is, the actor is reborn and radically freed from the indexical ‘memory’ of recording cameras, and is now able to become more powerful and affective thanks to the skewed technological interface with other human and inhuman actors and actants (see Fleming, 2012).

Another filmic role that seemingly reflects upon this paradigm shift in acting and performance can be unearthed in the Na’vi creatures of *Avatar*, which diegetically and extra-diegetically formulate a synthesis of computer technologies and human DNA. Jake Sully’s Na’vi avatar is a part-human, part-technological assemblage that seamlessly synthesises human, alien and digital technologies in a new and productive way. Extra-diegetically, over and above Worthington’s captured body movements, which invisibly interlace with the movements and actions of unseen stunt men and performance doubles, the Na’vi avatar also incorporates animation used to grant affective life to the creature’s expressive tail and other non-human physiognomy. The animators thus work with the captured human performance as raw data, adding to, and subtracting from the original performance as necessary in a bid to create a separate role. In this sense, a digital interface and multiple human performances (both actual and animated) also enter into the performative and affective assemblage.

For Daniel Frampton, digital animators become the new gods of the digital cinematic world, ‘able to show anything, be anything, go anywhere, think anything’ as well as perform in new ways that necessarily transgress the limitations of the all too human (Frampton, 2006: 205). Our conclusion here is that digital technology has taken cinema into the realm of the trans-human – even if we still consider these performances skeuomorphically to be carried out by a single actor, and even if most filmmakers still use these trans-human techniques to make films that claim to be about human characters. The logical extension of this, though, is the morph, in which we see a character change from one form to another before our very eyes – as happens in *The Lord of the Rings: The Fellowship of the Ring* when Bilbo Baggins (Ian Holm) sees the titular ring on the person of his nephew Frodo (Elijah

Wood), and transforms suddenly into a sharp-toothed demon as he reaches for it. As the depiction of space becomes 'gaseous', so, too, does the depiction of characters and the characters themselves. In short, then, many films are made according to the traditions and conventions that developed/emerged due to the limitations of the analogue technology used to make films (which is not to overlook industrial and economic factors and pressures, or the possibility that various analogue techniques may in fact capture viewers' attention in efficient, perhaps even 'natural' ways, as Brown has explored elsewhere (see Brown 2011). However, our argument here is that they need not be.

Drawing upon salient examples from Hollywood and other cinemas, we have proposed that on the level of cinematography, editing and performance, the traditional techniques—and the theoretical frameworks that we use to understand them—are retained in a manner that is both helpful (as are the concepts of remediation and simulation), but also deceptive. For, as per our *détournement* of the skeuomorph as a metaphor through which to understand digital cinema, these tendencies occult what is truly novel about cinema in the digital age. Namely, cinema is freed definitively from the camera whilst retaining perceptual realism; it is freed from the cut, even if it remains as a convention; and it explodes the concept of the actor into what Fleming (2012) characterises as a swarm or a galaxy of performing flesh and digital bodies. To evoke Marx once again, all that is solid has now melted into gaseous air. In this sense, while discourse surrounding digital cinema can either be evangelical or hyperbolic in its insistence upon the new, which in turn produces corrective, 'archaeological' arguments that point to the continuities between digital and analogue cinema, we would argue that the digital is skeuomorphic. That is, the retention of old techniques and conceptual frameworks is useful, but it also blinds us to what is truly novel about digital cinema.

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Notes

[1] Simulation is of course a useful concept, and it does apply to our understanding of contemporary cinema, but perhaps only in its most extreme manifestation, as per Mark B. N. Hansen's Bergsonian take on digital imaging in Virtual Reality (VR). For Hansen, VR marks out a post-medium mutation of the analogue cinema. Thus, if historically photography and cinema were materially inscribed images (or indices) created for the 'subsequent perception by the spectator's simulated consciousness', digital VR becomes an advanced and doubly articulated form of simulated perception, wherein a digital simulation folds directly into a human consciousness/simulation (Hansen, 2014: 170).

[2] Various recent news reports have suggested that scientists increasingly believe dinosaurs to have been feathered. In other words, the lizard-like scales that the dinosaurs in Jurassic Park possess could in fact be unrealistic based on the best available evidence—even though the creatures are still upheld, not least for their convincing style of movement, as realistic computer-generated effects. See, inter alia, Gill (2010), Handwerk (2009) and Science Daily (2007).

[3] The logic of premediation perhaps reaches its apogee in conspiracy theories that believe films featuring alien invasions are 'preparing us' for an inevitable and imminent 'contact' with aliens and/or invasion. It is not that these conspiracy theories are worth taking seriously (we will be happy to eat our words if they turn out to be true). Rather, they demonstrate the way in which premediation extends beyond us, never being caught unawares to us, knowing already that we will never be caught unawares.

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