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***Waking Life: The Destiny of Cinema's Dreamscape;
or the Question of Old and New Mediations***



Figure 1: Waking Life

Five minutes into Richard Linklater's movie *Waking Life* (2001), Wiley Wiggins's digital character walks through a train terminal out onto the street where he makes the first of a number of intriguing encounters. In retrospect, it becomes obvious that this is actually the second meeting depicted for Wiggins's character, an earlier scene showing him as a child sitting with a young girl who tells him his fortune with the help of a cootie catcher.¹ What connects these two encounters, though, is not so much the audience's awareness that the one scene is a flashback, memory, or dream of the other – indeed, it is too early in the movie for any connection between characters to be established. Rather, the two scenes create the first impression of the movie's central concern regarding a phenomenological understanding of

¹ A *cootie catcher* is an origami fortune-teller made of sides with colours and flaps with numbers, each flap enclosing a statement about the future (Figure 1).

our relationship with the world: that reality is our embodied awareness of the world, and simultaneously the existential space that constructs this consciousness.

It is fascinating to see how *Waking Life* itself performs an investigation of what it is to be part of the world, and what relationship a medium – in this case cinema – has with its own history of creativity. Informed by these concerns, this article addresses the idea of medium specificity from the point of view of the transition from celluloid to digital technology in cinema. I have chosen to focus on digital rotoscoping, which is the digital animating technique showcased by *Waking Life* as the first feature-length movie to be fully animated in this way. In its creation of the image as a completely digitised world, digital rotoscoping conjures up questions regarding the mediating potential and technological determinism of the digital. At the same time, this animating technique creates a sense of differentiation in binary interactions, which brings cinema's two means of image construction – analogical and electronic – together within a kind of technological interdependence. This article aims to show that, while it remains important to think of the digital as a medium distinct from the analogue, this does not mean it is impossible to think of the two technologies as forces whose *relationship* activates their creative potential and meanings.

The question of what cinema is, or how it functions, necessarily must take into account the experience that cinematic works themselves elicit, as it is here that mediation becomes a complex concurrency of differences and similarities, which shifts the borders of distinct structures in unexpected and continually renewable ways. While the technological design of digital software and hardware allow for a specifically new way of recording, storing, and accessing material, it seems to eclipse the experiences of celluloid. Nevertheless, as the digital makes possible new forms of mediation, it incorporates the moviemaker's creativity, which extends beyond the technology's defined structures, and simultaneously involves the viewer's perceptual interaction as a process of meaning construction. As a result, the *digitographic* image is drawn out of, and informs, a sentiment of a celluloid culture, albeit

unconsciously at times.² It is this implicating relationship between new and old technologies that I will examine here.

Dreaming as Waking Life



Figure 2: *Waking Life*

Before turning to explore the technical particulars of digital rotoscoping, it is important to see how the movie itself positions us within the debate regarding medium specificity and mediation as a form of perceptual and expressive communication. In the aforementioned opening scene of *Waking Life* a young girl is depicted asking a boy to pick colours and numbers drawn on the folds of the cootie catcher. As the boy finally picks the number six, the girl opens up the flap and reads out the secret of the future to come: ‘dream is destiny’ (Figures 1-2). Perplexed by the ambiguity of this reading, the boy walks through a yard, and looks up at a shooting star dashing through the sky with eyes that gradually grow until they extend beyond the limits of his face, as well as float above the surface of his skin (Figure 3).

² I explain my usage of the term *digitographic* in the following section: ‘Somewhere between real life and CGI’.

His whole body then starts to float up, and so he must hold onto a car-door handle to keep from flying away (Figure 4). But the boy's emotional reaction to these events implies that he does not expect these things to happen; that the physical impossibility he experiences does not fit in with his existence as set out by the premises of the fictional world to which he belongs. This sense of uncanniness seems to be mirrored in my own perception of the movie as well, as *Waking Life's* images seem stuck somewhere between reality and Computer Generated Imagery (CGI). The world depicted is both recognisable as a real world, and also completely imaginary as a painterly construction of a fictional reality. The experience is perplexing and unnerving, but also oddly appealing. This is digital animation, but there is a reality hidden somewhere beneath the swaying colours and the pulsing contours. The question that arises from this is whether there is indeed any real world of which to speak, or whether this subjectively designed animation of reality is, in fact, a meta-cinematic revelation of the digital's mediating powers. Can we still reflect on the world's representation in cinema as existent illuminations, or does digitisation erase every trace of the real in its sweeping substitution of light with binary code defined visually as coloured pixels?



Figure 3: Waking Life



Figure 4: Waking Life

As *Waking Life* suggests, if dream is destiny, then there is no way to escape the dreamscape that constitutes reality even in waking life. By the same token, if cinema is mediation, then there is no way to conceive of the image but as an *image* of reality. Regarded

from a structuralist tradition of media theory that extends from Marshall McLuhan – and his famous declaration that ‘the medium is the message’ – this means that any experience of a medium’s product will lead us back to an overriding effect of a quality or value that makes a technology useful in social terms, or through which it constructs a certain social order.³ Speaking of the powers of the electric light bulb, McLuhan explains that its message – which is to say, its specific effect that makes it a medium distinct from other media – has nothing to do with the content of its appearances. For instance, in the case of a lit advertisement, the message of the light bulb cannot be the textual content of the brand or the caption. Rather, the message of the light bulb as a technology is *information* in general, as it is this that the light bulb always makes available. As McLuhan writes: ‘the “message” of any medium or technology is the change of scale or pace or pattern that it introduces into human affairs’.⁴ As such, the notion of the medium is not associated with the diversity of a technology’s technical aspects, or with the variability of its usage. Instead, a medium for McLuhan is defined as the sociocultural currency that emerges from a technological innovation.

Ultimately, McLuhan’s definition means that it makes no difference if electric light brightens the streets of a city, projects film frames on a screen, or charges the television or the computer screen, because the technology’s social import and cultural space is information. An examination of a medium, in this context, must be informed by the consequences of a homogeneous function of its technological base, which uniformly drive the psychic and social conduct related to the medium’s force of communication. Nevertheless, to fuse all cultural impact of a technology in the general rubric of the message associated with one technological component of a medium, need not be the case or the solution. *Waking Life* seems to suggest precisely this idea, as a result of Linklater’s use of digital rotoscoping. The movie depicts how mediation can be understood as a process that extends beyond the

³ Marshall McLuhan, *Understanding Media: The Extensions of Man* (London: Routledge and Kegan Paul, 1964; repr. London: Routledge, 2007), p. 7.

⁴ *Ibid.*, p. 8.

specificity of the technology, simultaneously involving an appreciation of the image as an image of reality.

Here lies a revelation of the cinematic experience according to which the world is not ever lost from the image, but remains part of the material traces involved in constructing movies and experiencing them as an individual (as either moviemaker or spectator). This understanding is what arises from the final shot that ends the first scene, where Linklater cuts to Wiggins sleeping on the train. Once again, the focus remains in the arena of dreaming, as it is implied that the young man is the one who is dreaming the dream about the destiny of dreaming. It seems, though, that he has now returned to waking life; but the image of this reality is visually too much like the previous dream. As we watch Wiggins exit the train, make a phone call in the train terminal, and then exit the station, we see an image constructed as competing colours and contours, with different visual fields undulating towards different directions, and objects and surfaces becoming planes of patterns (Figures 5-7). The question of where Wiggins is and when this takes place seems to become a pressing concern, because the overtly animated image is somehow drawn out of the real world, while it simultaneously eliminates the indexical reality of this world.

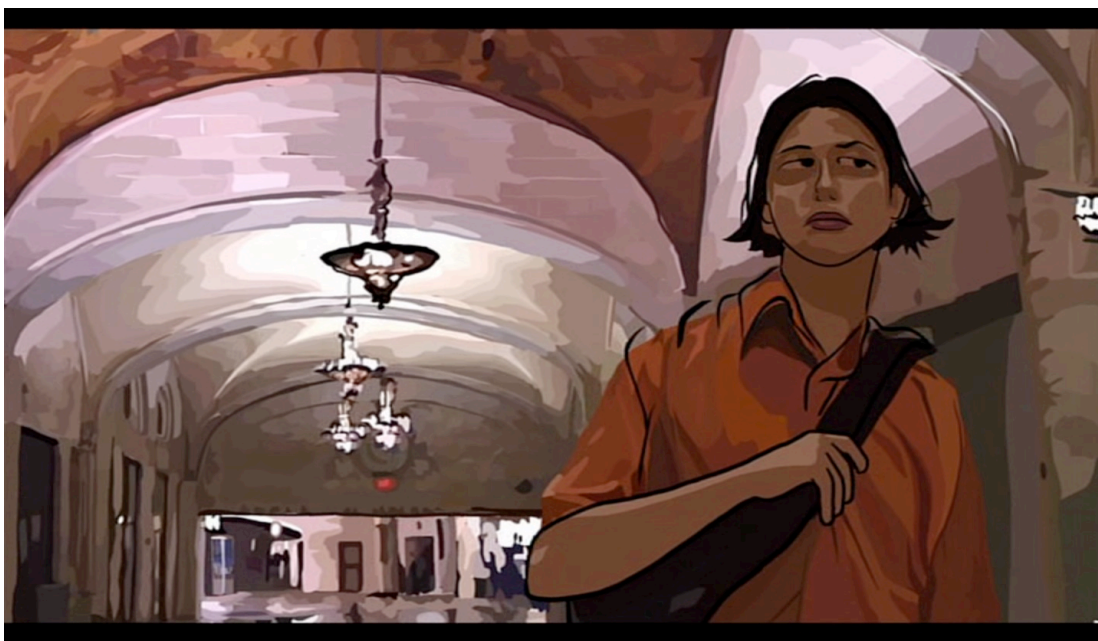


Figure 5: *Waking Life*

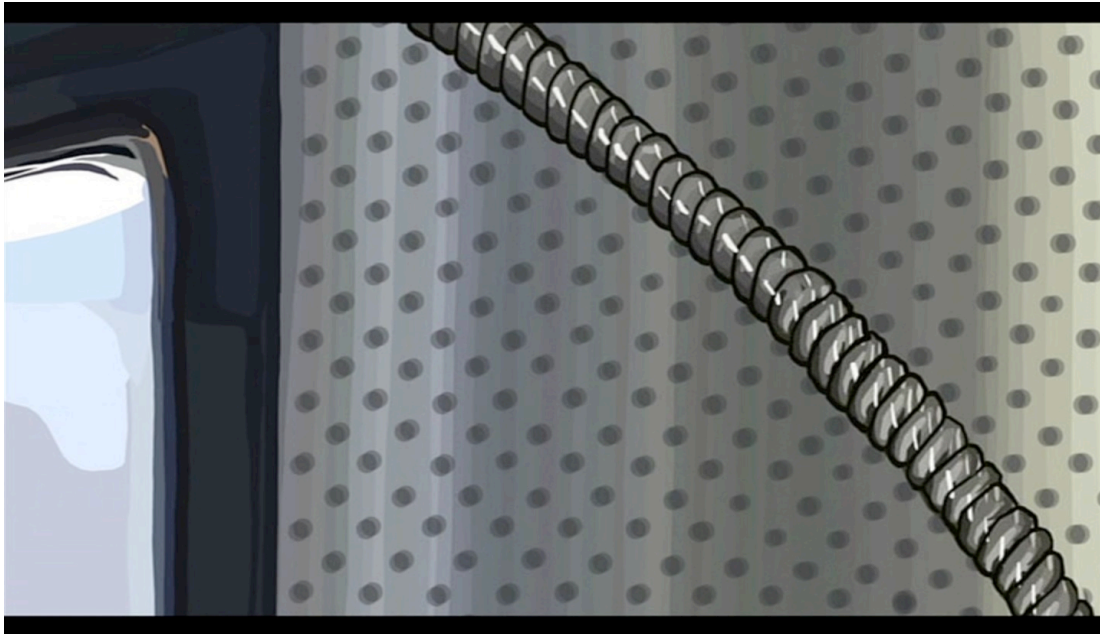


Figure 6: *Waking Life*

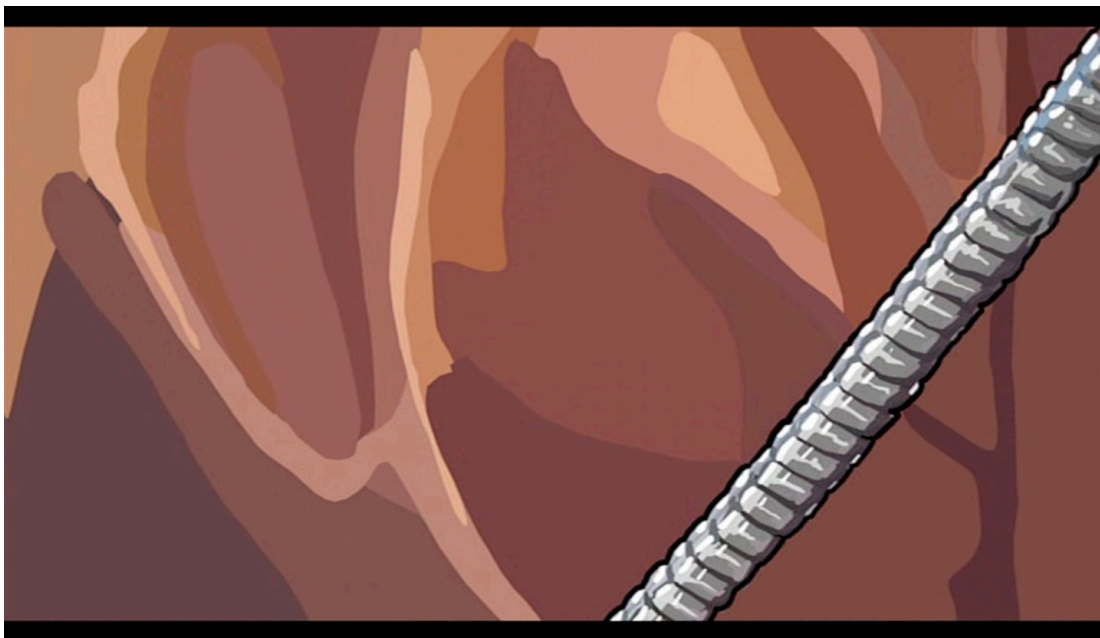


Figure 7: *Waking Life*

The uncanniness of the *animated real* image becomes the key focus in the discussion Wiggins has in the following encounter. As he exits the station to find a taxi, a man in a peculiar boat-car drives up to him and asks if he needs a lift. Wiggins accepts and enters the

car. As the man drives off, he begins to talk in a lively metaphorical way about his car, about seeing the world, and about being part of life.

He says:

It's like you come onto this planet with a crayon box. Now, you may get the eight-pack, you may get the sixteen-pack, but it's all in what you do with the crayons, the colours, that you're given. And don't worry about drawing within the lines, or colouring outside the lines. I say colour outside the lines, you know what I mean. Colour right off the page; don't box me in. We're in motion to the ocean. We are not landlocked, I'll tell you that.

While the driver expresses this exigency for creativity that disregards the demands for conformism, a plastic duck positioned on his dashboard becomes a visual expression of his words – and indeed of the animators' approach in general: as soon as the driver suggests that we should 'colour outside the lines', the duck's mouth starts moving in sync with the driver's voice (Figure 8). Not only is the mouth moving in accordance to the spoken words, but it also moves in and out of position on the duck's face so that it presents lines not conforming to an expected idea of forms. Here, Linklater focuses our attention directly on the idea of seeing, and on the implication of creativity in a visual appreciation of the world. Creative interaction or interpretation is heralded as an existential feature of embodied living because real life is aligned with our position in it. Nevertheless, this position is not one of sitting back and accepting, or defining from the distance allowed by a scientific knowledge. It is not enough to *think* in order to *be*. One must be involved in living as a process that draws the world actively, and draws her/himself in this world as an active becoming. It is, I think, no coincidence that a second passenger sitting next to Wiggins in the car is Linklater himself.

Linklater, here, is drawn into the animated image as an individual who exists as a creative process.

What follows, though, begins to complicate things by bringing a degree of anxiety in this manifesto for creative being. After the enchanting driver drops Wiggins off at an arbitrary spot chosen by Linklater's character, Wiggins stops to pick up a piece of paper in the middle of the road. As he turns it over, he reads: 'Look to your right'. At that moment, he sees a car heading towards him and then suddenly wakes up again – this time in bed. This constant return to the state of dreaming becomes the basis on which the narrative is built. Wiggins shifts slowly from one dream state to the next, while suffering more and more from the anxiety that he cannot escape this dream within a dream. The anxiety expressed here is not simply a part of the narrative progression, but an important debate conjured up one way or another in most of the encounters. The monologues and conversations range from ideas of existentialism and technology, to questions regarding God and the biological structures of memory and dreaming. As Wiggins wanders around Austin Texas, he engages in these meetings by adding his own thoughts, or alternatively, by taking the role of the audience in a contemplative process of listening. Nevertheless, for the duration of the movie his obsession grows stronger and stronger, leading to psychological distress: he is caught somewhere between waking life and a dreamscape, between reality and subjectivity, without the ability to decipher where he is or how to get out. As he tries to discover whether he is awake, sleeping, or actually dead, *Waking Life* becomes a comment on its own technological innovation: while watching the dreamy colours and mercurial sways of motion, I too wonder whether reality can be found in the image at all; I wonder whether the world on screen is a world lost entirely, or simply re-mediated.



Figure 8: Waking Life

Somewhere between real life and CGI

The interest with digital rotoscoping has to do with the way it constructs its image through a combination of real footage, and computer effects that are based on an execution of pre-designed algorithms. The technique is one form of digital synthesis that begins with digitisation through which a body or object is initially scanned. The image, that is, is constructed by the transformation of the pro-filmic event's physical quantities into the symbolic notation of the technology's numerical presets. As David Rodowick explains in his book *The Virtual Life of Film*:

Scanning an image or capturing a digital 'photograph' requires sampling light in a given frequency in the form of a grid with horizontal and vertical axes. The form of the grid is necessary to produce mathematically discrete units (pixels) whose variables can be assigned numerical values (luminance, colour, etc.). It is significant that we want to call such captured elements information, for inputs to digital devices level every source (speech, music, text, image) to a common form: symbolic notation. Once scanned, an artifact

can never be truly returned to a state of nondiscreteness. The process of quantification or numerization is irreversible, which is another way of saying that inputs and outputs are discontinuous in digital information.⁵

What this means is that digital synthesis produces an image by animating quantified raw footage through numerical manipulation. As light waves are registered as series of numbers that correspond to the fixed construction of the digital grid, we no longer have an immediate reference to physical materiality, or to a time of the past. Rather, the *digitographic* image makes visually perceptible graphics of numerical relations, which change so as to give the proportions of movement even when the entire environment of this movement is fantastical. To be clear, I use the term *digitographic* to point to this characteristic of the digital image: that it is an image whose basic construction is binary code (digits), but whose perceptual and expressive experience is necessarily mediated in the form of the graphically constructed display of the digital screen (coloured pixels). In other words, the term points to this peculiar ontology of digital cinema: that the base *material* of the image is made up of series of numbers, whose experience as a visual construction is impossible unless these numbers are transcoded into a representational form that mimics the coordinates of an analogue image. What we have here is a reality *effect*: a connotative construction of an image of reality – not a denotative link to reality itself.⁶ As Rodowick astutely notes, once the light waves of the pro-filmic event are transcoded into numerical form, their structure is ontologically equivalent to data produced directly onto the computer.⁷ In other words, it does not make any difference if an image is captured from the real world directly, or if it is input through design and painting software, because both belong to the ontology of the computer itself, which is based on mathematical symbols, their calculation, and their manipulation.

⁵ D. N. Rodowick, *The Virtual Life of Film* (Cambridge, MA: Harvard University Press, 2007), p. 119.

⁶ Elsewhere, I discuss the reality effect of the digital form with reference to another digital animating technique, motion capture, with recourse to Roland Barthes's theorization of the reality effect (*vraisemblable*) in literature. See 'How Does the Digital Matter? Envisioning Corporeality through Christian Volckman's *Renaissance*', *Studies in French Cinema*, 8.2 (2008), 123-36.

⁷ See Rodowick, *The Virtual Life of Film*, p. 122.

However, in the fantastical world of digital rotoscoping, this process is brought to the fore in an attempt to make the interaction between real image, computer effect, and human perception, a creative process of constant differentiation. Instead of exemplifying a digital obsession with recreating a realistic image (in line with what Stephen Prince calls 'perceptual realism'), digital rotoscoping reverses the order making the reality of the image a direct digitographic image.⁸ The digitised world, in other words, is made to appear as a world of creative subjectivity, and a world where existence is a process of thought, rather than a field that looks real enough to be assumed as natural by the eye.

The technique itself was developed and used originally by Bob Sabiston in 1999.⁹ It is based on celluloid rotoscoping, an animation technique developed in 1917 by Max Fleischer whereby animators trace over live-action film footage, frame by frame. In the case of digital rotoscoping, the live-action video footage is stored on a computer, through which the animators draw on several keyframes that are scattered along the shot. Through a method of shape interpolation, the software then reproduces the animators' input to all the other frames of the shot.¹⁰ The result is a seductive image of floating and fluid animation jammed together with the real footage.

With digital rotoscoping, digitising video footage recorded from real life created the movement of characters and space as seen on the screen. The animation, that is, is not generated directly on the computer – this is not CGI proper – but is achieved by combining real footage and digital imagery. The result is more realistic than computer-generated animation because the gestures of the characters and the spatial coordinates of the environment are based on footage of physical bodies acting in physical space. As such,

⁸ Stephen Prince, 'True Lies: Perceptual Realism, Digital Images, and Film Theory', *Film Quarterly*, 49.3 (1996), 27-37.

⁹ See Matt Hanson, *The End of Celluloid: Film Futures in the Digital Age* (Mies: RotoVision, 2004), pp. 106-11.

¹⁰ For a more technical analysis of non-photorealistic rendering (NDR), see Jue Wang, Yingqing Xu, Heung-Yeung Shum, and Michael F. Cohen, 'Video Tooning', International Conference on Computer Graphics and Interactive Techniques, *ACM SIGGRAPH 2004 Papers* (New York: ACM, 2004), 574-83 <<http://portal.acm.org/citation.cfm?id=1015763&jmp=cit&coll=GUIDE&dl=GUIDE&CFID=84767297&CFTOKEN=86131905#CIT>> [accessed 18 April 2010].

digital rotoscoping attempts to bring a sense of real corporeality and materiality within its images by encoding a causal link between the screen and reality: characters gain a bodily substance on the basis of physical motion that is realistic because it follows the coordinates of the world. Indeed, it is Linklater's own realist interests that led him to collaborate with Sabiston on *Waking Life*. The problem, of course, is that digitising still breaks any continuous relation between image and world, placing an emphasis on abstraction and manipulation. Physical space and bodies are thus created as *effects* that render a sense of reality in graphic form; but, as pure images, they cannot denote reality directly. Nevertheless, what I think is important to note here is that, while an existential link to the original footage is difficult to sustain in the case of digital rotoscoping – or digitisation in general – this does not mean that the digital image cannot achieve a connection to reality, as in the case of a celluloid image.

In view of the/a world

It is important to understand that, quite differently from celluloid or analogue video, digital technology functions with *discontinuity* and *transformation*. Digitisation entails two procedures – sampling, and quantisation – through which the plane of the image takes the form of separate, discrete, self-contained units (that is, pixels). In becoming a grid of elements stored as numerical values, the profilmic event becomes a set of information on a hard drive, and thus acquires the functionality of any digital object on the computer: that is to say, the image is easily stored and moved around from section to section, or from hard drive to hard drive; it is directly accessible from various points of retrieval and with immediate rapidity; and it is continuously open to alterations – of course, subject to the design of the software being used.

Herein lies an important aspect that an examination of the digital needs to take into consideration: the fact that the image is constantly open to a creative manipulation, and by extension, is constantly open to a creative interpretation. As it is not necessary to adhere to a specific sequence or hierarchy, digital elements can be stored, accessed, and organized in any

imaginable way. Evidently, this arbitrariness is founded on the fact that these elements are not physical objects as such but numerical relations. Nevertheless, in being accessed they engage powerfully with a corporeal existence: the creator or the spectator. Digital interactivity is a fascinating example in this respect, as it makes physically palpable the relationship between world, image, and spectator/user. In the case of digital rotoscoping, though, this potential is more difficult to uphold because there is no direct corporeal response between viewer/user and image. Here, spectatorial involvement is not necessarily foregrounded, and – unlike analogue images – the world viewed, is not actually *the* world but a subjective perspective of *a* world.

My interest in comparing an analogue and a digital culture in cinema has to do precisely with the existential potential or conundrum that is evoked in each case. A focus on the technology itself leads to an interpretation of a medium as closed within its own specificity. Because celluloid film creates its images indexically – that is, through the physical imprint of light waves on the photochemical substrate – its images become testimonies to a world that actually existed in the past. That is to say, celluloid film creates a structure of mediation according to which the viewer can potentially experience her/his existence within the world and across time. This is what Stanley Cavell proposes in his book *The World Viewed*, according to which reality is revealed as an actuality that is spatially concurrent within the setting of film projection, but temporally at a distance.¹¹ Quite differently, a digital image is not a physical inscription at all, but a series of calculations and algorithms that do not need to testify to any reality whatsoever. This non-indexical nature of the technology has allowed a series of theorists to be disheartened by its possibilities, because the link between image and time as an existential assurance seems missing. For example, Vivian Sobchack describes how the digital's independently transmitted information, which is scattered through a network of electronic chips, discs, screens, and the Internet, creates a

¹¹ Stanley Cavell, *The World Viewed: Reflections on the Ontology of Film*, enl. edn (Cambridge, MA: Harvard University Press, 1979).

sense of a coreless matrix of instantaneous, and thus immaterial, availability.¹² As the user selects from whatever is instantaneously available, s/he does not need to make any effort and thus no longer feels her/his own connection to any future evolution, or to her/his own physical mortality (and thus, existential responsibility). By extension, while the ability to respond to, and be involved in, an image of reality's past is eliminated by digitisation, existence is projected to the future at times, albeit problematically. For instance, post-production does not simply take part in the procedure of moviemaking, but completely defines the image on screen pixel by pixel. Movies like *Waking Life* that use digital image construction to create the whole world on screen are exemplary of this situation. The future, in other words, seems to overshadow any willingness to be concerned with the present, creating a sense of temporal fragmentation that renders living in reality incomplete, undesirable, or simply impossible existentially.

To recapitulate, from a clearly technical point of view, analogue cinema is a means of recording and projecting images that are both analogous to the material relations of the original source and are directly inscribed as a material trace onto the substrate (photographic or magnetic). Digital cinema, on the other hand, is a means of registering images as binary relations and algorithmic calculations that are rendered in graphic forms so as to be perceptible without any necessary adherence to *the* world. My question, though, is: what of the allusion to reality and the existential creativity that is implied in digital rotoscoping? Indeed, while the digital image's mathematical basis and predefined structures seem to assume a strict rationality – a matter that remains, for Sobchack, a point of existential crisis – digital rotoscoping (amongst other techniques and aesthetic forms of new media), has the potential of inducing a creative involvement between screen and creator/spectator to the point of overriding the technology's transcendental schema. As the image is a series of numerical

¹² See Vivian Sobchack, 'The Scene of the Screen: Envisioning Photographic, Cinematic, and Electronic "Presence"', in *Carnal Thoughts: Embodiment and Moving Image Culture* (Berkeley: University of California Press, 2004), pp. 135-62 (p. 153).

relations, it has the potential of becoming and displaying an act of living as constant variation – as a form of change that is only temporarily stuck in one form. In reality, the image is as flexible and imaginative as the creator or the viewer/user wants; and it is this imaginative abstraction that the image is able to foreground in its manifestation as *animated reality*. This potential contrasts with the controlling functionality of the technology's numerical basis. It is a means not only for being creatively active in one's spectatorial role, but for becoming openly aware of this participation in the act of living in a constantly changing reality.

Here, I take my cue from the relationship that Gilles Deleuze and Félix Guattari build between two modes of thinking – what they would call, images of thought: the 'arborescent model' of representational thinking, and the 'nomadic model' of a boundless and creative interactivity. It is the contrast between a controlled determinism of thought and a creative oscillation between multiple structures that lies at the heart of Deleuze and Guattari's discussion in their book *A Thousand Plateaus*.¹³ Brian Massumi's analysis of this work in the introduction to the book is exemplary of the distinction between the two models proposed, with reference to the production of concepts. He explains:

The concept has no subject or object other than itself. It is an act. Nomad thought replaces the closed equation of representation, $x = x = \text{not } y$ (I = I = not you) with an open equation: $\dots + y + z + a + \dots$ (...+ arm + brick + window + ...). Rather than analyzing the world into discrete components, reducing their manyness to the One of identity, and ordering them by rank, it sums up a set of disparate circumstances in a shattering blow. It synthesizes a multiplicity of elements without effacing their heterogeneity or hindering their potential for future rearranging (to the contrary).¹⁴

¹³ Gilles Deleuze, and Félix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia*, trans. by Brian Massumi (London: The Athlone Press, 1988; repr. Continuum, 2004) (orig. publ. Les Éditions de Minuit, 1980).

¹⁴ Deleuze and Guattari, *A Thousand Plateaus*, p. xiii.

The numerical, in fact Cartesian, basis of the digital grid follows the 'arborescent' model that Deleuze and Guattari discuss, according to which transcendental truths rise from closed equations of fixed and constant relations. Nomadic thought, on the contrary, is an act that leads to a combination of disparate events, bringing elements of the world into continuous contact and creative interaction. Nevertheless, what is most interesting with Deleuze and Guattari's discussion is that they present these two modes of thinking and living as opposed but not rigidly antithetical. In fact, it is the encounter between the two models that is of utmost importance to my discussion, because it opens up a way of unhinging technological specificity from a rigid and secluded plane of operations. In other words, the nature of the 'nomadic' and the 'arborescent' is not confined to stable presets, but alternates in the oscillation of their exchanges and the consequent variations that appear.

Likewise, it is possible to think of digital images beyond their mathematical grounding. As it does not hide its artificiality in any way, digital rotoscoping makes the abstraction of its mathematical foundation an expressive act. In a sense, digital rotoscoping visually foregrounds and extends what happens in a split second in celluloid animation: it makes the act of an animating transformation a constant element of the image, which persists visually on screen. Digital rotoscoping's radical transformation of the entire visual plane into a pictorial abstraction expresses the sensual and imaginative involvement of the characters it depicts, and by extension the viewer who is watching. This is to say that every detail of the image is an element in a constantly alterable connection of configurations. The result is an image of no set configuration – reality, that is, as functional change. Reality in this image becomes the emotional and imaginative creativity of a fantastical or unconscious world, which does not question existence, but puts existence at the centre of the debate.

To conclude, the introduction of digital technology in cinema practices does not simply invite one to understand how computers function, but how this affects a broader awareness of, and approach to, cinema. As I have been discussing, a medium is understood as

mediation that brings a preceding image culture inside a new technology. Causality might not be associated with the numerical graphic renditions of the digitographic image, but with a tradition of photographic recording. Nevertheless, it becomes part of new media's language and makes sense in the encounters that render it a form of mediation. A new medium is thus a portal in time to previous technologies as well as various formations of its own history. It is also the space of the meaning that takes place in the subject's interactive exchange with it.

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