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VR Stories of Travel and Exile: Forensic Storytelling and the Politics of Dynamic Framing

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Abstract

In this article, I analyse recent VR works that emphasize fictional or documentary stories of travel and exile, and thereby consider an active engagement with the environment crucial to the construction of narratives. In so doing, I re-examine and bring into dialogue three existing strands in film theory from the perspective of VR: an aesthetics of discovery (Andrew, 2007), the idea of liberal and embodied perception (Bazin 1953, Sobchack 2004) and an implied connection between film spectatorship and forensics (Benjamin 1931 & 1939). I then propose forensics as a narrative model for VR storytelling, and thereby emphasize broader epistemological and ideological implications of the discovering spectator. As in forensic research, a VR environment offers the spectator scenes in which each detail is potentially relevant to the story: meaning is then achieved through the discovery of relevant pieces information.

Keywords: VR Travelogues; Widescreen Aesthetics; Liberal Spectatorship; Politics of Place.

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> *Exile is a space-time dimension that one has not chosen, and where one arrives marked by rage, fears, suffering, early longing, love, broken hope, and also by a certain shy hope, one that signals a return.*
>
> (Freire 2016: 29)

We are at White Sands New Mexico, some 15.000 years ago. A smaller than average individual, possibly a mother, rushes towards an undefined destination carrying a toddler on her hip. On their way, they cross paths with a mammoth and a giant sloth, which doesn't seem to bother the mother (the sloth, on the other hand, is cautious). Not much later, this mother is homebound on the exact same track at slightly lower tempo, but without the child. In 2020, a team of palaeontologists meticulously analyses the fossilized "longest late-Pleistocene double human trackway in the world", using advanced image technologies and detailed measurements to recreate this ancient, somewhat mysterious travelogue. Matthew Bennet and his research team refer to the narrative practice as an "ichnological interpretation": a forensic and narrativized analysis, on the slippery line between "'paleo-poetry' and evidenced fact" (Bennet et al. 2020: 17). The results are reported widely in mainstream journalism, which confirms that this journey speaks to collective imagination: where was this woman going, why was she apparently in a hurry and, most importantly, what happened to her child? This oldest documentary story remained nevertheless completely undocumented: no oral or historical accounts, and naturally no filmed testimonies – except, their footsteps suggest the intrigue. In this first travelogue, it is an active engagement with the earth and environment which generates the story: paleo-poetry or not, this scientific reconstruction is exemplary in its emphasis of discovery as a narrative practice.

In this article, I analyse recent Virtual Reality works that emphasize fictional or documentary stories of migration and exile, and thereby consider an active engagement with the environment crucial to the construction of the stories. In so doing, I re-examine and bring into dialogue three existing strands in film theory from the perspective of VR: an aesthetics of discovery (Andrew 2007), the idea of liberal and embodied perception (Bazin 1953, Sobchack 2004) and an implied connection between film spectatorship and forensics (Benjamin 1931 and 1939). Adding to 360-degree video or spherical cinema, VR distinguishes itself by facilitating environmental interaction and engagement, which calls for a reconsideration of existing aesthetic theories of embodied sense-making and liberal conceptions of the gaze. In dialogue with recent studies on the disappearance of the frame in VR aesthetics (Brillhart 2015-2016, Uricchio 2018), I argue that editing and therefore storytelling in VR is in line with wider screen aesthetics: it includes less restricted techniques that activate the spectator's gaze, such as lighting, environmental sound, or depth of field. Deepening the ideological implications of such dynamic framing practices, furthermore, I support my analyses with theories on liberal spectatorship and democracy of vision. Following this line of thinking, I then propose forensics as a narrative model for VR, and thereby emphasize broader epistemological implications of the discovering spectator as examiner.

1 Off-screen film theory

The centrality of the frame permeates the history of film theory: from an ontological and philosophical dimension, the 24 frames a second have been crucial to understand the way cinema dissects and reconstitutes movement and time. Aesthetically, framing is the director's means of selecting information, and therefore of creating stories. To streamline information, to include and exclude, is perhaps a condition sine qua non for narrative: without structured plotting of events, no stories can be told. In other words, the frame expresses the filmmaker's intervention and is therefore the guarantor of film as art. In Rudolf Arnheim's words, the frame enables "restrictions to transform the peep show into art" (1933: 154). From there on, Arnheim's defence of film art leads him to dismiss any attempt to transcend the frame. From sound cinema, widening screens like Cinemascope or Cinerama to three-dimensional cinema: "there can be no composition of that [3D] surface" (Ibid.: 156), and "montage will seem an intolerable accumulation of heterogeneous settings" (Ibid.).

In his justification of the "formative potential" (Ibid.: 159) of cinema, Arnheim is exemplary of early day prescriptive film theories, yet the persistence of the frame returns prominently in psychoanalytic and semiotic film theory as an undeniable semantic marker in socio-political film analysis: not only does the frame, the "material unit of the image" as Stephen Heath describes it (1976: 258), solidify prescribed subject positions, it also "encloses film as narrative" (Ibid.: 260): narrative "supports the frame against its excess", and as with

Arnheim, the "denial of the frame can only lead to the breakdown of cinematic form" (Ibid.: 261). Although Heath's suggestion to film analysis has been critiqued from the start,[1] it nevertheless stands for a reassessment of the frame as an essential building block of cinema: the history of cinema starts with the immobility of the spectator, their "being-in-frame" (Ibid.: 260). Furthermore, Heath insists on the connection between framing and narrative structure: "narrative may be seen as a decisive instance of framing" (Ibid.: 261), he writes, thereby linking narrative constrains to framing conventions and repeating Arnheim's inherent connection between framing and cinematic form. With VR, then, Arnheim's biggest nightmare may indeed come true; and considering the importance of a fixed frame in subsequent theoretical and ideological enterprises, the implications of apparent frameless practices in VR storytelling pose essentially disciplinary questions. What about film language, narrative structures or the filmmaker's creative vision? If the frame contains ideology and film history began with the immobilization of the spectator's gaze, does VR qualify as post-cinematic?

There is, however, an alternative route which is entirely sketched around the ambiguity of the frame and the affirmation of off-screen space. In an address of the post-cinema question, Dudley Andrew attributes to post-war realist aesthetics, starting with André Bazin, a reformulation of cinema that departs from film theories based in framing and editing, thereby initiating a "redefinition of cinema's elemental makeup." (2007: 64). In what he terms the "aesthetics of discovery" lies a paradigmatic shift away from the frame that advocates a spectator who "'discovers' significance, rather than 'constructs' meaning" (Andrew 2007: 47). Theoretically speaking, Bazin's aesthetic and historical orientation takes a U-turn from prescriptive film theories, of which Arnheim's outlined above is exemplary. Aesthetically, his interest in off-screen space and minimal editing is therefore of interest for studies on VR and storytelling. Historically speaking, too, Bazin reasons that with the advent of sound cinema and wide-screen technologies, prescriptive theories based on the frame and editing become obsolete: "The evolution of cinema since sound, overall and in particular during the past decade, leans to a negation of montage and of plastic aesthetics, at least the sort of pictorial plastics based on the existence and proportions of the frame" (Bazin 1953a: 246). Rather than grounding film art in the frame, then, Bazin instead emphasizes the notion of the off-screen and depth of field as leading force in cinema's aesthetic and technological evolution, moving beyond the frame and into the spectator's perceptive dimensions.

Naturally, the question of storytelling untied from editing concerned Bazin: concepts like "horizontal montage" after watching Chris Marker's *Lettre de Sybérie* (*Letter from Siberia* 1957), or "neo-montage" in *La Course de taureaux* (*Bullfight* Boroutsky and Braunberger, 1951) testify to the fact that he was busy looking for alternatives. Horizontal montage reverses traditional audio-visual hierarchies by acknowledging sound rather than image as semantic marker: the same sequence accompanied by a different voice over will produce entirely diverging meaning. Neo-montage adheres to the found-footage logic, rather than dialectical or continuity editing: in breaking down apparent syntheses between shots, it "achieves an openly visible analysis of its construction" (Dall'Asta 2011: 63).[2] In a manuscript with the title "The Big Ideas", referring both to wider screen aesthetics as well as its intellectual implications, he elaborates specifically on the possibility of frameless storytelling:

> It is quite generally believed that the subtlety of storytelling and of psychological depth are credited to editing, which some even consider to be the essence of film art [...] And so of course the size of a CinemaScope screen reduces the possibilities of editing in ways even more decisive than realist sound cinema did. But it won't serve only spectacular subjects, and those who will understand and master its possibilities will also be able to make them serve a cinema of analysis and intelligence (Bazin 1953c: 2541).

Similarly, the apparent lack of a frame in Virtual Reality urges a radical reconsideration of editing. In "probabilistic experiential editing" (Brillhart 2016), VR editing becomes an effort to guide the spectator's most likely

1. The viewpoints highlighted in this section cover only the tip of a far-reaching theoretical debate at the time, including seminal texts in film and ideology. Jean-Louis Comolli, for instance, argues for a more active form of framing, and aligns it to "narrative condensation" (1987:70) while emphasizing the ideological implications of it: "the frame imposes itself and the spectator submits" (Ibid.: 76). On this topic, see also Noel Carroll, 1981 and Dana Polan, 1985.

2. In her chapter, Monica Dall'Asta suggests several parallels between Bazin's film aesthetic and Walter Benjamin's seminal "Work of Art" essay. Similarly, the notion of "forensic storytelling", central to this article, ties Bazinian film studies to Benjamin's views on critical spectatorship, politics and aesthetics.

interaction: continuity editing becomes concerned with stitching the image into spherical coherency, point of view shots become points of interest and match on action turns into match on attention. Linear narrative structures, furthermore, become spherical, "like a ripple effect - like a drop in a bucket, and then a ring around that, and a ring around that. [Editing in VR] was really about rotating those rings to corral people through the general idea of a story, or an experience" (Ibid.). Addressing today's largest global humanitarian crisis, *Carne y arena* (*Flesh and Sand*, Iñárritu 2017) illustrates that VR is indeed capable of expressing "big ideas", as it puts the audience in the shoes of South American immigrants crossing the Mexican border with the United States. Ironically, when it arrived in Amsterdam, the installation was set in a deserted film studio: bare footed in a cold detention centre, visitors await their turn for a unique walk-around VR experience. This prologue, so to speak, already emphasizes a sensuous experience to the setting, continued by the sand under your feet and blowing wind on your face throughout the VR experience. As you follow a group of clandestine refugees and their traffickers, voices and environmental sounds will guide your attention from one character to another, which determines the stories you hear. A sudden gust of wind, the deafening sound of a helicopter makes you turn towards its blinding searchlight, which enables the cut towards the film's climactic sequence of a border control's gun pointing straight into your face. A close reading of the editing techniques quickly reveals similarities with wide-screen aesthetics, like the use of environmental sound effects, depth-of-field and lighting to guide the spectator around. The problems in theory arising from VR, and in particular its implications for storytelling, are indeed similar to those raised by wide-screen cinema: without edges, traditional cut-and-paste editing fails completely, and therefore the necessity for alternative, dynamic storytelling models is revived.

2 Politics of choice

The lineage described by Andrew as an "aesthetics of discovery" in fact rests on a veritable paradigm shift with far-reaching ideological implications: it postulates a particularly active notion of spectatorship as crucial to the organisation of the narrative. In her reading of Bazin's work on depth-of-field, Jennifer Fay links wide-screen aesthetics and cinematic realism in general to a veritable democratic experience, "promot[ing] global humanism and world understanding" (Fay 2018: 176). While editing and close-ups impose views on spectators, depth-of-field puts forth an "aesthetic of choice": it gives the viewer the "time to form an opinion, first to see everything, then to choose importance," she writes, and thereby "restore(s) the individual's belief that [they] can make choices" (Ibid.). Similarly, John Mullarkey develops from Bazin's aesthetics a "democracy of vision" centred around the experience of ambiguity: "[depth of field] enables the freedom for the spectator's 'eye' to explore, thus protecting a democracy of vision" (Mullarkey 2012: 45). Ultimately, this intellectual freedom translates into an immersive and essentially participatory notion of spectatorship: "Bazin wants to end the observer status of the spectator and replace it with 'participating perception' " (Ibid.: 44). It is important here to underline that Bazin's affirmation of choice is not universal, nor is it therefore culturally un-coded. In a study on film language, he recounts an anecdote from 1940 when English missionaries used film to indoctrinate populations in southern Africa: knowing the particular film by heart, they were astonished to find that "everyone responded that they had been profoundly interested in the white chicken" (Bazin 1953b: 1080), a detail they themselves had never noticed. Reversely, in his own film club screenings of *Le jour se lève* (*Daybreak*, Carné 1936), Bazin notes that spectators systematically forget a large and very present piece of furniture in Gabin's room, simply because it plays no role in the story (Ibid.).[3] Instead of advocating some sort of universal film language, these observations show that liberal perception itself is processed in terms of cultural codes as well as narrative efficiency.

This nuance is important, because it points to the politics involved in choice and the distribution of attention, and it underscores a dynamic tension at the heart of this aesthetics of choice. "The democratic film style [is] fraught with seemingly undemocratic tension", Fay writes (2018: 181), as the viewer "is induced actively to participate in the drama planned by the director" (Bazin qtd. in Ibid.: 183). Indeed, the liberal spectatorship implied in Bazin's work on depth of field, his affirmation of off-screen space and wide-screen aesthetics comes

3. Here, Bazin is clearly more nuanced than Alain Badiou in his later assessment of cinema and democracy, in which he argues for the universality, or "generic humanity", of film: "The character of the Tramp, perfectly placed, filmed in a close frontal manner, in a familiar context, is no less a representative of generic"popular" humanity for an African than for a Japanese or for an Eskimo" (2009: 2).

with a trick: the image remains, of course, constructed. Rather than being spoon-fed through fixed editing and framing practices, however, information starts to rely on the dynamics of attention, which undeniable has its own ideological dimension — albeit more subtle, and perhaps precisely therefore even more coercive.[4]

Outlining these thoughts on dynamic framing and its political implications on notions of spectatorship, it becomes increasingly difficult not to confuse mid-century views on depth of field and wide-screen cinema with contemporary concerns relating to VR. In fact, the "big ideas" on intellectual emancipation, democracy and global humanism embedded in Bazin's realism extend well into the post-cinema debate. Serge Daney, for instance, postulates that with television and the zapper at hand, spectators may one day become "editors in their head" (1991: 165). Moving further from traditional film and media studies, the principle of discovery as sensemaking directly translates into a rhizomatic conception of networks: rather than structured from start to finish, VR narratives are decentred and "oriented toward an experimentation in contact with reality" (Deleuze and Guattari 2004: 13). And so, following up on Andrew's suggestion to extend this lineage further, the proposed paradigm shift from frame to off-screen aesthetics, from the construction of meaning to the discovery of significance, gives way to more phenomenological understandings of film centred on sensory interactions and environmental engagement.

I believe these affiliations, though they transgress quite beyond the disciplinary borders of film theory, nevertheless provide a strong sense of continuation from realist film aesthetics into the contemporary applicability of an aesthetics of discovery, particularly its implications for VR storytelling. Solidifying the suggested connections between an aesthetic of discovery and storytelling in VR, I will in the following part of this article draw on specific case-studies that incorporate discovery and spatial engagements into exilic experiences which make up the narrative.

3 Exilic Realities: some case-studies

In "traditional" cinema, established documentary and fictional genres like the travelogue and the road movie illustrate that movement through space can constitute the backbone of narrative structures. With open-ending and episodic plot structures, travel narratives typically transfer social and cultural critique as well as existential themes onto an active spatial engagement. A remarkable amount of recent VR stories adopt this narrative logic and follow in the footsteps of *Carne y arena* as semi-documentary stories of travel and exile. Always rooted in real-life testimonies, storytelling dynamics of VR appear to lend themselves well to convey wandering experiences of exile and migration as a highly politicized movements through space. The increased mobility of the spectator in Virtual Reality, which follows from its aesthetics of choice, finds literal translation in stories of travel, and in particular of exile — in these cases, VR appears to be the designated storytelling device.

Traveling While Black (Williams 2019) takes us to the times of racial segregation, when traveling throughout the USA was not only engrained with politics but also life-threatening for Black Americans. As if to affirm its cinematic affiliation, the film starts in an old-fashioned film theatre: red curtains flank the stage, all the seats besides your own are empty. Black and white home video footage is projected on the screen, and besides one or two curiosity driven looks towards the film projector in the back of the theatre, your gaze remains fixed on the screen in front. The contrast is therefore stark, when in the following scene you find yourself in the middle of a deserted street: the pavement is wet, it must have rained before. Slowly you start to turn around trying to figure out why you are left here, on the sidewalk of a deserted street. You are right in front of a former silent movie theatre Ben's Chili Bowl, Washington DC. Ever since its foundation in 1958, this diner has been a shelter for the community. Being there, listening to testimonies of racial violence and memories of student and civil rights movements, one feels participant of this community. Shot more than fifty years after the Civil Rights Act, each story told in *Traveling While Black* testifies to the fact that the co-called Green Book, a travel guide listing safe dining and accommodation facilities, has been internalized: while lawfully obsolete, systemic and persisting racism continues to divide public space. Structurally, too, the film emphasizes the politics of place, belonging and community: you sit right at the table or on a barstool, intimately close to the one who's talking

4. In this regard, William Uriccio's suggestion (2018) of future "algorithmic stories" is worth mentioning, in which AI predicts spectatorial behaviour in Virtual Reality just like algorithms in Facebook streamline advertisements and information on timelines, tailored to the specific interest of its users.

— other costumers don't really mind your table, until at one point everyone present engages in listening and the scene becomes somewhat of a collective fellowship. The film's elegant use of superimpositions in lieu of hard cuts in editing is also noteworthy: alluding to the diner's former use, archival footage is projected on the ceilings and walls, thereby spatializing what in traditional film language would have been a cut. Flashbacks of driving on public transportation are first projected on the horizontal mirror besides your table; and just when you started looking at the landscape passing by, the mirror becomes a window and the diner has changed into the bus on the road.

In her introduction to *Belonging: A Culture of Place* (2019), bell hooks accounts for this internalised Green Book in contemporary America, stating clearly that "[n]aturally it would be impossible to contemplate these issues without thinking of the politics of race and class" (2019: 3). Indeed, travel is not a neutral practice, feeling at home and having a sense of belonging is not a universal given or even conceivable to many. "Many folks," she writes, "feel no sense of place," (Ibid.: 1) thereby referring to "the everyday anguish that shapes the habits of being for those who are lost, wandering, searching" (Ibid.: 2). Likewise, cinematic space is biased and democracy of vision, as discussed previously, remains intertwined with prejudice. The politics underlying this discussion on place indeed resonate with existing film studies of space and place, notably in Vivian Sobchack's *Carnal Thoughts* (2004). In anticipation of her well-known "cinaesthetic subject" as a means to include the body and sensuous production of meaning in film, she distinguishes the "pleasurable and aimless meanderings of the *flaneur*" (15)[5] from her study of moving through space, and insists on its critical value: " 'not knowing where you are' is the most global and existentially threatening and 'not knowing how to get to where you want to go' the most local and mundane" (Ibid.: 34-35). Sobchack's turn to spatial experience aligns with her more general endeavor to find grounds for embodied sensemaking in cinema, which positions itself in opposition to the persistent "hegemony of vision" (Ibid.: 64) permeating film theory since the seventies. Importantly, she emphasizes not knowing, or experiences "without a thought" (Ibid.),[6] as catalysts for embodied sensemaking, thereby suggesting the centrality of the spectator's affective engagement in cinematic sensemaking. Ultimately, then, her exploration of the " 'lived geography' of being disoriented in a worldly space" (Ibid.: 15) is a quest for a different kind of knowledge emerging from the cinema: one which is lived, rather than given. Applied to VR storytelling, formerly formal framing practices become embodied and meaning relies on a discovering spectator.

Discovery is enhanced significantly in interactive Virtual Reality stories, specifically those that incorporate an active engagement with objects and props as narrative turning points. *The Key* (Tricart 2019), critically acclaimed for its persuasive and interactive narrative structure, is an exilic experience that starts like a video game, arguably clouding the film's political content: standing up and actively using your controllers, you are asked to open a locker and grasp mystical floating ball-friends. As you are tempted to move around, a brightly coloured animated world with alien figures creates itself: suddenly you're standing in line in the midst of a vast desert, awaiting your turn to pass a multi-eyed monster creature. As you continue the journey the key returns and this time unlocks the memories of a refugee: the colours start to fade, and the animated world transforms into the desolate ruins of a bombarded apartment. The film's narrative design is structured around not knowing where you are in an imaginary landscape, in which the sudden change towards a real and specific setting incorporates dissociative amnesia, a known post-traumatic stress disorder among refugees (Sandialo 2018). The prominence of keys, furthermore, references a common practice among refugees to hold on to the keys of the houses they left behind (Solsman 2019): the process of unlocking the narrative, then, becomes an effort in remembering the home which has turned to ruins. A similar emphasis on objects, memory and homelessness guides the narration in *We Live Here* (Troche 2020), which tells the life story of Rockey, a sixty-year-old woman without a home. Confined in her igloo tent in a Los Angeles public park, you are invited to

5. On the camera and the flaneur, see also Susan Sontag who links the drifting photographer-flâneur to a bourgeois appropriation of urban space, in contrast with the homeless or the drifters: "The photographer is an armed version of the solitary walker reconnoitring, stalking, cruising the urban inferno, the voyeuristic stroller who discovers the city as a landscape of voluptuous extremes. Adept of the joys of watching, connoisseur of empathy, the flâneur finds the world 'picturesque' " (1973: 42-43).

6. As her precursors seeking more sensorial sensemaking in film, Sobchack positions herself explicitly in opposition to methodological and theoretical explorations in semiotics, structuralism and psychoanalysis of the seventies. Instead, she positions herself in line with Sergei Eisenstein's synaesthetic film theory, Tom Gunning's cinema of attractions, Gilles Deleuze's sensory thought, Linda Williams' body genres, Richard Dyer's cinema of sensations, Laura Marks' haptic cinema, Walter Benjamin's tactile appropriations, and Siegfried Krakauer's definition of the spectator as corporeal material being.

pick up objects lying around: a diary, a box of photographs and notes, a small bottle of fairy-tale stardust each contain an imaginative sequence which temporarily takes you out of the suffocating setting of the tent. One of these objects is a miniature house, which prompts Rockey's voice-over: "I miss the sound of a key turning, locking the door and you can go to sleep, you know you are safe." Sitting in this tent, you see this house from an outsider perspective: the lights are on, people are laughing, you hear the door being locked, and you are excluded.

In these stories of exile the form and the content of displacement go hand in hand: thrown onto an unknown itinerary, spectators (the term gradually becomes frail) cannot but participate in the sensemaking process — nothing happens, otherwise. In this manner, choice and object-oriented designs in VR solicit exilic experiences through narrative structures that accentuate engaged spectatorship. Writing about traditional cinema, Hamid Naficy indeed emphasizes the embodied effect of exilic cinema as "provid[ing] both an ocular and an ideological perspective on deterritorialization. The ocular is encoded in the tactile optics and the ideological in the structures of feeling and synaesthetic sensibilities of the style" (2001: 30). That these real life or VR stories are fundamentally built on so-called carnal knowledge (Sobchack 2014) amplifies the tactile optics of exilic cinema and may in fact clarify the sensemaking implications of a cinema of discovery. At the end of the day, discovery does imply a more critical, participatory learning process if compared to the unidirectional transfer of meaning. This way, Paolo Freire emphasizes the embodied knowledge implied in exilic experiences: "Exile cannot be suffered when it is all reason. One suffers exile when his or her conscious body, reason and feeling — one's whole body — is touched by it" (Freire 2016: 30). In critical education studies, Freire is most known for developing alternative pedagogies to the so-called "banking system" of education, which he characterizes as a one-way *communiqué* that "regulate[s] the way the world 'enters into' the students," who then "'receive' the world as passive entities" (Freire 1970: 76). Instead, he advances "a critical reading of the world" before any literate "reading of the word" can occur: "it implies the sharpening of the learner's *epistemological curiosity*, which cannot be satisfied with mere description of the object's concept" (Freire 2016: 36).[7] This epistemological curiosity is fully in line with the ramifications of the aesthetics of discovery described throughout this article: the wandering experience, ultimately, is a critical reading of the world — an environmental activity that, rather than imposing meaning, produces it.

4 Towards forensic storytelling

The previous paragraphs each explore theories of film that question the dominance of framing as primary signifier in film from an aesthetic and political perspective. In conclusion, I will further develop the implications of "reading the world" into a particular storytelling model, which is also an attempt to solidify the link between VR and existing film and media theory. Addressing this issue of disciplinary continuity or break, William Uricchio suggests in an interview for the VR programme series XTENDED at the Eye film museum in Amsterdam that VR produces "an experiential narrative" (2018), thereby citing Carlo Ginsburg's hunting metaphor for storytelling: "a hunter walks through the world and sees a footprint, a bit of fur on a branch, a broken twig. And from that, is able to assemble a story" (Ibid.). Ginsburg's hunter-storyteller indeed offers a concrete example for the epistemological practice described by Freire as "reading the world":

> The hunter would have been the first 'to tell a story' because he alone was able to read, in the silent, nearly imperceptible tracks left by his prey, a coherent sequence of events...What may be the oldest act in the intellectual history of the human race [is] the hunter squatting on the ground, studying the tracks of his quarry (Ginsburg 1989: 93).

The equation with hunting is equally present in Vilém Flusser, who acknowledges in *Towards a History of Photography* that "the act of photography is like going on a hunt in which photographer and camera merge into one indivisible function. This is a hunt for new state of things, situations never seen before, for the improbable, for information" (2000: 39). While Flusser wrote about photography, the indivisibility of the camera and the photographer anticipates the embodied framing practices in VR. And this hunt for "information", in other

7. Uncoincidentally, Freire's participatory pedagogy is implemented in popular education projects in Syrian refugee camps in Jordan, see: Magee and Pherali 2017.

words for meaning, aligns with the sensemaking model proposed in a cinema of discovery. Rather than developing the hunting metaphor here, however, I conclude this essay with an exploration of forensics as proposed in Walter Benjamin's work on documentary photography. Doing so, I hope to sketch a fitting framework to tie the question of storytelling in VR back to earlier documentary theories of critical spectatorship that seek in photography a forensic and engaged kind of seeing.

As the palaeontologists retracing the story behind the fossilized footsteps in the White Sands desert, we are in VR actively imagining possible scenarios: why is the cup spilled, why was the window left open; why is this footstep deeper than the others, where did the baby steps go? We discover the scene as we engage with it, and this discovering mode drives the narrative. The storytelling logic appears to revolve around an active reading of clues, whose apparent lack of intrigue solicit the spectator's curiosity. From a similar perspective, Benjamin famously described the empty streets of Paris, photographed by Eugène Atget, in forensic terms:

> It has quite justly been said of [Atget] that he photographed them like scenes of crime. The scene of a crime, too, is deserted; it is photographed for the purpose of establishing evidence. With Atget, photographs become standard evidence for historical occurrences, and acquire a hidden political significance. They demand a specific kind of approach; free-floating contemplation is not appropriate to them. They stir the viewer; he feels challenged by them in a new way (Benjamin 1939: 226).

The emptiness of the scene constitutes the lack of a clearly established narrative, which in turn stirs spectators into a critical, examining mode of looking. In another formulation, he writes: "[...] the city in these pictures is like an empty apartment that has yet to find new tenants" (Benjamin 1931: 293).[8] Rather than having things explained and conceptualized, the interpretative freedom enables discovery: Benjamin's critical spectator follows almost naturally from an aesthetics of choice, here expressed as a challenge, and the critical mind is then triggered to complete the scene. Where Benjamin rejects "free-floating contemplation", Bazin's democracy of vision similarly depends upon participatory spectatorship — Sobchack's "lived geography" in turn implies Freirean epistemological curiosity.

The forensic framework of a crime scene furthermore supports the undeniably political nature of this engagement: the image turns into evidence and the spectator becomes its witness. The case-studies analyzed in this article each emphasize the embodied perception and framing practices as part and parcel of the storyline. Likewise, the fossilized foot tracks, Atget's documentary photographs and wide-screen aesthetics share with VR an essentially engaged and critical spectatorship without which these stories remain untold. The application of forensics as narrative trope, finally, has distinctive aesthetic implications which account for the fact that the scene is organized — in other words, that there is intrigue. What made Atget's photography compelling, what moves us in depth-of-field or in wide-screen cinema, and what makes us engage actively in Virtual Reality is precisely the fact that there must be an event to be discovered. Thriving on suspense and mystery, what is more enigmatic to examine than the scene of a crime?

While I have in this article emphasized interactivity and environmental engagement in VR, the ideas supporting my arguments nevertheless transcend technical specificity. With my analyses, I attempted to formulate an initial answer to the question of storytelling techniques in VR which move beyond editing and framing, and thereby to place practices of VR storytelling in continuation with particular aesthetic lines of thinking in film and media studies. The analogy between wide-screen aesthetics, a cinema of discovery and forensic storytelling not only helps to understand the specificities implied when framing is embodied, but also suggests ways of thinking through the aesthetic and political implications of VR. This way, recent documentaries on clandestine migration explicitly foreground the forensic framework of evidentiary material as well as an expressed inquiry into new documentary forms of representation, whether in VR or not. To name but a few: *Those Who Feel the Fire Burning* (Knibbe 2015) replaces commonplace TV helicopter shots of Mediterranean mar-

8. On forensics in Benjamin, see also Peter Hutchins' study on photography and legal frameworks, in which he relies implicitly on a kinaesthetic epistemology intending to "establish a connection between vision and touch" in physiology (1997: 230). Ultimately, forensics not only bridges VR storytelling with foundational texts in film and media studies, but also ties in with literature, which demonstrates its storytelling potential. The work of William Faulkner, in particular, has been theorized as "forensic fiction" by literary scholars (Ross 1994), and his style described incidentally by Bazin as "a new way of seeing things provided by the screen" (Bazin qtd. in Baldwin 2000: 35).

itime migration with ground-braking drone aesthetics to visualize the oneiric presence of drowned refugees on shore. *Meet Mortaza* (Derobe 2021) is a combined 360-degree video, VR walk-around installation and augmented reality exhibition retracing Mortaza Jami's trip from Kabul to Paris through fingerprints, objects, passport and other documentation. And Amel Alzakout's *Purple Sea* (2020) combines an internal monologue with footage of the director's own crossing on a dinghy, with an action camera tied to her wrist: before turning it into a film, the footage was intended to be evidence in court of humanitarian crimes at sea. Looking into existing theories on the politics and aesthetics beyond framing and editing, as well as texts on alternative constructions of spectatorship in film and media theory, this article suggests that with Virtual Reality we are not as much "post-cinema" as it seems — at least if one is willing to acknowledge that there has always been an off-screen, exilic and embodied nature to film studies. Considering the humanitarian crisis these stories represent, finally, the narrative framework of forensics testifies to the contemporary necessity of engaged and critical spectatorship.

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