# THE EXPANSIVE AND PROXIMATE SCALES OF IMMERSIVE MEDIA

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## Abstract

The term immersive is often used in relation to contemporary visual media, but the exact parameters of immersion can be ambiguous. In this article, I will explore what immersion means in terms of technological envelopment and, in particular, how this envelopment operates at a range of distances between observer and media surface. As I argue, immersive media can operate in two ways. The first is expansive, with immersion occurring through the creation of an extensive surrounding space into which the user is placed. The second is proximate, with intense closeness allowing for smaller media objects and apparatuses to overtake the visual field. An investigation into these seemingly alternate scales reveals their connections and overlap, and demonstrates the surprising importance of the proximate in immersive visual media.

Keywords: visual immersion; scale; envelopment; proximity; 3D cinema; microscope; stereoscope

## Introduction[1]

The word immersive is often used in relation to a range of contemporary visual media. From 3D cinema to virtual reality (VR), this label functions as a statement of approval, a commendation that an enveloping world has been successfully created. An immersive experience is one which places us within an image space, surrounding us with mediated content. Such a form of media immersion is far from a new development. But what does this word point to in perceptual and technological terms? If immersion, as its first entry in the Oxford English Dictionary has it, is the act of immersing someone or something in liquid, then how is this liquidly engulfing experience generated by media that employ screens and other surfaces? An immersive experience, as the liquid metaphor stresses, involves the envelopment of our immediate form, as we are given the impression that a represented world touches our face and submerges us within its alternate reality. How, then, can we understand immersion when it takes place via large-scale screens which are often placed at some remove from us, like those found in the cinema? Does media still engulf us, and if so how? Does the distance between the spectator and content alter the parameters of immersion and the strategies by which it is achieved?

In this article, I will unpack possibly bifurcated strategies of immersion: the large-scale but somewhat perceptually distant represented worlds of media like the panorama and cinema on the one hand and the small and close-at-hand worlds of media like the stereoscope and VR on the other. The former throw visual content across a large area in an attempt to surround our visual field, while the latter offer highly detailed but miniscule content and use lenses to focus our attention upon this content. While these might appear to be contrasting approaches, deeper analysis will reveal that they overlap in intriguing ways. These overlaps speak to the importance of closeness and a limited field of view in relation to experiences of immersion. They can also be used to productively link the aforementioned media with cinematic techniques like the close-up and scientific devices such as the microscope and telescope. Ultimately, I will show that contemporary 3D cinema is a kind of culmination of a diverse array of immersive approaches that have been attempted in the last several hundred years of media history.

## Forms of Immersion

In what follows, then, I focus on the technological structure through which an immersive media experience is proffered – that is, the method by which visual information is communicated in order to solicit the viewer's optical and mental attention. This is far from the only understanding of the word immersive, and indeed, this word requires some unpacking. As Oliver Grau notes, the concept of immersion often 'appears somewhat opaque and contradictory' (2003, p.13). Grau indicates how immersion is usually placed at one end of an imagined, albeit often unhelpful spectrum, with critical distance lying at the opposite pole. In this mode, immersion seems to

name a more emotional, less reflective experience than that offered by an intellectual and reasoned engagement with a work of art. In a somewhat connected fashion, immersion relies upon the removal of a wider frame of reference – indeed, immersive media depend precisely on eradicating (or at least attempting to eradicate) any awareness of the frame at all: 'on account of their totality, [they] offer a completely alternative reality' (Grau, 2003, p.13).

This alternate reality need not be entirely or partly visual. Narratives can immerse us, as we become psychologically embedded within a story and the plight of its characters. This process can occur with or without any visual stimulation (think, for instance, of radio dramas). We can become immersed imaginatively in the world created by a novel, sketching from the author's words a holistic and comprehensive milieu that we picture within our own minds. Meanwhile, in visual terms, the word immersive has teleological connotations, pointing to a kind of sliding scale or receding horizon of media possibility. Each new technological development across the media entertainment landscape is invariably praised as offering greater immersion than previous iterations. We are assured that a more believable, authentic, enveloping experience is being offered by the latest invention. As André Bazin (2005) described in 1946, cinema is always working towards a goal of 'total cinema' – the utter envelopment of the spectator in a completely convincing mediated representation of an alternative world. Color, widescreen, 3D and VR have all been understood in these terms by various industrial sectors as steps toward improved representation, as rungs upon a Bazinian ladder bringing technology closer to simulating our unmediated experience of space. Finally, immersion is a compliment

bestowed upon successful media or media products – certain kinds of cinema (IMAX, for instance) are praised for their immersive potential and particular pieces of art (such as the VR experience *Carne y Arena* by Alejendro González Iñárritu or the 2009 3D film *Avatar* by James Cameron) are delineated from others because of their apparently superior capacity to immerse.

While all of these aspects of media immersion are worthy of our attention, this article attends solely to the technical conditions by which immersive visual mediation is achieved, in particular the distance and physical scales of media and their concordant relationship to the viewer. As such, concepts like critical distance and emotional engagement are not addressed. Nor do I look to Alois Riegl's admittedly influential distinction between optic and haptic looking, which is a distinction that has proven to be important in the analyses of contemporary media, especially those that trade in the proximate and visually immediate. Riegl's model is useful in many ways, but it has more to say about our embodied spectatorial relationship with images than our practical distance(s) from them.

I narrow my focus to literal distances and our perceptions of them in order to offer an understanding of how immersion can function so successfully across scalar frames that seem to be radically opposed. How is it that immersive experiences can be generated both by enormous images that dwarf our human bodies and that exist at some distance from us (as in the cinema), and also by images that are highly immediate to our perceptual apparatus and that we can clasp in our hands (as in the stereoscope)? Both offer what might be considered

'optical' or mastering viewpoints but achieve this at very different scales. Moreover, are these two modes as different as they might first appear, or do their structural properties and visual strategies intersect in nuanced ways? In seeking to address such questions, I will concentrate for the most part upon the late nineteenth and early twentieth centuries, a time when cinematic exhibition was finding its place and the overlaps between expansive and proximate immersion techniques were especially palpable. This work, however, has direct relevance to today's media landscape and I will conclude with reference to contemporary 3D cinema and its combination of immersive approaches.

## Expansive Immersion:
## The Panorama and Cinema

I call the experience offered by media which is large-scale and relatively remote from our viewing bodies 'expansive immersion'. These forms of media, due to their distance, must provide images that are massive enough to fill our immediate view as well as some or all of our peripheral vision. In this way, we are provided an extensive space that is subject to our wandering gaze. These media appear to immerse us as the world itself might be thought to immerse us. They provide an expansive terrain that surrounds us and which perceptually recedes in depth. The panoramas of the late eighteenth and nineteenth centuries are iconic in this regard.

Consisting of huge scenes, up to 15 by 120 meters in size and meticulously painted within a cylindrical structure, panoramas offered their attendees an overwhelming visual experience of another place – particularly tourist sites such as those

associated with the Grand Tour (the urban centers of Rome, Athens, or Constantinople – see Comment, 1999: p.8-18), momentous overseas battles (such as the famous Battle of Waterloo panorama in Belgium) or displays of military power (see Plunkett, 2013: p.11). Spectators were placed some distance away from the surface of the canvas by a walkway, and this distance helped to sell the panoramic illusion – not being able to get close enough to inspect the media surface, the panorama maintained its status as an imagined landscape. There were closer elements than the painting, namely 'faux terrain' – elements of scenery that were built and mounted in front of the background, and which provided some sense of shifting parallax layers (Grau, 2003: p.106). Nonetheless, these served the overall purpose of immersing the viewer within the scenography of the more distant painting. Any alternative information in the visual field that might show the panorama to be illusory rather than real (such as borders) was removed as much as possible. As Alison Griffiths describes, 'With nothing within which to locate the [panoramic] canvas, the spectator was more likely to accept the realism of the visual field than if the painting had been conventionally framed and exhibited', and this viewer was instead 'enveloped in an artificial reality in which all boundaries delimiting the real from the synthetic had been putatively eliminated' (2008, p.39). This removal of the frame might perhaps not have been as fully successful as Griffiths' description implies – architectural elements like the railing and the windowed ceiling would have been visible as bordering elements – but this attempt to eliminate the real so completely is telling. Immersive media, as I will suggest shortly below, are immersive not just because of the delivery of the content but also because of way that they mask out any visual material that is not part of this media content.

Griffiths raises reasonable objections regarding the presumed relationship of the panorama to cinema by stating that, because of their co-presence in the late nineteenth and early twentieth centuries, 'to talk about one spawning the other is ridiculous' (Griffiths, 2008: p. 41). Nonetheless, there are links between them in their mutual emphasis on spectacle and immersion (which she further links to cathedrals and other spaces of hushed religious awe). William Uricchio, meanwhile, notes that early cinema's panorama films may have explored space 'in many different ways' to the preceding panorama itself but that 'the cinematic panorama as a cultural practice bore many similarities' to this older media form (Uricchio, 2011: p.281). Dioramas – in some ways similar to panoramas but with shifting lighting effects (such as illusory changes from day to night, achieved through translucent canvasses and controlled lighting) – in many senses act as a bridge between the panorama and cinema, thanks to their inclusion of visual transformation or animation and their emphasis on a more immobile spectator than that of the panorama (Clarke and Doel, 2005: p.50).

Later developments in cinematic large-format projection make the connections between the cinema and the panorama more overt. Cinerama, a multi-screen projection system which sought to surround viewers by filling their peripheral vision, was developed in the 1950s. In some sense updating this, IMAX theatres became popular in the 1980s screening specially made documentary content and they have, in recent years, become necessary parts of the release strategy of many Hollywood blockbusters. The emphasis in these

exhibition spaces is on size and on the removal of any sense of a surrounding frame which retains the panorama's overt desire to encase the viewer in virtual space.

However, it is helpful to return to the emergence of cinema as an institution in order to see how it inherits and retains the perceptual engulfment of the panorama as a key trait. Many accounts of early cinema focus exclusively on its links with a variety of hand-held or small-scale toys and technologies like zoetropes and phenakistoscopes, or the photography of Eadweard Muybridge.[2] This version of technological media history disregards how, in terms of presentation and spectator positioning cinema, once it had moved beyond apparatuses like the kinetoscope, was much closer to the panorama and also to theatre than it was to these gripped devices. The panorama may not have spawned the cinema, but it was certainly a strong early influence.

Across the 1890s, 1900s and 1910s, moving images were screened in a variety of contexts from cafes to classrooms, but cinema would soon find stability as a media form in environments that were explicitly theatrical. In both cases, the viewing situation involved a stepped array of seats in front of a stage or screen that was the focus of attention. Cinema effectively combined the theatre – which itself had a tradition of enormous trompe l'oeil stage sets – and the panorama, giving a seated audience a form of narrative entertainment with characters in addition to touristic and spectacular landscape sites. Martin Lefebvre even describes early cinema as 'the golden age of cinematic landscapes' thanks to the popularity

of 'scenics' and travel films (2006: p.xxiv). The screen, meanwhile, rather than being life-sized (showing figures as the same size as they would be if seen upon a theatrical stage) became larger as a way of providing a greater sense of immersion. Technological developments in cinema across the twentieth century like deep focus lenses, widescreen projection and even the aforementioned Cinerama multi-screen and IMAX large-format projection systems, have maximized the size of the screen and the landscapes it provided, and so concordantly they have maximized the media experience of each audience member. Furthermore, the very act of lowering the lights during screening effectively disguises the parts of vision that are not taken up by the screen, allowing the screen to take the place of our visual world. As William Paul has shown, cinema architecture has become increasingly minimalist to serve this same end: while the ornamentation of the space of viewing was once part of the cinema experience, contemporary multiplexes seek instead to achieve an 'architecture of efficiency', giving viewers 'the screen and sound entertainment with no room for distraction' (Paul, 2016: p.2).

If the size of the screen and the minimization of architectural detail focuses attention upon the screen rather than the viewer's surroundings, all working to overcome any sense of distance between the spectator and spectated, then this is also achieved through the formal means of film grammar. Narrative cinema – which, unlike the panorama, was not only reliant upon vistas and views – quickly developed ways of making the screen seem less like a distant surface and more like a world in which the audience might feel immersed, even if it lacked the panorama's 360-degree envelopment. These devices did not literally make the screen bigger, but they sought to

make the viewer feel as though they were perceptually closer to it (even though they remained distant). What came to be called classical continuity editing works to define a coherent filmic space using techniques like shot-reverse-shots, eye-line matches, and cutting on action. Deliberate framing, meanwhile, gives the audience the impression that they are seeing everything that is relevant within the scene and that they are seeing it from the best angle. As a result of these techniques, viewers effectively become silent participants within the scene, with their gaze smoothly and imperceptibly directed to the required parts of the constructed world (Heath, 1976: p.79).

All of this strives to create a comprehensive space, one inside which the viewer is placed. This indicates the extent to which cinematic immersion is accomplished through strategies that aim to collapse the distance between viewer and media. This procedure of bringing-closer is perhaps best exemplified by the close-up, a cut-in or enlargement of detail which massively magnifies an object or person for our gaze. As filmmaker and theorist Jean Epstein wrote in the 1920s, the close-up's scalar expansion offers a hypnotic overabundance of sensual detail. Focusing on faces, Epstein outlines the power of such a shot:

The close-up modifies the drama by the impact of proximity. Pain is within reach. If I stretch out my arm I touch you, and that is intimacy. I can count the eyelashes of this suffering. I would be able to taste the tears. [...] It's not even true that there is air between us; I consume it. (Epstein, 1977: p.13)

Epstein may emphasize the fragmenting, separating tendency of the close-up, which after all extracts a single detail from a

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2)   See, for instance, the short account in David Bordwell and Kristen Thompson's *Film History* (New York: McGraw-Hill, 1994), pp. 4–7, from which the panorama is absent.

larger world, but he also shows how the power of the close-up is its felt fusion of the spectator and the media itself. The character that is the subject of the close-up becomes a gigantic, oversize presence on the wall before us, but rather than being perceived in this manner, the image's amplified size is instead intuited by viewers as an indication of peripersonal proximity. Contemporary film scholar Mary Ann Doane builds on this, proposing that the close-up can, as a result, function as a kind of 'semiotic threat', an excess or enhancement that escapes language and rational meaning-making (Doane, 2003: p.89-90). That is, the close-up seems to appeal to the haptic rather than the optic, to the embodied rather than the detached; it is an impression that is dependent upon a sense of proximity and an inability to view things objectively because of our closeness to that which we observe. It turns exterior data into interior affect, short-circuiting the normally distancing function of vision (Watter, 2015: p.100).

## Proximate Immersion: The Stereoscope, The Microscope and The Telescope

The stereoscope seems to operate from the other end of media distance and scale from the panorama and cinema. An object held in the user's hands which creates three-dimensional impressions from two side-by-side images when the user peers through the binocular lenses, its technical conditions of viewing involve distances of no more than a few inches. It is a

personalized media experience and although it is akin to cinema in its emphasis on the visual, its immersive strategies are explicitly *felt* as close in what would seem to be a qualitatively different, possibly haptic manner.

Stereocards featured a variety of content, from close-ups to family portraits through to large scale vistas that were very much in the fashion of the panorama or the scenic film. All of this material is physiologically brought into the immediate proximity of the user. No matter the distance represented in the photo (or drawing), the card itself remains a few inches from our eyes, a fact that our binocular convergence registers: our eyes angle themselves to focus upon the card, which is very near, rather than whatever it may represent, which would require a less acute angle. As a result, there is always a sense of nearness – this is unsurprising, since Sir Charles Wheatstone's original invention of the mirror stereoscope was prompted by his exploration into the way that near objects looked less realistic in a painting than far landscapes (Wheatstone, 1879: p.225-226). The stereoscope's origins lie in the ambition for an accurate representation of the *proximate* (i.e. that which offers considerable binocular disparity).[3]

As a media device, the immersion that the stereoscope offered was pegged not to a holistic, excessive world space (as is the case in cinema) but to an inescapable, overwhelming impression of close space. For Oliver Wendell Holmes, the particular

power of the apparatus was that it allowed users to 'clasp an object with our eyes, as with our arms, or with our hands, or with our thumb and finger,' an act which amplified the realism of the experience (Holmes, 1980: p.75). The depth of the stereocard is visually conjured through a kind of pseudo-physical clasping – and we can only 'clasp' that which is literally close at hand. The apparatus itself also asserts closeness through the way that we literally clasp it and peer into its depths. We bring it so close to our faces that it touches the skin around our eyes and we look through lenses that our eyelashes may lightly come into contact with.

What we see when doing this is also bordered by the refraction of these lenses, and this subtle warping of perception is also key. The stereoscope substitutes our normal vision, but this substitution is not entirely comprehensive. There is a clear intention to mask peripheral vision in the majority of stereoscopes produced for the mass market – whether resembling binoculars or including a mask- or hood-like cavity into which the face is placed, the external world is intentionally blocked by these devices. Depending on the form of stereoscope that is being used, we have a sense of the enclosing capsule into which we are looking and the focusing being undertaken by the lenses of the device: our peripheral vision may offer a slight darkened haze or the very edges of the stereocard may reveal themselves as blurred and distorted were we to look directly at them rather than at the central point of focus in the picture.

This is an integral part of the stereoscope's aesthetic, albeit one that is rarely explored. As Rosalind Krauss describes in a 1982 piece for *Art Journal*, stereoscopic media create a kind of 'tunnel vision': the apparatus masks out the user's 'ambient

space', an experience quite unlike observing 2D images within a gallery space:

As [the stereoscope user] views the image in an ideal isolation, his (*sic*) own surrounds, with their walls and floors, are banished from sight. The apparatus of the stereoscope mechanically focuses all attention on the matter at hand and precludes the visual meandering experienced in the museum gallery as one's eyes wander from picture to picture and to surrounding space. Instead, the refocusing of attention can occur only within the spectator's channel of vision constructed by the optical machine. (Krauss, 1982: p.314)

Surroundings may be banished from sight as Krauss states, but the act of banishment is dimly perceived by the user through the tunneling of attention that she also notes. This tunneling is necessary because the media is being presented through lenses in a highly determined fashion – there is a large central media field to which we attend, while the remainder of our vision is, if we pay attention to it, being closed off and effectively obstructed. Yet we rarely notice this periphery and instead feel it imperceptibly as a kind of force pushing us towards the central point of presumed visual interest. The result of this masking and focusing is an experience of 'deep recession' that is 'insistent and inescapable' (Krauss, 1982: p.314). Immersion, then, is not just about filling vision; it relies upon the circumscription of vision in such a way as to invisibly direct our gaze towards a nucleus of content. This nucleus may be relatively large (far larger than our foveal vision, which is the centre of our direct visual attention), but it is nonetheless being created through the subtle presence of a frame, albeit one at the extreme edges of our sight. The unfocused,

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3)   Also contributing to this impression of smallness is the occasional use of hyperstereo or expanded inter-ocular ratios by many stereocards. Wonders of the world, huge buildings and epic landscapes may have been common subjects, but to give these scenes a suitable sense of depth, the gap between the left and right eye views could be expanded beyond that of the 2.5 inches between the average human's eyes. Making the viewer into something of a giant, this approach makes the scene pictured more or less miniaturized (an effect which can be palpable or so subtle as to be almost unnoticeable).

distorted nature of this frame (the blurs at the edges of the lenses, the indistinctness of the slight edging of black that reveals the presence of the stereoscope's hood or encasement) further encourages us to ignore it.

In this intense focalizing of sight, the actual embodied experience of looking into a stereoscope intriguingly resembles the viewing conditions of the microscope or telescope. Like the stereoscope, these scientific devices migrated beyond the laboratory. As a form of media entertainment or hobby, they were soon found in middle- and upper-class Victorian living rooms. All were methods for revealing otherwise unseen space through lenses which reshaped observing capacities. Originally intended for empirical discovery – a task that the microscope and telescope retained more than the stereoscope – these devices seemed to authenticate the imaginative existence of otherwise invisible detail-rich realms. Laura Forsberg has suggested that in the nineteenth century the microscope, for instance, 'served as a portal into the unknown and mysterious world of miniature life' (Forsberg, 2015: p.639). The microscope reveals the unseen; a slide or specimen, apparently blank, or containing only an opaque dot, becomes something else when placed in the apparatus. The telescope shows what is otherwise invisible on the surface of the moon or within the night sky, summoning hyper-rich detail where there initially appears to be none. Similarly, a stereocard seen unmediated is two side-by-side images; it needs the stereoscope to become something else, to reveal its secrets.

The worlds to which these apparatuses gave access are not just uncovered, they are also made to feel extremely close. As Forsberg also points out, these potentially enchanted worlds are placed by their respective technical devices 'in the immediate proximity of the user' (Forsberg, 2015: p.639). The stereoscope, microscope and telescope all require embodied, tactile and intimate attention: the user grips the apparatus, peeps into a viewing port, and sees something that is perceived to be close. It is no coincidence that Krauss, above, uses the phrase 'the matter at *hand*' when describing the focus created by stereoscopic viewing conditions, and the same impression of visual nearness and proximate *gripping* is present in the microscope and telescope also. Furthermore, the worlds that these apparatuses reveal are, in many ways, analogously diminutive. They are not expansive vistas into which the user is placed but more intimate viewing situations, their intimacy emphasized by masking that borders vision and funnels attention.

## 3D Cinema: Hybrid Immersion

Despite the emphasis that she places upon the channeled, intimate attention engendered by the stereoscope, Krauss connects stereoscopic and cinematic viewing. Both, as she describes, 'involve the isolation of the viewer with an image from which surrounding interference is masked out,' and this connection is so strong that the stereoscope provides something of a 'proto-history' of the cinematic apparatus (Krauss, 1982: p.314). The cinema, as mentioned, masks attention through the darkness of everything other than the screen. Perhaps more notably, the close-up has been interpreted stereoscopically. Writing about turn of the century modernity, David Trotter suggests that cinematic close-ups were this medium's way of eliciting 'stereoscopic effects' (Trotter, 2004: p.51-52). Trotter argues that the cinematic close-up was developed in the 1900s and 1910s as a direct response to the kinds of sensations that had been popularly offered by the stereoscope for several decades, and which were still a potent presence in the media landscape. In both cases, a tangible sense of space and presence is created which is infused with an excessive power – both stereoscopic media and the close-up were, as Trotter describes, imbued with a certain unstable intensity and even eroticism thanks to their closeness (Trotter, 2004: p.51-52).

Links between the cinema and the microscope might be less obvious, but a comparison here is also instructive. If the microscope is like the stereoscope, it is also like the cinema. Through the lens of the microscope what appear to be blank or very simplistic slides are shown to contain abundant worlds; similarly, in analogue projection, chemically-produced images are magnified and shown to contain far more detail than we might appreciate when handling them in their un-projected, material form. The film strip, like the microscopic slide, is a latent image, a kind of representative icon of possibility. A strip of celluloid is rarely an end in itself, but the promise of a media experience, a promise which requires an apparatus involving lenses and light in order to be delivered and in order to be transformed into a world into which we can project ourselves. The film projector is effectively a microscope, blowing up a miniature world, only in an expansive rather than proximate fashion. Rather than being provided a tunneled, close-by experience, in the cinema we are effectively placed within an expanded microscope, occupants of the technical system which is magnifying the small into the detailed and enveloping.

In all of these types of media – the stereoscope, microscope, telescope and cinema – lenses are employed to reshape our perception of a framed image and to effectively re-size it. In all cases, we are dealing with a reduction: space is limited and compressed, but this bordering is not the source of frustration. Rather, it works to further focus our attention and encourage a sense of immersion within this reduced yet perceptually expanded world. The reduction that media, by necessity, undertake is countered by the employment of an apparatus which either swells the mediated content or brings us so close to it that we are surrounded by it. In this way, while immersion seems to be achieved in two distinct ways by visual media – either proximate and hand-held, or expansive and projected at some distance – these two strategies mobilize surprisingly similar technical viewing situations and are themselves highly interrelated.

The scope of this interrelation is revealed by 3D cinema in the present moment, this being a media form which intriguingly hybridizes the immersive strategies already outlined. Perhaps most obviously, 3D cinema is expansive. It is projected onto a cinema screen, and is associated with IMAX and other large format screening situations. Digital 3D cinema is, as emblematized by the most significant commercial 3D film of the current era, *Avatar*, a cinema of *scale*. In this film as in many others, our gaze wanders through an expansive volumetric terrain. While 3D cinema may be linked with frame-breaking objects and spectacle, a counter discourse has emerged which emphasizes that the technology can (and, it is often argued, should) be used to create seemingly limitless worlds

through which the viewer's eyes are encouraged to move.[4] This returns us to the visual rhetoric of the panorama – rather than an edited space into which we are perceptually placed (as in 2D cinema), 3D cinema is often expected to provide a panoramic overview, a world that we feel has engulfed us. This is certainly the strategy taken by many IMAX 3D documentaries, which place their audiences in unusual or exotic spaces (such as a wildlife safari or the International Space Station), and that encourage a wandering, amazed gaze.[5] *Avatar* offers moments that work in this manner, but it also balances such spectacle with more standard, 2D-like film grammar, which is a negotiation undertaken by many other mainstream 3D narrative feature films (Jones, 2015).

For all the panoramic immersion that it may offer, 3D cinema, like the stereoscope, is predicated upon closeness. Relying upon binocular disparity, a physiological effect that only arises from proximity, 3D cinema tends to bring things into the peripersonal zone of the viewer. Depth values might be manipulated to add a greater sense of separation or roundness to objects (especially so in the digital era with its post-production tools), and this makes the content of the world presented seem closer (after all, the greater the binocular disparity, the closer the object). This also tends to make things seem smaller – a scene with amplified depth values, made to seem closer, is made also correspondingly to seem miniaturized (that is, it provides us with the imagined physiology of a giant through its wider inter-ocular gap).

So, for all that 3D cinema is aligned with IMAX screens and huge cinematic spectacle, the presence of stereoscopic media cues complicate any assumption that the immersion being provided is functioning in an expansive and distant manner. We may feel as though our eyes can wander through the terrain of a 3D film, but this wandering is closer and more circumscribed than the panorama. The world presented is perceptually closer thanks to stereoscopic cues, and the viewing angles of 3D projection even work to funnel our attention in a similar manner to the stereoscope's focalizing lenses. As such, the miniaturization undertaken by 3D cinema is connected to a broader tendency toward a play with scale in immersive media. As described above, the cinematic close-up has been linked to stereoscopy in its effect of closeness and depth. Meanwhile, the closeness of 3D cinema is what helps it to potently envelop the viewer. Like the stereoscope, the impression can be one of surrounding, but intensely (if subtly) close space. This is similar to the experience offered by contemporary VR. As another highly proximate media delivery device (the screen is barely a couple of inches from our eyes), VR may provide more expansive spaces than cinema since we are able to move our head and look around, but it mimics the stereoscope in our awareness of the proximity of the media apparatus, the focusing of attention and the subtle masking being undertaken within our visual field.

## Conclusion

In this article, I have delineated between expansive and proximate immersion, showing how both the small and the big can be immersive, and in similar ways. Dissimilar physical proximities between viewed and view can lead to similar impressions of closeness and envelopment. An immersive, created world need not be that which is huge, which towers over us and is far beyond our grasp, as in a nineteenth-century panorama or a contemporary IMAX screen. Stereoscopes and VR may, in their own way, offer immersive and seemingly expansive and spatially extensive media experiences. Moreover, we must attend to the ways in which both hand-held and large-scale media still manage and even rely upon closeness, or a sense of closeness, for their immersive operations. 3D cinema combines aspects of expansive and proximate media and so demonstrates further the importance of the proximate in relation to our understanding of visually immersive media.

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4) On this approach to 3D, see, for instance, Atkinson (2011, p. 153) and Jockenhövel (2016, p. 58-59). Scott Higgins (2012) terms such use of depth a 'sustainable' 3D aesthetic.

5) Despite the presence this amazed gaze, Griffiths (2006) notes that the register of such IMAX films often moves away from the panoramic through the use of tilts and phantom ride-style visual material.

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