4. Reconfigurations of Screen Borders: The New or Not-So-New Aspect Ratios

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Abstract
The ubiquity of mobile phone cameras has resulted in many videos foregoing the traditional horizontal (landscape) frame in favour of a vertical (portrait) mode. While vertical framing is often derided as amateur practice, these new framing techniques are part of a wider contemporary screen culture in which filmmakers and artists are using unconventional aspect ratios and/or expanding and contracting aspect ratios over the course of their audio-visual work. This chapter briefly outlines historical contexts in which the border of the screen has been more flexible and open to changing configurations than is widely acknowledged. It then uses recent case studies to consider how our understanding of on-screen and off-screen space is determined by these framing configurations.

Keywords: Aspect ratios, embodiment, framing, cinema

In recent years, the increasing ubiquity of mobile phone videos has drawn attention to a radical challenge to traditional screen culture. It is not just that a wide variety of amateur users now have a filmmaking device at their fingertips—rather, that many of them are foregoing the more than a century-long norm for shooting with a horizontal frame. Appearing on social media sites such as YouTube, Facebook, and Twitter as well as in commercial news broadcasts, their footage stands tall in a vertical format. When replayed on horizontal screens, the startling strangeness of wide black bands on either side of the content focuses attention on the border of the frame as well as seemingly absent screen space. While vertical framing is often derided as amateur practice, these new framing techniques are part of a wider contemporary screen culture in which filmmakers and artists are on the one hand using

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unconventional framing with square aspect ratios (*Mommy*, Xavier Dolan, 2014) or vertical framing (Sonic Arts’ Vertical Cinema series for the 2014 International Film Festival Rotterdam) and on the other hand expanding and contracting aspect ratios over the course of the film (*Life of Pi*, Ang Lee, 2012; *Oz the Great and the Powerful*, Sam Raimi, 2013; *The Grand Budapest Hotel*, Wes Anderson, 2014). In each case, comfortable understandings of on-screen and off-screen diegetic and non-diegetic space are problematized. This chapter will briefly outline a historical context in which the border of the screen has been more flexible and open to changing configurations than is widely acknowledged. It will then use the aforementioned examples as starting points to consider how our understanding of on-screen and off-screen space is determined by these framing configurations.

**Introduction**

Towards the beginning of the 2010s, a minor controversy in visual media spread across YouTube, Twitter, blog sites, and other social media. Gaining traction with the 2012 Glove and Boots YouTube video, ‘Vertical Video Syndrome—A PSA’, calls were made for mobile phone users to stop filming in a vertical (portrait) mode.1 Assertions were made that those filming in a vertical rather than traditional horizontal aspect ratio were ignorant, uneducated media users who didn’t understand the best-practice procedures of filmmaking, yet many of the so-called vertical videos reached millions of viewers through viral video success and/or were bought by mainstream news broadcasters for use on terrestrial and cable television. At the 43rd International Film Festival Rotterdam in 2014, Sonic Acts’ Vertical Cinema section, featuring ten large-screen 35mm experimental shorts in a vertical format, introduced a high-art alternative to the mobile phone user’s use of the aspect ratio.2 Maintaining the distinction between portrait and landscape framing in painting, photography, and other visual arts, these shorts were visually distinct from the moving-image norm that has been dominated by a landscape, horizontal aspect ratio. Their presence at various film festivals in 2014 and 2015, as well as accompanying lectures by film academics and visual arts curators, demanded that this unconventional aspect ratio be taken seriously.3 At the same time that these seemingly

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1 Ross and Glen, ‘Vertical Cinema’; Ross, ‘Vertical Framing’.
2 Maheshwari, ‘Angular Visions’.
3 For more details of these events, see http://verticalcinema.org. (Accessed 2 April 2017).
oppositional cultural spheres—of the amateur mobile phone filmmaker and the experimental film artist—were destabilising long-standing expectations for rectangular, horizontally oriented aspect ratios in moving-image culture, other alternatives were appearing in more mainstream cultural practice. Xavier Dolan's feature film, *Mommy* (2014), shot in a 1:1 square aspect ratio, received numerous film festival awards, while advertising companies increasingly produced content in a vertical format for the various non-horizontal electronic screens appearing in airports, train stations, and other public sites. In each case, the use of new aspect ratios acted as a reminder of the importance of the frame in visual media, particularly the way the frame ‘separates the materiality of spectatorial space from the virtual immateriality of spaces seen within its boundaries’. The frame does, of course, interact with the physical parameters of the screen on which the image rests as well as the visible articulation of the image itself. For this reason, I consider the screen's borders to refer to the edges of the physical, hard-bodied space that projects or has images projected on to it, whereas the frame's borders are the visible edges of the image. In this way, the frame may be delineated as smaller than the screen and, if the image expands or contracts, the frame thus appears to expand or contract regardless of the physical parameters of the screen that are utilised.

Within the aforementioned contexts, changing aspect ratios are no trivial matter but have an impact on the embodied relationships we bring to our interactions with screen content and its delineated boundaries. Not just affecting our sense of physical distance and proximity to the borders of the image, different aspect ratios are able to help configure our immersion (or not) within visual fields and the way our multiple senses explore the way these visual fields are laid out. Some of the contemporary works that draw the most attention to the ways in which changes to aspect ratios can affect our embodied viewership are those that display the parameters of the screen but shift aspect ratios within it so that we reconfigure our perception of both the film's material body and our relationship to it. Recent examples

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4 Some critics have suggested that a 5:4 aspect ratio, or otherwise vertical composition, is used, but interviews with Dolan and press material indicate the aspect ratio is square. Although this film is also relevant for its use of changing aspect ratios during the film (see Brown, ‘Mommy’), there is not space to fully analyze it in this chapter.

5 Friedberg, *The Virtual Window*, p. 6.

6 For more on the way the film body operates as a material presence with its own perceptive and expressive qualities which at times reflect and simulate the human body's perceptive and expressive qualities while at other times creates its own embodied modes, see Sobchack, *The Address of the Eye*. See also Marks, *The Skin of the Film*; Barker, *The Tactile Eye*.
of feature films operating in this way are *Life of Pi* (2012), *Oz the Great and the Powerful* (2013), and *The Grand Budapest Hotel* (2014). While the aforementioned works are possible due to new screen technologies such as digital projectors and mobile screens, there are significant historical precedents that problematize any understanding of twentieth-century moving images as fixed within horizontal rectangular frames. This chapter will briefly outline a historical context in which the border of the moving-image screen has been more flexible and open to changing configurations than is widely acknowledged. While much of the focus is on cinematic works, a variety of different media utilizing moving images can be understood to operate within this context. This then leads the way for using the examples of feature films with changing aspect ratios as a starting point to consider how our embodied understanding of on-screen and off-screen space is determined by their aspect ratio configurations.

**Historically Diverse Aspect Ratios**

Some of the earliest moving-image motion studies, conducted by Eadweard Muybridge and displayed in his zoopraxiscope in the 1880s, were framed in a portrait orientation. Using human figures as the object of study, they exploited an aspect ratio that contained the upright body and little more. While promoted as part of a new science of photographic innovation, there was no attempt to hide the visual pleasure created by a gaze that removed the body from its surroundings in a manner that illustrated ‘Foucault’s point that the power exerted over bodies in technology is rendered pleasurable through technology’. The use of a black-and-white grid behind many of the bodies reinforced the extent to which the frame was carefully placed so that the visually mechanized figures could be studied. In this way, there was nothing arbitrary about the use of vertical composition, and there was no need for a wider gaze that could detract from the seemingly scientifically relevant on-screen space. Although this aspect ratio quickly lost favour with the introduction of the 1.33:1, 35mm format that became an industry staple from 1889 until 1953, other aspect ratios played a role within cinema’s first decades. The circular frame produced by early Kodak cameras in the late 1880s gave way to experiments with square moving images by various early pioneers such as W.K.L. Dickson.
(USA), Etienne-Jules Marey (France), and William Friese-Greene (UK). Using this format as well as the somewhat squat 1.33:1 aspect ratio, filmmakers were able to compromise between the traditional portrait framing often used for human figures and the landscape mode in place for wider vistas. Although photography had commonly split these two subjects into different aspect ratios, early cinema’s on-screen space needed the capacity to frame both. Early cinema is filled with examples of external shots that take in urban and rural landscapes as well as internal shots that focus on individual humans. As multiple-shot films developed, there was an increasing need for aspect ratios that could consistently deal with multiple subject matters within one frame. These aesthetic requirements combined with technological necessities (such as the need for space for perforations at the side of the image and a later need for space for the sound strip) and economic necessities (Thomas Edison’s patent on the 1.33:1, 35mm format led other manufacturers to experiment with different ratios) during the production of different aspect ratios.

Thus, in John Belton’s words, ‘there is nothing “natural” about these formats’.

With a greater emphasis on wide screen technologies from the 1950s on, a distinction arose in the second half of the twentieth century between the wider screen aspect ratio of cinema and the boxier ratio used in television. Yet there were moving-image works in both media that reconfigured these parameters either for artistic experimentation or due to technological necessity. In the former context, artist-filmmaker Paolo Gioli produced a number of 16mm film works with portrait aspect ratios such as Film Stenopeico (1973/81/89), Commutazione con mutazione (1969), and L’operatore perforato (1979), as did Bill Viola in video with The Messenger (1986) and The Crossing (1996). Other work, such as Marina Abramović’s video installation Cleaning the Mirror #1 (1995), used the configurations of television’s standard aspect ratio in new ways. Abramović’s installation included five television sets with a slightly horizontal rectangular frame that were stacked vertically to form a column. Each television set displayed different footage of human anatomy that roughly corresponded to the height of a human standing next to the screens. Viewed together, they produced a continuity of on-screen space that created its own portrait framing even though it was roughly broken up by the edges of the television set. With regard to the context of technological necessity, 3D cameras such as the

10  Belton, Widescreen Cinema, p. 18.
16mm Bolex camera had to produce two images (one for each) and so split the horizontal frame in two and recorded left- and right-eye images on each half of the frame. When exhibited, these two halves of the frame were fused together by an optical lens so that viewers seemed to see one portrait-framed image.

What is interesting about these examples is that they are impossible to view in a cultural vacuum. They stand out as different from the horizontal standard that predominates in the visual cultural contexts that surround them, in this way drawing attention to the uniqueness of their framing. Although dependent upon the exhibition space in which we see these works, if we are accustomed to a wider view, there is always the possibility that we would experience a physical sense of missing space, an invitation to question what we normally see beyond the edge of the frame. In a contemporary context, one of the ways in which this is forcefully made apparent to us is when vertical videos are displayed on horizontal screens, creating a pillar-box effect with black bars running down the sides. It is this configuration that has drawn particular ire from opponents to vertical videos. Yet we can view this ‘restriction’ in a different light: what is so important in the on-screen space that it must be framed in this way, that our view should be bordered and limited to this content? As I have previously argued, although many vertical videos result from an almost accidental framing due to the embodied position the mobile phone user has when holding the camera upright, their portrait framing often suits the subject matter they are filming. An unusual framing thus has the ability to concentrate on-screen space in certain ways, an aspect that can bring to our attention a sense of physical proximity to screen content. This aspect is articulated by Xavier Dolan in his justification for using a square aspect ratio during *Mommy*: ‘the perfect square in which it consists framed faces with such simplicity, and seemed like the ideal structure for “portrait” shots. No distraction, no affections are possible in such a constricted space. The character is our main subject, inescapably at the centre of our attention’. At the same time, restrictive framing need not only concentrate attention inwards. Depending on the content of the shot, tight framing in such a way can also provoke intensified relationships with the imaginary off-screen space, the wondering about what is beyond the frame and the potential for us to feel through multiple senses the limits of what we are able to see.

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12 Ross, ‘Vertical Framing’.
The Changing Frame

Moving-image works that most acutely play with these parameters and our relationships to both on-screen and off-screen space are the next group of examples that can be drawn upon: works that change the parameters of the frame by shifting aspect ratios at some point in their duration. Although recent digital technologies have made it easier to reconfigure the frame’s borders, historically diverse experiments have taken place. Perhaps one of the best known is Abel Gance’s 1927 epic *Napoléon Vu par Abel Gance*. Experimenting with a variety of new technologies (including colour and 3D processes), Gance used a triptych system called Polyvision to expand screen images towards the end of the film.14 During four sections—Les Deux Tempêtes, the Return to Corsica, Le Bal de Victimes, and the Entry into Italy—two peripheral screens adjacent to either side of a central screen displayed images that either expanded the shot on the central screen or provided distinct visual data to augment the central images. At its premiere in the Paris Opéra, this gave the impression that images stretched across a one-hundred-foot-wide screen. Although later screenings (particularly those organized by MGM) reduced the triptych images to three small pictures side by side on the main screen, audiences at the premiere were given a sense of how seemingly off-screen space can be brought into play.15 In the expansion of a single shot, the newly available vistas suggested that a wider visual world demanded attention whereas the juxtaposition of adjoining images on different screens, seemingly with their own frame, more significantly questioned how we build space in our mental and embodied processes. Do we, both visually and with other senses, perceive a continuum of space that can be infinitely expanded and that we might enter into and interact with? Or do we perceive a compendium of different views and perspectives that our bodies will adapt to as we are brought into close contact with each one? As Kenneth McGowan notes in his comparison between Fred Waller’s 1950s Cinerama widescreen technology and Gance’s triptych system, ‘Waller let his audience enjoy peripheral vision. Gance asked his to do a kind of peripheral thinking’.16 There is thus an appeal to a cognitive understanding of how we experience space, but I would argue that this understanding is simultaneously inflected by sensory understandings of how this space operates.

15 More recently, a restored version of the film that fully displayed the triptych sections was screened at the San Francisco Silent Film Festival in 2012.
In the former but equally well-documented context, the expansion of peripheral vision was not only strongly articulated but also had implications for teleological concepts of how screen space can and should be employed. When Cinerama was introduced at New York’s Broadway Theatre in 1952, it began with a thirteen-minute black-and-white lecture on the history of art in a seemingly standard aspect ratio. The theatre’s red curtains then opened further so that a panoramic, Technicolour image of a rollercoaster filled the expanded screen space in an aspect ratio of around 2.59:1. While very much a publicity stunt for demonstrating Cinerama’s potential, the expansion of space asked audiences to retrospectively reconfigure their relationship to what had seemed an acceptable standard of image construction at the beginning of the film. Going home to watch the black-and-white, boxier images on the burgeoning television set or returning to the movie theatre to watch the academy’s standard aspect ratio, audiences were aware that an expanded frame was possible. Coming amidst a flurry of new technologies such as 3D cinema and surround sound—each of which competed to prove they were the ‘natural’ next step in audiovisual display—Cinerama suggested that seeing more, particularly at the peripheries of one’s vision, was the future of cinema. Sixty years later, a similar process occurred when the advert for the 3D release of Star Wars Episode 1: The Phantom Menace (originally 1999, released in 3D in 2012) began with a smaller image on screen before expanding to a full image. As Ariel Rogers notes, ‘such a strategy for suggesting the spectacular effect of a new technology through reference to the purported paucity of an older one (here, via the initial tiny internal frame) is familiar’.

In each case, the intended effect was a sense of novelty and wonder at spectacular displays that could differentiate new cinematic technologies from predecessors and competitors. At the same time, other examples throughout the 20th century made it clear that expanding horizontal views were only one potential option and that expanding and contracting screen space in various directions could be implemented in flexible and vibrant ways. One of the most experimental was Glenn Alvey’s Dynamic Frame system that produced images of varying size and shape by using movable mattes to control height and width during shooting. When viewed, space opened up in distinct horizontal and vertical courses, often in order to reveal new details or focus more intently on certain aspects of the image. In his review of Alvey’s The Door in the Wall (1956), Derek Prouse states: ‘one

18 Rogers, Cinematic Appeals, p. 139.
reacts less to the changing shape of the screen than to an awareness of the more highly charged nature of the space employed.\textsuperscript{19} In this way, viewers were asked to interact with spatial parameters and understand how they might be as important as the subjects that were being framed. In many ways, it was a realization of the ‘dynamic square’ that Sergei Eisenstein had proposed during debates in the 1930s where he was concerned with a ‘passive horizontalism’ that was emerging from industry developments in widescreen formats.\textsuperscript{20} Eisenstein expected an overall square frame could contain dynamic aspect ratio configurations within it in order to actively engage audiences with screen content.

At the same time, more mundane occasions abounded in the numerous documentaries that incorporated archive footage and other visual material that did not conform to a single aspect ratio. In these works, there is often a greater containing frame that houses the different moving-image sections but in each sequence, a particular aspect ratio makes it clear how attention to the content should be concentrated. These are also numerous feature films that use split-screen processes within their duration.\textsuperscript{21} For example, frames within frames were seen as early as the shot of a fireman day dreaming within Edwin S. Porter’s \textit{The Life of an American Fireman} (1903), and merging split-screen images were seen again in F.W. Murnau’s \textit{Sunrise: A Song of Two Humans} (1927). Producing multiple aspect ratios in one screen space, they normally structure relationships between the spaces and places represented in each set of images, asking us to create a fragmented but conceptually layered sense of the immediately visible on-screen space as well as the off-screen space that is both alluded to and sometimes briefly visualized. These visual formations build upon but are distinct from Noël Burch’s description of the way feature films traditionally divide off-screen space into six segments: one to each side of the screen, the area behind the camera and any area occluded by the set.\textsuperscript{22} Burch notes the different ways in which character movement and gaze out of and into off-screen space are able to help us imagine the existence of that space that does not have its own objective existence until, in certain circumstances, it is depicted in a reverse shot or different angle. Off-screen space’s ‘intermittent or, rather, fluctuating existence during any film’ is complicated by split-screen processes that multiply and layer this space

\textsuperscript{20} Eisenstein, ‘The Dynamic Square’, p. 49.
\textsuperscript{21} Hagener, ‘The Aesthetics of Displays’.
\textsuperscript{22} Burch, \textit{Theory of Film Practice}. 
in ways that ask us to envision manifold connecting and disconnecting spaces simultaneously.\textsuperscript{23} Their spatial arrangements conform more closely to Lev Manovich’s description of spatial montage that, whilst developed by Manovich to refer to the visual organization of different windows on a computer screen, can also be applied to split screens in films as has been demonstrated by Bruce Isaacs’ reference to \textit{Time Code} (2000), \textit{Dressed to Kill} (1980), and \textit{Body Double} (1984).\textsuperscript{24}

In these various moments, the shifting of audience relations to screen space also opens up the possibility for reconfiguring bodily placement. Considering Vivian Sobchack’s point that ‘photographic, cinematic, and electronic media have not only historically symbolized but also historically constituted a radical alteration of the forms of our culture’s previous temporal and spatial consciousness and of our bodily sense of existential “presence” to the world, to ourselves and to others’, different framings ask us to think about where the intersections and limits of our bodies in relation to screen space operate.\textsuperscript{25} As previously noted, narrower framings and expanded views, as well as taller views and shortened views, have an impact on how we not only see visual space but also perceive with our other senses. In the shifts that occur when aspect ratios change mid-duration, there are already intensified physiological processes at work when these changing aspect ratios ask our eyes to scan moving images in different ways and with different attention. But we can also understand how our synesthetic and kinaesthetic sense of being in the world is also affected by the way space in front of us seemingly expands and contracts as well as seems to open up our view to space that was previously only inferred or imagined.\textsuperscript{26}

**Boundaries of On-Screen and Off-Screen Space**

A recent film that stands out with regards to using changing aspect ratios to impact our bodily sense of space is \textit{The Grand Budapest Hotel} (2014). Its visual fields, set mainly in the hotel that provides the film’s namesake and the surrounding alpine village and countryside, already have a tactile

\textsuperscript{23} Ibid., p. 21.
\textsuperscript{24} Manovich, \textit{The Language of New Media}.
\textsuperscript{25} Sobchack, \textit{Carnal Thoughts}, p. 136.
\textsuperscript{26} For more on the way phenomenological processes of kinetic and synesthetic viewing operate, see Sobchack \textit{The Address of the Eye}; Marks, \textit{The Skin of the Film}; and Barker, \textit{The Tactile Eye}. 


and haptic sensibility in their use of heightened textures, particularly their nostalgic invocation of 1930s and 1960s design. Here I am drawing on Laura U. Marks’ use of haptic (developed in her work to refer to specific intercultural cinema) that refers to embodied processes of viewing that interact with the surface of the image or, as Marks says, the skin of the film. 27 In particular, she is concerned with the way we may feel our way around images rather than regard them from an objective distance. Due to the design aesthetic of *The Grand Budapest Hotel*, sensory registers of how we might feel our way through its textured spaces are already in play, yet our embodied relationship to both space and place in the film is further informed by the way in which screen space contracts and expands. Unlike some of the more dramatic examples of shifting aspect ratios mentioned previously, the aspect ratios in *The Grand Budapest Hotel* contract and expand more subtly, moving from a somewhat boxy 1.37:1 to the wider 2.35:1, with other aspect ratios in between. 28 While the Fox Searchlight and Indian Paintbrush moving-image logos that precede the film use a 1.87:1 aspect ratio, in this way taking up the whole of the screen space in most exhibition contexts, the various sequences in the film’s narrative sit within this space in different ways, never taking up the entire screen. 29

An opening shot of the Old Lutz Cemetery has an aspect ratio of around 1.85:1 that, while similar in shape to the studio logos, is smaller in size so that it sits within the larger screen with black bands appearing both to the sides and above and below the shot. When the next sequence cuts to a flashback set in 1985 of the fictional author of a book titled *The Grand Budapest Hotel*, the aspect ratio shifts slightly to around 1.8:1, but the image also enlarges so that it takes up more of the screen. There are nonetheless still some black bands on all four sides. Less than three minutes since the beginning of the film, another cut takes us to a new aspect ratio of 1.37:1, showing two figures on a bridge high on a rocky outcrop in the mountains. In this instance, the black bands are now only visible to the sides of the image. There is also a different colour scheme, less saturated

27 Marks, The Skin of the Film.
28 I have tried to provide the dimensions of the aspect ratios as accurately as possible. Verifying them is difficult when, for example, cinematographer Robert Yeoman, scholar David Bordwell, and film critic Ari Arikian provide different aspect ratios in the same book. See Seitz, The Wes Anderson Collection.
29 Many movie-theatre, television, and computer screens will have different screen dimensions, but in most wide-screen exhibition technologies this aspect ratio will appear to fill the screen space.
with pink and blue tones than the prior orange and brown tones of the writer's study. The author's voiceover describes it as the location for the Grand Budapest Hotel, which is also shown on screen with a somewhat twee façade. When we later return to this scene and aspect ratio, we find that it takes place in the 1930s and is the setting for the main portion of the story. Yet another cut, only a few seconds later, takes us to a different, seemingly more recent depiction of the hotel in 1968 where the appearance of the hotel has changed to a communist era set of geometric blocks. Within this setting, a younger version of the author is present, talking to the owner of the Grand Budapest Hotel, Mr. Moustafa, about events that occurred in the 1930s. This time, there is an aspect ratio of around 2.35:1 and the black bars only appear above and below the screen. In this way, a number of framing narratives—the Old Lutz Cemetery, the author in 1985, and the author in 1968—are in place, each with their own visual style and an aspect ratio that is wider than the boxy aspect ratio of the central narrative.

The transition between these narratives and aspect ratios is rapid, all occurring within the first few minutes of the film, and all focusing our attention on the different possibilities for framing action. When we are introduced to one of the central characters, the hotel concierge M. Gustave, in the 1930s narrative he is framed by open doors leading on to a balcony where he stands. These doors and their vertically hanging curtains further narrow our visual encounter with the image so that our eyes seem to be peering into a distanced view. Throughout this narrative, the camera often looks down corridors, into narrow rooms, or otherwise emphasizes a similar vertical framing within shots. We are very much positioned as outsiders looking in: the periphery—and its proximity to us and our embodied space—is far less important than what is occurring to the characters. Even when shots in this narrative produce dynamic close-ups on characters that come close to addressing us directly, the black bars on either side of the shot reiterate the characters' occupation of interior space. This aspect is emphasized even further due to the frequent visualization of physical frames within the image composition: the use of doorways, car windows, elevator doors, and train windows. In each case, the tactile surfaces of the film's interior designs, carefully textured costumes, and close-ups on characters' faces enhance Marks' haptic visuality, a sensation of touch passed from our eyes to our other senses.30 However, the aspect ratio combines with the other framing devices to

30 Marks, The Skin of the Film.
posit us at a remove so that we are not within easy touching distance. In this case, we are in flux between the haptic visuality encouraged by the film’s textured surfaces and an optical visuality (the counterpoint to haptic visuality which Marks suggests operates more commonly in mainstream cinema) that positions us in front of and outside deep space configurations. It is our bodies as much as our eyes that negotiate this proximity and distance.

This visual setup is distinct from shots in the wider aspect ratio of the 1960s setting in which two-shots are far more common. Although the 1960s narrative only briefly occurs in the film (but not as briefly as the other two framing narratives), it situates a different spectatorship of on-screen and off-screen space. In shots, such as the one of the author and a concierge in front of the concierge desk, a fisheye lens combines with the wide aspect ratio to suggest the image is bulging towards us. We are no longer peering into the film’s interiority but rather seeing it presented towards us. Even without the use of the fisheye lens, the greater use of horizontal periphery space suggests the film body stretching closer to us, particularly when the camera pans from one character to the next in a way that indicates it might continue panning until it reaches where we are sitting. During these scenes, when haptic visuality is emphasized, the diegesis thus seems much closer to being within our physical grasp, allowing surfaces to be explored more intimately but also giving us the sense of how they might stretch beyond our centralized vision. In this way, the possibility of a continuing and embodied off-screen space is situated in comparison to the stricter delineation of space in the 1930s narrative where the centripetal focus suggests that what is outside the visible space is not important.31 Although any one film, or other moving image work, might suggest these different on-screen and off-screen spectatorial relationships, it is the flux between different aspect ratios in The Grand Budapest Hotel that concentrates our attention on them. At one point in the 1930s narrative, Moustafa is narrating events via a voiceover when the author interrupts him. The latter questions why M. Gustave prefers blonde elderly ladies. At the same time that this vocal interruption emphasizes the humour of the imagery being suggested, there is a cut to the author in the 1960s setting. The jump between aspect

31 Bazin has discussed the extent to which painting encloses space in a centripetal manner whereas film expands it in a centrifugal manner. See Bazin, What Is Cinema?; Fowler, ‘Into the Light’; and Monteiro, ‘Fit to Frame’. In this way, the squatter aspect ratio of The Grand Budapest Hotel can be understood to have a more painterly tendency whereas the outward looking perspective of the wider aspect ratio suggests a more cinematic tendency.
ratios aids the humour by further emphasizing the interruption, but it does so not only through a visual demarcation but because the shift in aspect ratio disrupts our position in relation to the film’s visual space more forcibly than traditional editing might.

Stereoscopic Expansion of Off-Screen Space

The two other films I will discuss, *Life of Pi* (2012) and *Oz the Great and the Powerful* (2013), have similarly expanding and contracting frames, but their stereoscopic (3D) versions bring into play a wider consideration of screen space. Like all stereoscopic films, the optical illusion that seems to expand content into the auditorium and behind the traditional plane of the screen encourages different embodied reactions from viewers in relation to the film. Viewers often respond in acute physical ways to stereoscopic content—reaching out to touch objects,ducking to avoid them. Yet even when their actions are not so pronounced, they are made aware of the extremely tactile and hyperhaptic dimensions of the films’ visual fields, in particular the way these visual fields are no longer confined to a flat screen space.32 The extra layers of depth provided by stereoscopy make textures seem more pronounced, and there is an ongoing play between the seeming proximity of objects and their extension away from viewers depending on how they are placed in the 3D visual fields, all of which have an impact upon haptic and optical visuality. While 3D systems are often promoted, in the same way that extreme widescreen cinema systems such as Cinerama and CinemaScope were, as a way to remove the frame by extending content beyond our peripheral vision, outside of IMAX 3D systems, the black borders surrounding the frame are still visible.33 In this way, viewing relationships to on-screen and off-screen space are complicated by the seeming expansiveness of on-screen space into new areas at the same time that various off-screen spaces are alluded to but cut off from view by a visible frame. In both *Life of Pi* and *Oz the Great and the Powerful*, this configuration is further complicated by moments in which the frame, still visible but no longer quite such a stable container as it is in the 2D versions, expands and contracts.

In *Life of Pi*, this expansion and contraction occurs in just two brief moments, but each are significant for their reconfiguration of a stereoscopic

32 Ross, *3D Cinema*.
screen space that usually has a uniform frame in 3D films. In the first instance, 1 hour 14 min into the film, there is a shift from the previous 1.78:1 aspect ratio. The shipwrecked Pi, stuck in a lifeboat with a tiger, is attempting to keep the tiger at bay with a hooked wooden pole. As he drops the pole and stands up to throw a fish at the tiger (towards us in negative parallax space), a cut takes us to a reverse shot in which the fish flies towards the tiger (into positive parallax space).\(^{34}\) This new shot now has a different, thinner aspect ratio of around 2.28:1, with black bands above and below it. In a single shot, the fish continues to soar into positive parallax space before a series of cuts brings us to a shoal of flying fish cascading towards the boat’s occupants and the viewers. The fish not only come into negative parallax space but also soar out above and below the frame, on top of and underneath the black bands. A series of edits show the fish flying at the boat from different angles, meaning that they come in on the black bands, go out on the black bands and/or fly horizontally across them. This action continues as their movement is shown under water, moving in similar directions and continuing to violate the boundaries both of the frame and of the flat screen plane. As director Ang Lee notes, this thinner framing allowed the fish to come out of the scene.\(^{35}\) In its stereoscopic incarnation, viewers are thus given a heightened sense of the fragility of the frame's normal ability to separate what I have already referred to as the ‘materiality of spectatorial space from the virtual immateriality of spaces seen within its boundaries’.\(^{36}\) After almost two minutes of this action, a cut takes us to a later scene of Pi and the tiger in the lifeboat, and the original aspect ratio is restored. The transition into and out of the thinner aspect ratio is a subtle effect that may not be noticed unless pointed out but nonetheless combines with stereoscopic technology to have an impact on how viewers can experience this scene in embodied ways: they feel the fish come close to their physical position and the way the fish seem to move beyond them in the auditorium.

Similarly, the other aspect ratio change that occurs is also relatively subtle. At 1 hour 23 minutes into the film, there is a dissolve from a black night shot to an overhead shot of Pi and the tiger asleep in the boat with a whale swimming underneath. The shot is in the 1.33:1 academy aspect ratio with black bars visible to the sides. On the one hand, it is a direct visual

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34 Negative parallax space refers to the space that seems to appear in front of the screen plane whereas positive parallax space refers to the space that seems to appear behind the screen plane.

35 Ang Lee in Shawhan, ‘Talking with Life of Pi Director Ang Lee’.

36 Friedberg, The Virtual Window, p. 6.
reference to the book cover of the novel on which the film is based, and the narrower framing helps make that reference more explicit. On the other hand, it reminds us that there is nothing sacred about the illusionistic space created by the film and enhanced by stereoscopic depth fields. In the same way that the film and the book blur the lines between fiction and reality (mainly through a framing narrative that plays with the question of whether the spectacular events of the film really happened or were a figment of Pi’s imagination), this shift of aspect ratio is a quiet reminder of the film’s fictionalization of diegetic space in which space does not naturally occur but is artificially constructed and framed.

*Oz the Great and the Powerful* also uses an academy aspect ratio but this time at the beginning of the film. It opens with a black-and-white Disney Logo in a 1:33:1 aspect ratio that allows black bars to form on either side of the image. As our viewpoint travels in through the front doors of the Disney Castle and down a lengthy arched corridor to a proscenium arch stage, our movement into positive parallax space gives us the sensation of being sucked into an enclosed world. The visibility of the black bars enforces the sense that this space is interior rather than expansive. We continue moving forward through other black-and-white incarnations of the proscenium arch framing, which then give way to movement forwards and backwards through spirals and other geometric shapes that are layered with circus and Southern US imagery. In each case, we are encouraged to feel drawn into space rather than expected to wonder at what off-screen space may be available on either side.

Following a dissolve into the black-and-white diegesis of a fairground in 1905 Kansas, travelling cameras take us through the fairground until we reach a fire breather. Until this point, the edges of the frame have contained the action, with most objects residing in positive parallax space. When he breathes a long draught of fire, the flames shoot out over the edges of the black bands. In a similar manner to the flying fish in *Life of Pi*, the violation of the frame does not so much allude to and increase our knowledge of off-screen space but rather asks us to consider the possibility that the flames might reach our place in the auditorium. Although some gentle material such as clouds of smoke drift towards us and beyond the confines of the screen plane, most of the following action in the fairground remains clearly within the demarcated frame and stretching away from us in positive parallax space. It is only later, around 20 minutes into the film, that our embodied space will be incorporated again, through heightened use of negative parallax space.

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37 Shawhan, ‘Talking with Life of Pi Director Ang Lee’.
and an expanded view which suggests that the spaces of the film are far less easily contained. After the fairground magician, Oz, alights in a hot air balloon and experiences a tumultuous tornado, he finally touches down in a new land. During a single shot, the image becomes slowly saturated with colour at the same time as the edges of the frame expand to a wider aspect ratio of 2.35:1. In all, it takes around 20 seconds for this transition to occur. Utilizing negative parallax space, snowflakes drift out from the centre of the screen space at the same time that landscapes far behind the balloon are visible, in this way making it clear that the image is not just expanding to the sides but also towards us and away from us. Unlike The Grand Budapest Hotel and Life of Pi that use cuts to transition to different aspect ratios, this film thus uses an expansion within the shot in a manner that recalls the Cinerama screenings. In the fantasy vistas that populate the rest of the film, space and place are spectacular and varied, in many ways following the teleological traditions of the 20th century that brighter, wider, and deeper are preferred visual states. Even though the wider frame still limits our view into off-screen space, the latter’s expansiveness and illusionistic continuity beyond the visual parameters created by our embodied position in front of the screen is suggested and brought into play.

Conclusion: Where Are the ‘Correct’ Aspect Ratios?

One of the significant features of these stereoscopic 3D films is that they are commonly released concurrently with 2D versions, normally via theatrical screenings but later with DVD, Blu-ray, and streamed formats. Although 3D enthusiasts may argue that the stereoscopic versions are the preferred viewing format, commercial industries are keen to promote the equal value of their different versions. This context raises serious questions about how, and if, we can claim that ‘correct’ configurations of screen space can be put in place and prioritized. Writing about the home theatre enthusiasts that vocally debate the aspect ratios that are used in DVD releases, James Kendrick notes that an adherence to the aspect ratio used for theatrical screenings are preferred. The extent of this preference is often articulated

38 These versions can be expanded even further through the use of screening formats such as IMAX. For example, Guardians of the Galaxy (2014) incorporated expanding and contracting aspect ratios in its IMAX 3D version but not during other screenings. See Anderton, ‘Marvel’s “Guardians of the Galaxy”’. 39 Kendrick, ‘Aspect Ratios and Joe Six-Packs’. 
through hierarchies of taste in which ‘home theatre enthusiasts attempt to shape a particular mode of film presentation and viewing for the home theatre environment by denouncing competing modalities as lesser, inappropriate or “illegitimate” uses of DVD technology’.\textsuperscript{40} He goes on to state that, ‘the DVD, then, unlike either the videocassette or laserdisc, is a home theatre format designed from the outset for the presentation of widescreen films in their original aspect ratios. To do otherwise is, from the cinephile’s perspective, not only an insult to cinematic art but a subversion of the use for which the format was intended.’\textsuperscript{41} Some of their strongest criticism is aimed at pan and scan techniques or techniques that un-matt areas of the images in order to make widescreen films fit narrower aspect ratios, arguing that these techniques cut off space that was meant to be viewed or introduce space that the filmmaker never intended to be seen.\textsuperscript{42} Thomas J. Connelly expands this context to discuss viewer frustration that arises when broadcast television is also modified to fit the wider screen space of high definition television sets.\textsuperscript{43}

In each case, the removal or expansion of screen space to fit new screens and their correspondent frames concentrates attention on where the limits of on-screen and off-screen space begin and end. Although viewers may argue that pre-determined and artistically constructed limits are violated by post-release changes to aspect ratios, as Connelly points out, ‘certain films are photographed for both theatrical and nontheatrical screens, complicating the issues of a true or original aspect ratio’.\textsuperscript{44} This is confirmed by Kendrick’s discussion of the Super35 film format, used by filmmakers such as James Cameron, that is similar to standard 35mm film stock but without an encoded soundtrack so that there is more room on each frame for visual information. By matting the frame in different ways during postproduction, variable aspect ratios can be created, most often 2.35:1 for theatrical screening and 1.33:1 for the home. ‘In essence, this means that there is no one “true” aspect ratio because the filmmaker deliberately framed his or her shots for both versions.’\textsuperscript{45} These examples, as well as the stereoscopic

\textsuperscript{40} Ibid., p. 58.
\textsuperscript{41} Ibid., p. 61.
\textsuperscript{42} Belton, 	extit{Widescreen Cinema}, p. 222; Guldbransen, ‘Danes Back Pollack in Pan & Scan Case’.
\textsuperscript{43} Connelly, ‘Mapping Aspect Ratios’.
\textsuperscript{44} Ibid., p. 185.
\textsuperscript{45} Kendrick, ‘Aspect Ratios and Joe Six-Packs’, p. 64.
versions of films that expand screen space out towards and away from the viewer in ways that complicate on-screen and off-screen space, thus raise the question: does a core delineation between on-screen and off-screen space remain in these multiple versions? It is a question that is reiterated in Stephen Monteiro’s analysis of new screen modes emerging from portable technologies such as phones and tablets, in which he suggests the screen is privileged so that ‘the object is reinforced while the image must adapt. Filling the screen surface with the image has become a priority, even when this risks alterations to the image's original aspect ratio or internal, formal relationships’. Countering this, some moving-image works will continue to be created in contexts where one ‘correct’ aspect ratio is emphasized and thus stricter delineations of screen space will prevent the image from needing to adapt, but we are currently in a media environment in which fluid and multiple possibilities are becoming increasingly common.

The debates around ‘Vertical Video Syndrome’ and the continuing controversies surrounding pan and scan or other reframing techniques highlight a tension between the expansion of screen technologies and their diverse permutations on the one hand, and concerns with artistically enforced delineations between on-screen and off-screen space on the other hand. While it is easy to rationalize various points in these debates through calls to take into account visual framing and concentration of space, we should not forget that there are embodied reactions, whether consciously or subconsciously manifest, in viewership of different aspect ratios. We are encouraged to feel our way through the places created by on-screen and off-screen space in various ways, and changing aspect ratios play their own role, whether experienced pleasurably or displeasurably, in that process.

Bibliography


Monteiro, ‘Fit to Frame’, p. 360.


About the Author

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