

Screen Genealogies

*From Optical Device to
Environmental Medium*



Amsterdam
University
Press

EDITED BY
CRAIG BUCKLEY,
RÜDIGER CAMPE,
FRANCESCO CASETTI

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Introduction

Craig Buckley, Rüdiger Campe, and Francesco Casetti

A flourishing of screens increasingly defines our contemporary lifeworld. Screens have become more numerous and more protean, changing in size, position, and dimension as well as thickness, shape, and material. But with this increase in number and variety, the screen's functions have also mutated. No longer solely surfaces for the display of representations, they are central to mobile, multi-directional communication. They are surfaces for writing and aggregating messages; they also serve as interfaces for the storage, sharing, and filtering of information. As their uses expand, screens also reshape the most public as well as the most intimate of experiences, obliterating many of the boundaries through which these spheres were formerly distinguished. We should not mistake the screen's immediate visual impact as proffering transparent or universal access. The explosion of screens also depends on and produces new invisibilities, divisions, and enclosures. As more and more aspects of production, consumption, leisure, and communication rely on interactions with screens, so fears grow of the risks and dangers associated with screen exposure—fears that increasingly issue from the very technologists who design and program screens.¹

The present surfeit of the screen puts pressure on the familiar assumption that screens are primarily optical devices. Against the grain of the burgeoning literature on screens, this book argues that their present superabundance cannot be understood as an expansion and multiplication of the screen that found its epitome in cinema: the screen as a surface that plays host to impermanent images and readily disappears under these images. Rather, screens continually exceed the optical histories in which they are most commonly inscribed.² As contemporary screens become increasingly dis-

1 See, for instance, articles by Bowles 2018; and Manjoo, 2018.

2 This insight was the point of departure for the Yale University Sawyer Seminar in the Humanities, sponsored by the Andrew W. Mellon Foundation during 2017-2018. The initial text to which speakers were invited to respond was Francesco Casetti's 'Notes on a Genealogy of the Excessive Screen', 2016.

persed in a distributed field of technologically interconnected surfaces and interfaces, we more readily recognize the deeper spatial and environmental interventions that screens have always performed.

For screens have long been something more and other than optical devices. Let's take the English word *screen*—but the same can be said for the Italian *schermo*, the French *écran*, and the German *schirm*. The classical edition of the Oxford English Dictionary (OED), edited by James A.H. Murray at the turn of the century, offered the following main definitions of the word: '1. A contrivance for warding off the heat of a fire or a draught of air. [...] 2. A partition of wood or stone, pierced by one or more doors, dividing a room or building in two parts', and in this sense also '2c. A wall thrown out in front of a building and masking the façade'. The word *screen* could also be '3. Applied to any object, natural or artificial, that affords shelter from heat or wind'. Correlatively, a *screen* could be defined as '3b. Something interposed as to conceal from view [...] 3c. A small body of men detached to cover the movement of an army. [...] 4. A means of securing from attack, punishment, or censure. [...] 5. An apparatus used in the sifting of grain, coal, etc'. Finally, the word *screen* was also '6. Applied to various portions of optical, electrical, and other instruments, serving to intercept light, heat, electricity, etc'.³ These definitions focus on functions other than supporting a representation: functions of separating, filtering, masking, or protecting, mostly in space and sometimes in time. It is only in the early nineteenth century that the word *screen* was bound to the optical, in connection with the emergence of spectacles like the phantasmagoria.⁴ And yet it appears that the screen's optical connotations penetrated the dictionary very slowly. The aforementioned edition of the OED mentioned the optical screen almost incidentally, in a sense derived from other uses.⁵ What mattered were the word's older meanings.

So, for most of its history, a screen was a filter, a divide, a shelter, or a form of camouflage. These functions indicate the screen's environmental character. A screen was a barrier or a mobile device; it was an object that marked a significant threshold and that could be placed anywhere; it was an object always shaping and shaped by the space in which it was located.

3 *A New English Dictionary*, VIII, 272-273.

4 The inaugural occurrence of the word's optical meaning can be located in two notices referring to the patent granted to Paul De Philipsthal on 26 January 1802, respectively published in the *Cobbett's Political Register* II (p. 1053) and in *The Monthly Magazine* (p. 488). See in particular note 20 in Casetti's contribution in this volume.

5 'A contrivance in the form of a screen [sense 1a], for affording an upright surface for the display of objects for exhibition; a flat vertical surface prepared for the reception of images from a magic lantern or like.' *A New English Dictionary*, VIII, p. 272.

When definitions such as 2c or 3c imply the screen's visibility, they do so in terms related to concealment, deception, and distraction more than display or projection. Only the advent of cinema—and later of television—attached to the screen its now widely accepted identity as a surface supporting a changing representation.

Though intertwined with the movies and the TV, the current explosion of screens quite paradoxically favours the reappearance of these older meanings. New media expand the screen's function beyond the optical. Surveillance cameras provide protection and defence from the outside as much as they reveal or display. In retrieving information, computers sift through vast reservoirs of data, combining a user's query with a search engine's secret algorithms. Hand-held devices enable users to create existential bubbles in which they can find intimacy and refuge, even in public. Global Positioning Systems parse territory and identify potential escape routes. Interfaces create or emphasize separations between worlds and maintain control over the passages between them. Illuminated digital façades promise to make buildings more conspicuous and responsive while also hiding their underlying structures. Screens have again become filters, shelters, divides, and means of camouflage. They remain surfaces that display images and data, yet their opticality has been deeply affected by their reference to, connection with, and impact upon the various spaces they inhabit.

The current debates on the nature of the screen—which we will retrace shortly—either ignore the opposition between the screen's environmental and optical connotations or treat the screen's transformation from spatial to optical device as a complete and decisive break. Against this background, we contend that historians and theorists of the screen must recognize and further explore the paradoxical coexistence of its two connotations as environmental medium and as optical device. Such an exploration is a necessary step towards grasping the complexity of the screen's modernity. The essays in *Screen Genealogies* trace alternative histories of the screen that depart from the well-travelled paths in screen studies. These histories revise, reverse, and reframe the still largely dominant optical conception of the screen. To stress the environmental aspect of the screen is to reconsider the historically contingent and conjunctural role that screens have played as mediators between interior and exterior, protection and exposure, visibility and invisibility. To borrow a concept from the philosopher and historian of science Ian Hacking, we might say that screens today are not only devices for *representing* but are even more so devices for *intervening* in the world.⁶

6 See Hacking, 1983.

Screen Genealogies aims to rediscover the history of screens in places where we don't expect to find them; it also seeks to comprehend the ways in which an optical understanding of the screen came to dominate other historical possibilities. It means to insist that screens always have more than one side.

Screen archaeologies

Recent years have seen a blossoming of efforts to theorize the changing functions and histories of screens.⁷ These have been written not only from the perspective of film and media studies but also by historians of art, communications, music, science, and architecture. Rather than seek to summarize the entire history of this burgeoning scholarly field, we will highlight two significant vectors. First, there is the effort to consider the screen's role in the 'post-cinematic' transition from analogue film to digital media; second, the effort to question—and sometimes to multiply—the historical lineages of contemporary screens.

The movement of film into the art gallery since the 1990s has raised significant questions about the screen's mediality and historical mutability. The long history of the screen has become an increasingly important rubric for theorizing the difference between such gallery-based moving image exhibitions and the theatrical exhibition form that had characterized much twentieth-century cinema. Curators have played a key role in this process, as Okwui Enwezor, Chrissie Iles, Phillipe-Alain Michaud, Mark Nash, and Jean-Cristophe Royoux, among others, have proposed the emergence of new genres of multiscreen work specific to the art gallery and to other non-theatrical exhibition spaces.⁸ The revision of the historical and theoretical notion of the *dispositif*, or apparatus, developed in film theory has been important to critics and historians as different as Raymond Bellour, Erika Balsom, Francesco Casetti, and Noam M. Elcott. These and other scholars have re-engaged the notion of the apparatus less as a framework for ideological critique than as a means of thinking about the difference between the dominant theatrical mode of cinematic reception and the current reconfiguration of screens in a range of spectatorial contexts, including, but not limited to, those of contemporary art.⁹ Historians such as Beatriz Colomina, Orit

7 McQuire, Meredith Martin, and Sabine Niederer, 2009; Tamara Todd, 2011; and Dominique Chateau and José Moure, 2016 have all collected important recent contributions.

8 See Enwezor, 2001; Royoux, 1999; Iles, 2001 and 2017; Michaud, 2006; and Nash, 2001.

9 See Bellour, 2009; Balsom, 2014; Casetti, 2015; and Elcott, 2016.

Halpern, Branden W. Joseph, Liz Kotz, Janine Marchessault, Kate Mondloch, Fred Turner, and Andrew Uroskie have excavated and theorized the varied para-cinematic roles assumed by screens during the mid- and late twentieth century.¹⁰ From the context of world's fairs to the rise of video installation, and from expanded cinema to happenings, these studies have highlighted just how important a multiple and variable array of screens was to both the cultural ambitions of states and corporations and to a range of counter-cultural artists and movements. Rethinking the screen has been also been key to recent work on film that has sought to trouble the privileged place of vision in film criticism. Informed by phenomenology and affect theory, Laura U. Marks's *The Skin of Film: Intercultural Cinema, Embodiment, and the Senses* (2000) influentially theorized the screen as a site of 'haptic vision'. As the qualities of film or video images become blurred, shallow, unfocused, and textured, they intermingle with the qualities of the screens on which they are perceived, yielding an embodied, multi-sensual response that Marks argues is central to intercultural and diasporic cinema.¹¹ Giuliana Bruno's *Surface: Matters of Aesthetics, Materiality, and Media* (2014) argued that the screen was central to an interdisciplinary investigation of the fate of materiality in our contemporary 'age of virtuality'. Drawing on practices from contemporary architecture, art, and film, Bruno highlights the haptic qualities of contemporary façades, installations, and moving image works to examine their physical composition and experiential qualities, emphasizing the screen as a host of changing optical representations and as a 'space of material relations'.¹² In parallel, yet not directly in dialogue, with these appraisals of the post-cinematic screen are recent efforts to document and re-interpret the meaning and function of pre-modern screens, including choir screens in the Gothic cathedrals of Western Europe, folding screens in China and Japan, and iconostases in Byzantine and Eastern Orthodox churches.¹³

Alongside efforts to engage the variable practices, effects, and materialities of the screen in a post-cinematic age are important efforts to reconsider the historicity of the screen under the broad umbrella of 'media archaeology'.¹⁴ An early effort to outline a genealogy of the screen

10 See Colomina, 2001; Halpern, 2015; Joseph, 2002; Marchessault and Lord, 2007; Kotz, 2004; Turner, 2013; Uroskie 2014.

11 Marks, 2000.

12 Bruno, 2014.

13 On Gothic choir screens, see Jung, 2012. On religious screens more broadly, see Gerstel, 2006.

14 On the challenge of defining 'media archaeology' as an approach, see Huhtamo and Parikka, 2011.

appeared in Lev Manovich's *The Language of New Media* (2001), which postulated three screen types linked to different historical phases. The classical screen, Manovich argued, was a fixed frame for fixed representation and was epitomized by Alberti's metaphor of linear perspective as a view from an 'open window'. The second type, the dynamic screen, was a fixed frame that contained moving images and was epitomized by technologies such as the cinema, television, and video. Finally, the computer screen characteristic of new media, he argued, was a dynamic frame with the capacity to control a range of media—from moving and still images to texts and graphics—by means of multiple windows that could be activated simultaneously. Manovich's genealogy charted a teleological development of the screen across media ruptures; the screen was progressively reconfigured to absorb more and more types of media into multiple frames, while at the same time becoming ever more expansive and immersive.¹⁵ In 2004, writing from the perspective of 'the new film history', Thomas Elsaesser welcomed debates over the impact of the digital screen on conceptions of film history—yet he proposed a method of media archaeology that stood in direct contrast to Manovich's teleological narrative. Elsaesser agreed with Manovich's assertion that digital screen technologies marked a profound rupture in media history, yet he argued that this rupture itself compels us to break with genealogical and chronological models of history, calling for an archaeological approach that understands the screens of the past not as steps leading toward the present but as fragments, comprehensible only as pieces of lost totalities: 'irrecoverably other'.¹⁶ Anne Friedberg's *The Virtual Window: From Alberti to Microsoft* (2006) revisited the historical terrain noted by Manovich while making a profoundly different historical argument. Rather than a development from static frames toward more dynamic, multiple, and immersive screens, Friedberg argued that the conventions of 'windowing' within digital interfaces paradoxically installed the window as the dominant metaphor for the computer screen.¹⁷ In a more general move, W.J.T. Mitchell explored the closeness of the concepts of screen, grid, wall, sheet, and window, tracing the diverse operations and subject positions that each of these surfaces implies.¹⁸ Finally, Erkki Huhtamo, who, together

15 Manovich, pp. 95-100.

16 Elsaesser, 2004, pp. 98-100.

17 Friedberg also noted that this metaphoric reinscription of a new technology in an old form took place at a time when the function of architectural windows were increasingly being transformed by the operations of the virtual screen to which they were likened. Friedberg, pp. 10-12.

18 See Mitchell, 2015.

with Jussi Parikka, has been a leading voice in defining the project of media archaeology for Anglophone audiences, has proposed ‘screenology’ as its own branch of media studies.¹⁹ Concerned with a deeper history of screens as ‘information surfaces’, Huhtamo’s screenology searches previous eras for patterns and schemata that anticipate contemporary screen technologies, formats, and practices, with a particular emphasis on nineteenth-century popular culture. Thus nineteenth-century panoramas, shadow theatres, peepshows, billboards, and optical furniture are highlighted as historical media that are examined for their anticipatory relationship to the present.

A genealogical approach

This archaeological fervour quite often relies on a teleological vision of history, in which what matters is a lineage—or a set of anticipations or resonances—based on likeness and causality. When Foucault resumed archaeology and then genealogy as key concepts for retracing the history of ideas, he insisted on a non-linear, non-causal, and non-mimetic approach. His inclination was to identify moments of discontinuity and dispersion rather than narrate linear evolution; he wanted to emphasize the role of contingent elements in historical emergence rather than trace a development based on necessity.²⁰ Hence our second contention, heralded by the title of this collection: while directly referring to a genealogy of the screen, we try to capture the forces and events through which a technique or practice is absorbed into a ‘system of purposes’—to use a phrase from Nietzsche—foreign to its own origin.²¹ Indeed, the specific screen objects and screen phenomena assembled in this book pinpoint such events, stressing the ways in which screens are neither pre-existing objects nor inventions but rather a diverse and contingent range of surfaces that *become* screens. A surface becomes a screen through an arrangement of apparatus and by virtue of a struggle between forces and practices. A screen always enlists an ensemble of elements—an assemblage—characterized by certain dispositions and

19 See, for instance, their comparative overview, Huhtamo and Parikka, 2011. On Screenology, see Huhtamo, 2004 and 2013.

20 A central reflection on genealogy as historical approach is Foucault’s ‘Nietzsche, Genealogy, History’, 1977.

21 ‘For history of every kind there is no more important proposition than that one which is gained with such effort but also really *ought to be gained*—namely, that the cause of the genesis of a thing and its final usefulness, its actual employment and integration into a system of purposes, lie *toto coelo* apart.’ Nietzsche, 1998, p. 50.

sustaining certain types of operations.²² Genealogies of the screen thus emphasize processes of transformational descent and emergence rather than moments of invention or historical culmination.²³

A genealogical emphasis requires us to rethink some of the most influential premises of recent media studies, such as the claim that the languages of new screen media originate in those developed for the cinema screen.²⁴ A perspective stressing transformational descent rather than origins and roots emphasizes that the understanding of the screen as an optical surface, while crucial to cinema, was but one instance in a larger set of intersecting and competing definitions of the screen. The screen's beginnings, moreover, cannot be traced to a single technology or moment; rather, multiple emergences of the screen have crystallized amid the dispersed range of entities that the word 'screen' has served to name. Rather than accumulation and growth, descent implies a process of dispersal and consolidation across different and conflicting currents. Thus the gradually increasing dominance of visuality in the nineteenth century should be seen as neither inevitable nor irreversible, as the increasing entanglement of the screen with the management of ecologies, environments, and spaces in the twentieth and twenty-first centuries serves to highlight. Far from telling a simple story about objects and technologies, an emphasis on descent can illuminate the screen's relationship to bodies which are, in Foucault's words, 'imprinted by history' and to nervous systems whose potentials and pathologies are defined by multiple inheritances.²⁵

For Foucauldian genealogy, descent was defined less by lines of continuity than it was by moments of sudden emergence. Such emergence cannot be understood as the appearance of a new object within a pre-existing field but rather as an event. The event of emergence or absorption in a pre-existing field is always unpredictable and singular, defined by the conflict of forces that seek to determine the configuration, direction, and purpose of entities with the capacity to change the shape of the historical field. The event of an emergence, Foucault noted, designated a *non-lieu*, or 'non-place', precisely

22 As Deleuze and Guattari use the term in *A Thousand Plateaus*, 'assemblage' indicates heterogeneous elements that enter into a new relation, forming a coherent but mutable unity. For the utility of the concept in film studies in an age of excessive screens, see Casetti, 2015, pp. 67-98.

23 The centrality of 'descent' and 'emergence' to Foucauldian genealogy descend (as it were) from his reading of Nietzsche, for whom *Entstehung* ('emergence') and *Herkunft* ('descent') 'are more exact than *Ursprung* ('origin') in recording the true objective of genealogy'. Foucault, 145.

24 This argument was central to Manovich, 2001.

25 Foucault, p. 148.

because adversaries ‘do not belong to a common space’.²⁶ Put another way, the conflict that impels something to emerge is itself a conflict between incommensurate organizations of space. Unfolding from interstices and sites of instability, an emergence redefines the relation of places to non-places. The spatial vocabulary latent within genealogy is worth emphasizing in considering the long historical descent of the screen. Continually defined and redefined by virtue of its between-ness, the screen might be recognized as a crucial element for thinking about such interstices and ‘non-places’—a category that has become central to a contemporary ethnography of the sites of transit, consumption, and leisure within contemporary globalization.²⁷ For this very reason, a genealogical account of the screen’s various emergences cannot remain at the level of narrating the history of the changing technologies that host visual representations. The struggle over such interstices has always concerned not just representations but also *interventions*, efforts to control and experiment with the environments and sites where screens and screening operate. Yet the concept of *intervention* does not displace or replace the importance of representation. Rather, interventions are precisely what link representations to other actions: the means by which images can filter external elements, shelter components, divide spaces, and camouflage appearances.

The plan of this book

The contributions to this book bring together a broad range of screen events that highlight the accidents, deferrals, reversals, appropriations, and deviations that characterize screen emergence. In addition to the familiar screens that one would expect to find in such a book—cinematic, televisual, and digital screens—the contributions reflect on a range of entities that radically stretch the boundaries of what has been considered a screen. Along with the phantasmagoria, the movie screen, smart phones, and virtual reality headsets, the reader will encounter shields, mirrors, hunting blinds, canvases, mechanical scenery, technical standards, hypnotic gestures, curtains, legal

26 Foucault, p. 150.

27 Foundational in this respect is the work of the ethnographer Marc Augé, who developed the concept of ‘*non-lieux*’ (non-places) to analyze airports, shopping malls, toll-booths and other spaces characteristic of what he termed ‘supermodernity’. Like that of Foucault two decades earlier, Augé’s use of ‘*non-lieu*’ depended on a neologism. Advanced as a term for thinking about space, ‘*non-lieu*’ was distinguished from its established juridical sense, which designated a lack of grounds for prosecution, the dropping of a charge for want of evidence. Augé, 1995.

concepts, stereoscope viewers, façades, murals, atomic blasts, artificial fog and clouds, and many others. To understand many more things as screens (and as things that effect different kinds of screening) does not mean that genealogy extends the concept of the screen indefinitely; we do not mean to propose that anything or everything could be considered a screen. By extending the notion of the screen beyond its optical use we mean to introduce a different focus. Instead of fixating the identity of the screen on an object with one particular function the effort is rather to grasp the struggles and conjunctures that characterize the emergence of different screen functions. Drawing on examples from antiquity to the present, the contributions mark out a temporal framework at odds with the dominant periodizations of screen studies, which have tended to unfold from the late eighteenth and early nineteenth century into the twentieth century. The unorthodox temporality of *Screen Genealogies* contains a provocative suggestion: that the screens associated with literary, artistic, and cinematic modernism may well represent a period of relative stability and calm rather than an epoch of rupture and turbulence, as is often assumed – if we look at it in the context of a longer and more varied history.

The essays are brought together in four sections that engage questions central to a media genealogy of the screen in such a wider history: 'Becoming Screen', 'Spaces', 'Atmospheres', and 'Formats'. The initial section, 'Becoming Screen', explores the process through which the screen as a technical device emerges as a component of a media *dispositive* or, better, a media *assemblage*. The individual screen types and screen artifacts encountered in this book may appear 'new', yet from the genealogical perspective their discrete ontogenesis can be seen to emerge from the complexities and struggles characteristic of a larger technical, social, and practical phylogenetic process. In his opening essay 'Primal Screens', Francesco Casetti explores the process of becoming-screen challenging the traditional screen archaeologies. In contrast to arguments that draw a teleological arc between contemporary screens and a first (or primal) screen, Casetti argues that these origin myths are just that—myths, which tell us little about the historical circumstances of the screen's emergence. Instead, these 'prefigurations' reveal many of our present-day assumptions and priorities. To test this assertion, Casetti playfully stages three 'primal scenes', each of which offers a potential origin point: Athena's shield, which Perseus converted into an optical tool of warfare; Butades's wall, on which his daughter fixed her lover's shadow; and Alberti's window, which the artist transforms into an abstract mathematical tool for visualization. No one of these situations represents an 'ancestor' of our screens; yet, once critically re-read, these primal scenes reveal the ground

from which screens emerge. The screen only ever comes into being thanks to a recurring set of operations, which integrate the most diverse material objects into their mode of working, give their components new functions and roles, and assign a new orientation to the whole. It is against this backdrop that we can capture the process of becoming a screen, the persistence of an environmental aspect within the prevalent screens' optical connotation, and finally the great variety of screens within an enveloping 'screenscape.'

For his account of the screen's becoming a screen, Rüdiger Campe's "*Schutz und Schirm*": Screening in German During Early Modern Times' takes its departure from the distinction between the two main German terms for screen: *Bildschirm* and *Filmleinwand*. While *Filmleinwand* (film canvas/screen) denotes a movie screen, *Bildschirm* (image screen) remains specific to electronic and digital displays, such as radar, TV, and computer screens. Such a neologism, Campe argues, should be understood via a return to the semantic field of the term *Schirm* in early modernity. Screens in early modern German did not denote surfaces for image projection but rather such things as elaborate *Jagd-Schirme*, or hunting blinds, which were complex means of visual concealment that also configured deadly forms of projection. The meaning of *Schirm* was further located in the legal sphere, notably in the principle of '*Schutz und Schirm*', a provision for exceptional administrative and military protection that also allowed for the projection of a legal entity that would otherwise not exist within the ordinary structures of power and politics. Given that there was nothing optical about the combined sense of protection and projection in the early modern *Schirm*, how should one comprehend the return of the term within the language of electronic display? Campe elucidates Friedrich Kittler's notion of 'implementation' as a concept for how such early modern practices of the screen—and the closed technical systems that characterize the modern media history of the optical screen—can be seen as discontinuous in one respect and continuous in another. 'Implementation', in this reading, means to identify certain functions—such as protection and projection—for possible technical development but also to construct autonomous technological—in this case optical—systems that resume such functions.

The following three sections—'Spaces', 'Atmospheres', and 'Formats'—each highlight shared problems central to emerging work on screen genealogies. The essays in 'Spaces' underscore how a screen's optical functions have been shaped by questions of location, configuration, and orientation. Whereas the spatiality of the screen has often been considered in relation to the auditorium

of the movie theatre, these essays highlight the operations of screens as a function of a broader range of architectural, urban, and virtual spaces.

Craig Buckley's 'Face and Screen: Toward a Genealogy of the Media Façade' questions the tendency to see the multi-media façade as paradigmatic of recent developments in illumination and display technologies in the twentieth and twenty-first centuries. Instead, Buckley reconsiders the conflicting urban roles in which façades, like screens, have been cast. Through the course of the nineteenth century, façades underwent an optical redefinition parallel to that which defined the transformation of the screen. An eighteenth-century physiognomic conception of the building's exterior as a representation of its inner identity and purpose was displaced by an idea of the façade as an overwrought and deceptive screen, dangerously independent from the structure to which it was attached. The extensively glazed building envelopes of the early twentieth century set themselves in contrast to such false faces—yet, confronted with increasingly congested commercial environments, they were also caught up in a conflict over visibility in the metropolis. Through an unexpected twist, buildings that sought to do away with a classical conception of the façade emerged as key sites of experimentation with illuminated screening technologies. In designs for storefronts, cinemas, newspaper offices, union headquarters, and information centres, the media façade emerged as an environmental agent defined by its capacity to operate on and intervene in its surroundings rather than express an interior.

Nanna Verhoeff's 'Sensing Screens: From Surface to Situation' considers recent screen-based public art installations that extend from their architectural site into surrounding urban space in order to engage techniques of 'remote sensing', interactivity, and public display. In these installations, Verhoeff identifies a genre of artwork that aims to raise awareness of urban social issues by visualizing and making 'present' otherwise invisible crises relating to the meeting of the social and the environmental. These installations compel one to look past the *surface* of the screen to its surrounding *situation*. Drawing on a range of contemporary examples, Verhoeff conceptualizes an approach to screens as site-specific boundaries that produce various ways for the subject to *interface* with his/her immediate, as well as remote, surroundings. Verhoeff thus reorients cinematic concepts of the *dispositif* towards a broader spectatorial territory, one with a porous and permeable boundary that opens onto other spaces. Fundamentally performative, the spectatorial territories Verhoeff identifies are defined by their building-scaled interfaces that reach beyond their local situation to remake, create, and influence surrounding space by sensibly linking it to other, more distant spaces.

Ariel Rogers's 'Taking the Plunge: The New Immersive Screens' addresses the contemporary experience of virtual reality (VR) technology and its long and volatile relationship to ideas of immersion. The multiplication and pervasion of screens has often been viewed as a break from previously dominant forms of screen engagement. Whereas viewers' encounters with the twentieth-century cinema screen (conceived as singular and static) has typically been framed as an experience of centred space, marked by fixity and transfixion, the experience of enclosure in multiple-screen environments has often been conceptualized via concepts of spatial fragmentation and information flow. Contemporary VR sets confound this distinction: not only are they 'immersive' and centring, they are also unanchored, breaking the tight identification of frame and screen that has dominated much of cinema's history. With VR technologies, the 'frame' appears to move when the screen moves, an effect most notable and problematic in the search for effects oriented to vertical spatial movement within many VR films. Insofar as Virtual Reality technologies mark the emergence of a new kind of screen assemblage, they are oriented, Rogers argues, less towards representation than to emergent forms of spatial penetration.

The next section, 'Atmospheres', gathers together contributions that consider the screen less as a technical surface and more in terms of the qualities and functions associated with its surrounding atmosphere. The essays in this section pinpoint intersections in which the idea of the screen was redefined by virtue of struggles over how to comprehend diffuse phenomena in which the natural and the technological were not distinctly separable. Antonio Somaini's 'Atmospheric Screens, Atmospheric Media' highlights one salient point of intersection in the veils, mists, and fogs that appear in the late canvases of J.M.W. Turner. Reading Turner's canvases in relation to the starkly opposed accounts offered by William Hazlitt and John Ruskin, Somaini brings to light the canvas's status as an 'atmospheric screen'. Drawing on the etymology of the term 'medium', Somaini probes the reemergence of an environmental media concept in relation to the rediscovery of the environmental nature of the screen. Their parallel genealogies, he suggests, intersect in Romantic landscape painting and in nineteenth-century German *Naturphilosophie* and Romantic literature, each of which might be situated within a line of transformational descent running from Aristotle's notions of *metaxy* in *De Anima* to mediaeval theories of *media diaphana*. The controversy over Turner's canvas—its status as an atmospheric screen and an immersive environment—is a potent reminder of the unsettled status of the atmosphere at a moment when the optical conception of the screen was not yet dominant.

Yuriko Furuhashi's 'The Fog Medium as Environmental Screen' explores the fog sculptures of artist Nakaya Fujiko. Nakaya's deployment of fog and smoke recalls other expanded cinema practitioners and environmental artists in the postwar period, including Matsumoto Toshio, Anthony McCall, and the art and engineering collective E.A.T. Yet her experiments take on a different significance when seen not as a descendant of the phantasmagoria but as part of an assemblage linked to the development of smoke screens for aerial warfare. Paying particular attention to the dual function of fog screens—which obfuscate visibility yet also make visible such qualities as temperature, humidity, and wind—Furuhashi historicizes the epistemological and political conditions behind the turn to fog and smoke within expanded cinema and the environmental arts during the Cold War. In so doing, Furuhashi provides a geopolitically nuanced analysis of what the philosopher Peter Sloterdijk has called the process of 'atmospheric-explication', which he regards as a universally modern relationship to the environment—adding a different twist to the recent interest in 'atmospheric media' and 'elemental media'.

John Durham Peters, whose *The Marvellous Clouds: Towards a Philosophy of Elemental Media* (2015) helped lay the groundwork for theorizing atmospheric and elemental media, extends this investigation in 'The Charge of a Light Barricade: Optics and Ballistics in the Ambiguous Being of Screens'. The essay invites us to rethink the optical and environmental duality of the screen by examining media practices that link projection to protection and showing to shielding. The ontological ambiguity of the screen—at once a site for the representation of a world and a real element embedded in the world—enables one to think of media as a key part of what Peters calls 'infrastructures of being'. The intertwined history of optics and ballistics are crucial to the conflicted character of this infrastructure, whose work enables aggressive destruction and essential forms of protection. Outlining the historical convergences between cultural practices of targeting and visualizing in Western history, Peters weaves together a rich and unexpected set of voices from the onset of the 'atomic age'—from James Joyce and Vladimir Nabokov to Harold Edgerton and Norbert Wiener—illuminating the imbrications of detonation and image-making across photographic, filmic, televisual, and celestial screens.

The final section, 'Formats', comprises essays that examine the roles played by screen formats and standards in the domains of opera, early cinema, and contemporary art respectively. Engaging the concept of format rather than atmospheres or spaces, these essays take seriously the manner in which overlooked technical and epistemological conditions can function environmentally only to the extent that they are embedded in ratios, staging practices, or gestures.

Gundula Kreuzer's 'Flat Bayreuth: A Genealogy of Opera as Screened' challenges assumptions about the 'screenification' of contemporary opera productions by reconsidering the historical formats of screening techniques within staged opera. Beginning with the Baroque picture-frame stage, she highlights the emergence of a key 'spatial dilemma' in which a desire for visual illusion on stage came into conflict with the increasingly complicated array of equipment, scenery, and props required to produce such elaborate scenes. Retracing the architectural, scenic, lighting, and compositional strategies tested out at Wagner's Festspielhaus at Bayreuth, she argues that the theatre's curtain line came to operate as an invisible screen, a flat plane of illusion with the capacity to organize the depth of the stage together with the visual and acoustic environment of the auditorium. Rather than a device of manipulation or a part of the telos of modernist painting, she highlights this flattened planar format as the outcome of technical and aesthetic conflict, whose unsettled and enduring legacy proves highly relevant to contemporary experiments with opera staging today.

Ruggero Eugeni's 'The Imaginary Screen: Hypnotism and the Dispositives of Early Cinema' argues for a deep congruence between the medium of film and the medium of hypnosis through an examination of the iconography of hypnotic induction in early cinema. From the nineteenth to the twentieth century, hypnotism was itself a shifting format. In early depictions, hypnotists pointed their fingers at the subject in order to hit him or her with a shot of magnetic fluid. By the early twentieth century, subjects were induced into a hypnotic state when the hypnotist's hand was waved repeatedly in front of the eyes. In this period, many films staged the setting of hypnosis as a metaphor for the cinematic dispositive itself; the gestural format of hypnosis in these movies mirrored and shaped in imaginary terms the film's screening conditions and the viewer's experience. At a moment when a nascent cinema might have been defined in a number of ways, the anachronistic figure of the hypnotist's hand worked to establish the screen—rather than the film or the projector—as the essential element of an emerging assemblage.

Noam Elcott's 'Material. Human. Divine. Notes on the Vertical Screen' takes cues from architecture, painting, and experimental cinema to map three distinct paradigms for the format of the vertical screen. Portraiture—the erect human figure or face—may be understood as the eponymous and paradigmatic form of this vertical format. Vertical screens also align with the celluloid strips that run vertically through nearly all projectors, thus hinting at film's otherwise invisible material support, whose properties were interrogated by postwar avant-gardes and have taken on renewed urgency in light of celluloid's impending obsolescence. Finally, the luminous verticality

of stained glass windows helped define the Gothic order, which provided a model for avant-garde experiments in light and space for a century or more, and which have suddenly returned to centre stage in contemporary art. Elcott's three distinct paradigms—material, human, and divine—map a centuries-long encounter with vertical screens that resonate unexpectedly yet unambiguously in the present.

By emphasizing questions of space, atmosphere, and format, these essays provide alternative avenues for examining the processes of 'becoming screen' that emerged and consolidated during the nineteenth and twentieth centuries. The present volume seeks to further a diachronic, interdisciplinary conversation around the questions raised by screens by recognizing the distinct environmental and optical histories of the screen and by better understanding the historical interrelations between these two modalities. The multiplication of contemporary screens—their differing arrangements and environmental entanglements—demand a renewed attention to the historically shifting ways in which cultural production, technologies, infrastructures, and bodies form functioning relationships, together with the range of effects these produce. In this sense, screens never simply stand between a spectator and his or her visual object; they also fundamentally intervene in the world. Screens are increasingly essential to life. The effects of their different configurations raise questions that are not strictly about particular media, like film or television. Firstly, these effects cannot be understood as specifically geared towards human consciousness. As elements that form distinctions between interior and exterior, protection and exposure, visibility and invisibility, screens enact a deeper and more primary structuring of the lifeworld in which perception, orientation, and representation take place. Secondly, many of the essays in this volume demand a recognition that screens exceed conventional oppositions between technology and nature and belong more fundamentally to both at the same time.

It is for the same reasons that the emergent manifestations of the screen belong to no discipline in particular. Screens have become an object of concern across the humanities more broadly, even if this has only recently begun to be recognized. No longer a topic solely for Film and Media Studies, it speaks to disciplines such as the History of Art and Architecture, Literature, Communication Studies, Theatre, and the History of Science, to name only a few. Far from exhausting the capacious task implied by a genealogy of the screen, this volume highlights a domain whose faults, fissures, and layers will, we hope, continue to be debated, elaborated, and explored by others. In fundamentally rethinking the descent of the screen, we think again about what the screen might become.

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