membrana/4

Augmented

Miha Colner / / Harun Farocki / **onformative** / Devon Schiller / John Hillman / Nicholas Mirzoeff / Anisha Baid / Ana Peraica / Murat Durusoy / Clio Flego / Forensic Architecture / Patricia Prieto-Blanco / Alexander W. Schindler / Richard Whitlock /

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Forensic Architecture, project of reconstruction of attack on MSF-Supported Hospital, 2017. <http://www.forensic-architecture.org/case/msf-supported-hospital/>

The Incompleteness of Lookings

John Hillman

"In augmented reality, as things behave in unexpected ways, our 'real' reality seems more obscure, confused and hidden."

There is a significant but sometimes overlooked difference between virtual reality and augmented reality. Virtual reality takes an environment, either real or imaginary, and maps it into a digital one. The experience is immersive: we remove ourselves from any so called "actual reality," and enjoy something entirely simulated. Augmented reality, on the other hand, takes reality and the digital and locates them, simultaneously, within the same experiential frame. In this world, our interactions with "real" reality are continuously mediated via a digital fantasy of augmented experience.

A popular example of augmented reality is Pok*émon Go*. This GPS location-based game was designed to be played on smart mobile devices. In the game, players explore, find, capture, battle and train virtual creatures, known as Pokémons. Importantly, as they are mediated through the screen, these creatures appear as though they are actually within the player's real environment. When users locate Pokémons, reality and the digital appear combined. Players are encouraged to continue to play by integrating the reality of their everyday environments with a fantasy inflected desire to find more Pokémons. In this way, the game expresses something of the essential mechanism of ideology (Žižek, 2017, p. 114) through its structuring of how we see what we desire. But augmented reality applications can also be more than self-contained, distracting games that lead us through the real world.

Even when not playing a game, it is possible for reality to be augmented by technology. For example, when using a smart phone to photograph Gerhard Richter's 48 Portraits the facial recognition software indicates some, although not all, of the facsimiles of faces in front of the lens. Here, what we experience is the transition from looking into a form of assisted looking. This assisted or augmented look orientates us within a world configured to supply us with more and more information. Without information mediated through screens, looking begins to feel like an incomplete process. With no screen, no data, no information, everyday perception feels partial. What augmented reality software does is create a context in which perception connects to misrecognition and an over-determination of reality.

As reality becomes a part of, rather than distinct from, digital information both the digital and the real seem fused in a single relationship. A relationship where objects and environments function as actants: they do things they are not supposed or

Gerhard Richter, *48 Portraits*, seen through an iPhone camera with facial recognition overlay. Photograph: J. Hillman.

expected to do. Through this seemingly magical effect we find ourselves in a world where objects emit more and more details about themselves. The entanglement between objects and data means objects, which are not usually supposed to communicate, are now able to provide us with more information. This extra, mediated, knowledge appears as though it has seeped into the real world. It is now quite normal to interact in the virtual world and make things happen in the real world: for example, when using an application to control music streaming in a home. Here, literally and metaphorically a network of forces act together and within which we are only one aspect: just another actant amongst many.

What the overlaying of information onto existing physical reality removes is any possible notion of looking being innocent. Culturally or subjectively determined signification becomes targeted with tightly constrained and specific meanings. (Uricchio, W, 2011, p. 32) For augmented reality, signification is located elsewhere, as the data in a virtual map held on a server. The map anticipates when a user's device will come across a tagged space. This refined process of signification means subject-object relations are reworked, opening up a space for a new politics of the encounter. Here, the desire connected to looking becomes explicitly dependent on one thing: the discovery of an invisible layer of meaning.

Of course, these dynamics are already found in other aspects of our interactions with the digital, particularly on the Internet. It's widely accepted that in the digital age, most of our experiences seem predicated by "algorithmic intermediation." (Uricchio, 2011, p. 25) The result being that computer software and hardware has more responsibility for creating different perspectives or positions. If software, algorithms and hardware manage the process, it is our data, our choices, our location, our information feeding it. The combination of software, hardware and data produces a new generative form of subjectivity situated somewhere between the real and the virtual. A subjectivity that will, at times, misrecognise what is real and what is virtual, since neither appears fully complete on their own.

However, the mediation of direct experience always underpins any understanding of reality. So, while augmented reality may operate through new computing technologies, its basic function is not radically different from how we have usually experienced "real" reality. (Žižek, 2017, p. 118) What augmented reality poses is some different questions about perception, reality and the digital environment. Since it stages, in a very precise way, how implicit notions, thoughts, prejudices and knowledge seem to fill in the gaps in our perception. When we encounter strangers on the street do we not regularly project onto them our own fears, concerns or emotions, thus filling in the perceived gaps in our misunderstanding of them?

If there are gaps in perception that need filling in, then we might better understand how we experience reality if we see it as being constructed along similar lines to how the world of a novel emerges when reading. (Žižek, 2017, p. 118) There is no direct access or fully realised account of reality, instead, partial reality instigates an interpretative filling in. However, I argue, this should not be understood as a process whereby we project ourselves into the gaps in perception: the domain of seeing oneself represented. Reality does not situate us in this way, because, as I shall suggest, there is a more complex mechanism that refracts our experience of reality. This is based on a fundamental unknowability of reality that we can see explicitly expressed in mechanical representational practices such as film and photography.

A widely accepted notion from film theory is that the cinematic screen functions as a kind of mirror. In its simplest formulation, the viewing subject is entrapped by representations that then construct their being: they see a version of themselves projected onto the screen. This supposed mirror function of the screen is drawn from Jacques Lacan's writings around the gaze in Seminar XI (1973/2004). However, as I outline, Joan Copjec (1994) suggests the conceptualisation of the screen as mirror is based on a misreading of Lacan's ideas. Theorists, such as Christian Metz and Jean-Louis Baudry, formulated Lacan's mirror stage into a film theory by focusing on the two registers of the imaginary and the symbolic, doing so they all but neglected Lacan's third register of the Real. (McGowan & Kunkle, 2004) A different reading of the Lacanian gaze sees the screen, not as a mirror but as an opaque layer, a mask covering over unknowable reality, over the Real. Developing this position, we can think of augmented reality applications as bringing a level of unreality to "real" reality. As such they expose, not subjective identity – we do not become Pokémons – instead Pokémons seem to have emerged as another layer of image. This complicates the gaze further by offering opposing experiences: augmented reality frustrates our imagined sense of "real" reality with virtual infiltrations, while simultaneously supplementing the same "real" reality's significance with more symbolic information. This fusion of symbolic and imaginary serves to indicate how the Real is absent or appears in-visible.

Three elements inform conventional thinking around the screen as mirror within film theory: the apparatus, the gaze and the subject. The relations between these three create a particular discursive structure. Each a part of a wider social discourse, constructing and rendering a subject visible in society. For film theory in the guise, cinema is not a simple representation of reality or even an inaccurate reflection of it. Cinema is another discourse: one that creates a particular subject who sees. Photographic theory also borrows from this same account. Photographs being often understood as part of a subject forming discourse. A range of institutions, or apparatus, support the creation and management of particular types of photographs and approaches to photography. (Burgin, 2018, p. 249) At the most basic socio-economic level, what these institutions make visible is certain types of photographs and/or photographers. In doing this, they contribute to the construction of a visible subject who identifies with or projects themselves onto photographs. Like the cinematic screen, the photograph operates as a mirror, reflecting back onto those who look.

Underpinning this theoretical approach is an idea of permanent visibility. Drawing on the basis of Bentham's plan for the panopticon, the social subject only becomes visible when seen. Therefore, being visible determines a particular, if sometimes changeable, identity (we can apply a notion of permanent visibility onto today's social media platforms where algorithms determine visibility and therefore perceived status).

If images reflect identity, then ultimately there is unity between the viewing subject and image. However, what if photographs or the cinematic screen are understood, not as a mirror but as an opaque layer? Acting with a different purpose, photographs no longer reflect or mirror the world, instead they obscure it. Seen as an obfuscating layer radically changes how we might understand photographs. No longer grounded in notions of visibility, they hide something that is in-visible. They become illusions, indicative of their failure to resolve reality. Of course, to an extent, the illusion of a photograph is always operational, it's just systematically overlooked. In fact, it is necessary to ignore the illusion of photography in order to look at photographs. But what photographs actually declare is more complicated: this is connected to their operation rather than what is on their surface. In this way, photographs are not images of things in the world but objects posing questions about a world we are not experiencing.

This rethinking of photographs suggests they are read as a tromp l'oeil, rather than reflections of subjectivity. Which means subjectivity doesn't come from a process of identification but emerges from something, literally, beyond representation. For this reason we ask: "What is behind a photograph?" "What is out of view, out of the frame?" This focus on what is missing from representation is central to understanding Lacan's concept of the gaze. (Copjec, 1994, p. 34) This is not because there is some unattainable or unrealised ideal or desire situated behind the image. It is because they only indicate an impossible, in-visible real, "[t]he veil of representation actually conceals nothing; there is nothing behind representation." (Copjec, 1994, p. 35) As with language, which never articulates the whole truth or never adequately expresses our feelings, images also never completely represent their subject. It is because an image cannot fully resolve the world that we become a seeing subject and not because we somehow see ourselves within the symbolic texture of representations. This may seem counter intuitive, but it can, perhaps, be explained if we return to consider Gerhard Richter's 48 Portraits.

For Richter, 48 Portraits is about the "speechless language" (Richter, 2009, p. 63) of the portraits. His subjects are politicians, writers and philosophers – people usually understood through their words – but they are presented as anonymous, standardised and silent. When facial recognition software identifies their faces, it materialises something human in the symbolic. Here, we experience a transition from symbolic to real, via our own imaginary staging. Which means we imagine these portraits as being real people. We do so because, when looking through the veil of a technology that recognises something human in them, we still only see the symbolic but we mediate the real, via an imaginary register. This is not to see or experience the real politicians, writers or philosophers that Richter chose as his subjects. Rather, it is to experience how unreal these representations are and to therefore confront a traumatic real that is in-visible and unknowable lurking behind the symbolic texture of representation. It is in this moment that we become a subject of incomplete visibility.

What we experience with augmented reality might appear to be an enhanced form of looking. But what it signifies is that no matter how effectively looking is mediated, it is always insufficiently realised: there is always something we cannot access, always one more invisible Pokémon.

In conventional film theory the gaze is located in front of the screen. The signified is the viewing subject themselves: the one who looks and gives meaning to the image. In other words, the viewing subject identifies with something within the image. They recognise themselves in images and thus, "the imaginary provided the form of the subject's lived relation to society." (Copjec, 1994, p. 21) But for Lacan, the image is not a mirror but an obscuring layer. Our gaze is located behind the image. If the Real, as Lacan suggests, is that that resists symbolisation, then what we try but fail to see is what cannot be realised through representation. The object of our gaze is then manifested as that which fails to appear in the image.

In augmented reality, as things behave in unexpected ways, our "real" reality seems more obscure, confused and hidden. In an effort to render "real" reality visible it becomes increasingly more in-visible and the seeing subject is cut off from seeing. Unlike the regime of the panoptic gaze, where vision is pervasive and ever present, Lacan's gaze does not look back: it does not recognise you. Instead, the only truth is that you are alone in your own solitude.

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[abstracts]

Wild Life
Anisha Baid

Wild Life is a series of augmented photographs of animals and insects placed in vacant, overgrown spaces in suburban Bangalore. Taken through mobile AR apps like Holo and Augment, these photographs (or screenshots) situate virtual bodies within the frame of the mobile camera – creating something in between a document and fiction. The work investigates these processes of augmentation, which enable 3D representations of things in the real/physical world to be projected back into physical space that are then photographed. The larger phenomenon of AR photography also complicates traditional notions of "immersive" media – forcing one to interact with their environments. This essay reflects on the implications of mobile AR photography on the image and the referent. Through a phenomenological reading of and immersion into popular uses of mobile AR (like the game Pokémon Go), the essay is an observation of the convoluted relationships evoked between augmented bodies, their environments and the screens on which they manifest.

Key Words: mobile AR, screens, documentary photography, Pokémon Go, digital image.

In-Game Photography: Creating New Realities through Video Game Photography
Murat Durusoy

Computers and photography has had a long and complicated relationship throughout the years. As image processing and manipulating capabilities advanced on the computer front, photography re-birthed itself with digital cameras and digital imaging techniques. Development of interconnected social sharing networks like Instagram and Twitter feeds the photographers'/users' thirst to show off their momentaneous "been there/seen that - capture the moment/share the moment" instincts. One other unlikely front emerged as an image processing power of the consumer electronics improved is "video game worlds" in which telematic travellers may shoot photographs in constructed fantasy worlds as if travelling in real life. While life-like graphics manufactured by the computers raise questions about authenticity and truthfulness of the image, the possible future of the photography as socially efficient visual knowledge is in constant flux. This article aims to reflect on today's trends in in-game photography and tries to foresee how this emerging genre and its constructed realities will transpose the old with the new photographic data in the post-truth condition fostering for re-evaluation of photography truth-value.

Keywords: Photography, Video Games, Screenshot, Digital Imaging, Lens-based

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Forensic Architecture: A New Photographic Language in a Factual Era
Clio Flego

A group of visual activists, architects, software developers and archaeologists as well as a multicultural team composed of artists, investigative journalists and lawyers – an organic organization. Forensic Architecture 'Investigative aesthetic' is based on visual aggregation on data allowing viewers to enhance their perception-cognition of events by the integrated use of augmented photography. Their works have been presented in front of a court, but also exhibited at international shows all around the world. FA expanded use of photography, integrating in the urbanistic reconstruction of frames of any kind of multimedia information collected, consider it not simply as a medium, but as a proper tool for triggering critical reflections and political action. Forensic Architecture have mainly been investigating the area of conflicts with the aim to present counter-investigation on unclear circumstances, often underlining social constructs in the public forum. The particular role that FA plays, claiming social truth and assigning to photography the function to be a "civil act," remarks its place in the history of war photography, and underlines the importance of also having a contra-culture in a post-industrial society, permeated by the presence of technology.

Keywords: Forensic Architecture, photography, evidence, truth-value, forensic reconstruction of event

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Social and Pop-media as Reflection of Self
Jernej Čuček Gerbec

The essay provides an introspection into the relationship between our identities and technology. It aims to show how our identities are affected by new modes of operation that were less accessible before the emergence of social networks. Through an observation of popular media (i.e. TV shows) and social media, it reveals how the self is convoluted, resulting into a variety of performed identities. It explores how through social media, individuals are able to create perceived identities, which are to various degrees lived or completely fabricated. The essay uses *iZombie* and *Orphan Black* as case studies to showcase how life and the media are intertwined, resulting in the latter holding a mirror to the former. With a distinction between the online and offline personality, it presents the augmentation of identity with the aid of new interfaces, online intermediaries that add to the interpersonal contact; from the initial landline phone to more current modes of communication (Facebook, Tinder...) the essay points out how levels of anonymity aid the emergence of new identities. It provides a mirror of contemporary life and the ways the augmented self-influences the ways we understand and view our identities.

Keywords: social media, identity, performing the self, TV shows, context collapse

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The Incompleteness of Looking
John Hillman

Augmented reality is fundamentally different from virtual reality: it does not map a real world environment into a digital one as a virtual experience. Instead, it locates both reality and virtual within the same experiential frame. Through it, our interactions with reality are mediated via the fantasy of an augmented experience. Thus, augmented reality supplements what we see with the purpose of trying to maintain our attention. What is most fascinating about augmented reality is how reality itself becomes a part of, rather than distinct from, digital information. It is in this sense that the very notion of seeing is fundamentally challenged. Since when augmented technology is not deployed, what is left is an apparent incompleteness of simply looking. But what are the consequences of confronting this incompleteness? In this article I examine how augmented reality simply renders a structure that has always sustained the visual field.

Keywords: augmented, reality, looking, gaze, Lacan

Selfies and the World Behind Our Back
Ana Peraica
(an excerpt from the upcoming book *Postdigital Arcadia*)

Selfie photography serves not only a traditional role of photographic (self)recording, but also for manoeuvring the space behind one's own back. Unfortunately, as two realities, the unmediated and mediated, human and machine vision, are not matching, there are many accidents of selfie-makers due to the crabwalk. By this, the photographic technology based on the rear-view mirror – in which objects (may) appear closer than they are – finally resolves one of the largest tragedies of human self-perception; the inability to see and control the world behind one's back.

Keywords: selfie, photography, background, mobile photography, optical devices

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Visual Mediations, Affordances and Social Capital
Patricia Prieto-Blanco

Spatial dislocation of migrants is a catalyst for early, heavy and informed media use (Ponzanesi & Leurs 2014); as well as a motif for transnational families to form families of choice (Beck-Gernsheim 1998; Weston 1997). This text reports on how Irish-Spanish families living in Ireland manage this situation. It argues that (digital) photographic exchanges give rise to mediated third places (Oldenburg, 1989), where (dis)affect and belonging are negotiated. Transnational families visually mediate their domestic spaces regularly. The double visual mediation of presence and space forms part of their everyday. This, in turn, outlines current developments in how (digital) photography is used to mediate actions and emotions. In accounting for and reflecting about how (dis)affective communities of place activate affordances of media, photography emerges as a multi-dimensional site of image production, distribution and storage, in short, as a practice that is both unique to the socio-cultural moment in which it is embedded, and general enough to be recognized as such across cultures and societies.

Keywords: diaspora, photography, visual mediation, new media, experience of place

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Reflections on Photogrammetry
Alexander W. Schindler

This article presents an overview of the history, principles, and current developments in the media technological field of photogrammetry. By chronicling the isomorphic shift taking place in image capturing, we seek to show that photogrammetry has led the way forward in seeing technical images not only as two dimensional projections, but as three-dimensional model-based images. In the mid-nineteenth century, photogrammetry was first used for the documentation of architectural objects and it later became a standard technique in aerial photography. Although its fields of application have become more extensive, photogrammetry's basic principle hasn't fundamentally changed: it is still defined as the three-dimensional geometric reconstruction of two-dimensional photographs through the measuring of reference points. With digital technological standards and advances in camera technology, photogrammetric imaging nowadays is intensively used for object recognition in machine vision and robotics. Beside this, photogrammetry is also opening new possibilities for documentation in the fields of investigative arts, this being explored with a discussion on the "Ground Truth" project from Forensic Architecture.

Keywords: photogrammetry, photography, machine vision, investigative art, object recognition

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Images as Mediated Realities: Vilém Flusser and Harun Farocki in Meta-dialogue
Louise Hisayasu

A critical gaze and an investigative guise are necessary in a time where the uneven boundaries between "the real" and the phantasmagoric are blurred into our conceptions of reality. We are surrounded by interfaces, screens, virtual spaces and infinite networks. Technologic advancements departing from the photographic medium have the potential to change our relations to our surroundings and our conceptions of ourselves through images. We are no longer merely receivers of images, we are active producers of them; In the 1980's, philosopher Vilém Flusser and filmmaker

Harun Farocki were already engaged in questions aimed at understanding our relationship to images and our responsibility towards the production images. Both urged their readers and spectators to engage in dialogue, to understand the phenomenon of photography and its direct correlations to mass communication structures.

Keywords: responsibility, technical images, reality, codes, communication theory

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Machine is Doing the Work:
Interview with Nicholas Mirzoeff
Lenart J. Kučić
Prevedla Anja Kos

Optical and mechanical tools were the first major "augmentation" of human senses. The microscope approached the worlds that were too small for the optical performance of the eye. The telescope touched the too far-off space; X-rays radiated the inaccessible interior of the body. Such augmentations were not innocent, as they demanded a different interpretation of the world, which would correspond to images of infinitely small, remote or hidden. Similar augmentation is now happening with cloud computing, machine vision and artificial intelligence. With these tools, it may be possible to compile and analyze billions of digital images created daily by people and machines. But who will analyze these images and for what purpose? Will they help us to better understand society and learn from past mistakes? Or have they already been hijacked by attention-merchants and political demagogues who are effectively spreading old ideologies with new communication technologies?

Keywords: augmented photography, reality, communication technologies, machine vision, machine learning

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Augumenting The Physiognomic Gaze Across Space and Time:
A Conversation with onformative
Devon Schiller

Augmented photography can be used in the digital arts to over-code upon real-world environments with computer-generated data, in order to translate stimuli across sensory modalities, and thereby extent or increase our faculties for perceiving spatial and temporal relations. Because of this media-specific affordance, the augmentation of the photographic medium may have especial application for the "physiognomic gaze," a way of doing "form interpretation" or "nature knowing" based on the physical behaviors and psychological phenomena of the human face, head and body. The innovativeness of such technological prosthetics becomes manifest how new ways are generated to both perceive and to know those experiences that were previously unseeable or otherwise unsensable. Here, I converse with Cedric Kiefer (co-founder and creative lead) of the onformative studio for digital art and design in Germany about their works *Meandering River* (2017), *Pathfinder* (2014) and *Google Faces* (2013). And we explore how onformative uses the augmented photograph in their digital artworks to extend the physiognomic gaze, bringing data not visible to the naked eye into the senseable sphere, to offer the audience different perspectives about space and time.

Keywords: onformative, augmented photography, physiognomic gaze, digital art, computer-generated data

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Perspective and Memory in Photographic Images
Richard Whitlock

Digital imaging may have tied us to the computer keyboard, but it allows us to recuperate for photography the freedom and control that painters and draughtsmen have always had when reconstructing space on a flat surface. Angles of vision can be explored beyond the normal reach of the human eye or the camera lens. For the last few years I have concentrated in particular on the application of orthographic projection to photographic images, both moving and still. I have found that removing the conventional perspective has the effect of defamiliarising and enriching what we see: objects seem to pass directly into memory not as images but as realities.

Keywords: moving picture, augmentation, de-perspective, expanded view, photography

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Clio Flego (1987) is a researcher, manager, video maker and activist. She studied at IUAV University in Venice and received a graduate degree in Visual and Performing Arts. Clio has collaborated with international festivals and events such as, among others, 7th International Histories of Media Art, Science and Technology Conference in Austria (2017), Madeira Film Festival (2015, 2016), and LEM Experimental Music Festival in Barcelona (2014). As a creative and critical thinker, she has also cooperated with universities and cultural institutions based across Europe, including FACT Liverpool, Digital in Berlin, Roma Trial, MACBA Barcelona, and the Venice Biennale.

Jernej Čuček **Gerbec** is a media agnostic artist with an interest in theory and visual culture. His work has been shown in Slovenia, Finland and USA. His artistic practice is not concerned with medium or concept but with observations. Observations of the common, conventional and the widespread. The artist finds poetics in the simple acts of life, recurring conversations, pictures of random passers-by and quotidian struggles. The end result is never a simple act of documentation, but varies between installation, photography, video, text and sculpture. In his work, he tries to highlight the things that may go unnoticed, while at the same time making the end message ambiguous and unclear to retain its former allure. He earned his MA in Visual Culture and Contemporary Art at Aalto University and a BA in Photography at VIST.

John Hillman is an educator, image-maker, researcher and writer engaged in the interdisciplinary areas of photography, image and visual culture. He currently works as Course Director of the Department of Photography at Birmingham City University. His interests lie in philosophical approaches to contemporary culture and understanding how images and media technologies shape our experience. What unifies all his interests is the exploration of how theory can enrich and offer new insights to creative practice and lived experience.

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Dr. Patricia Prieto-Blanco is a Senior Lecturer at School of Media, University of Brighton. However, she prefers to be defined as a critical thinker and visual maker. Her research interests are: photography, methods and methodologies, mediation of the everyday and migration. Patricia advocates interdisciplinary, practice-based and collaborative research. In her spare time, she tries to subvert neo-liberal, capitalist, patriarchal norms via http://www.hystericalfeminisms.com/.

Alexander W. Schindler has a master's degree in Communication and Media from the Berlin University of the Arts. He also worked for the university's Vilém Flusser Archive. Hailing from a background as a media designer, his research now revolves around media theory, media art, and philosophy. His theoretical and artistic focus is imaging in the post-photographic era.

Louise Hisayasu is pursuing her postgraduate studies in the field of digital humanities. She spent some months interning and conducting researching at the Vilém Flusser Archive in Berlin. She is currently based at the School of Creative Media at City University of Hong Kong.

Nicholas Mirzoeff is professor of media, cultural and communication studies at the American University of New York Steinhardt. He described the field of visual culture two overview books: *An Introduction to Visual Culture* (1999) and *The Visual Culture Reader* (1998). He later devoted himself to the phenomenon of modern visual communications. In the book *How to See The World* (2015), he described the effects of the first visual revolution of the 19th century (the emergence of film, photography and X-rays) and scientific inventions of the 17th century (microscope, telescope, and maps) and put them in the context of the present visual abundance of Facebook, Instagram and images of surveillance cameras. With the book *The Right to Look: A Counterhistory of Visuality* (2011), he explored alternative visual (political) history of the 20th century, including the Black Lives Matter movement – which he covered as a visual activist.

Lenart J. Kučić is a journalist, lecturer and researcher of mass media. For 10 years, he covered the intersection of media, technology and society for *Delo* newspaper Saturday supplement. Last year he joined the media for investigative journalism *Pod črto* (*The Bottom Line*). He is also the founder of the Marsowci podcasting network and co-author of several research and expert articles on media ownership.

Cedric Kiefer is co-founder and creative lead at the onformative studio for digital art and design in Berlin, Germany. He established the Studio in 2010 at a restored factory, along with co-founder and managing director Julia Laub. A team of creative coders and generative designers, onformative exhibits their work in Australia, China, Europe, and North America, as well as having clients such as Nike and Porsche. In 2013, the Art Directors Club (ADC) recognized Cedric as a "Young Gun" for his vanguard creativity.

Devon Schiller is a media rhetorician and visual semiotician in the Department of Image Science at Danube University, Austria. His scholarship centers on studies of the face done at the intersection between art, science and technology. Devon is certificate trained in the Facial Action Coding System (FACS), as well as the Neuropsychological Gesture Coding System (NEUROGES), and has conducted grant-supported research on automated facial expression recognition at the Fraunhofer Institute for Integrated Circuits (IIS).

Richard Whitlock is an artist, sculptor and film-maker. He has made sculptural, graphic and photographic installations in Moscow, Beijing, New York, Helsinki, Marseilles, Athens and elsewhere. In 1997, he exhibited in Ljubljana, and drew the view from the window of a cell in Metelkova prison on the wall inside the cell. His non-perspectival photographs and "moving pictures" are discussed in Joanna Zylinska's *Non-human photography* (MIT Press, 2017), in *Afterimage* and in *Photomediations Machine*. He has written and lectured widely on the question of perspective in photography, and is currently writing about "anti-perspective" in Byzantine and Chinese art for a book to be published by the Central Academy of Fine Arts in Beijing. He lives in Greece.
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