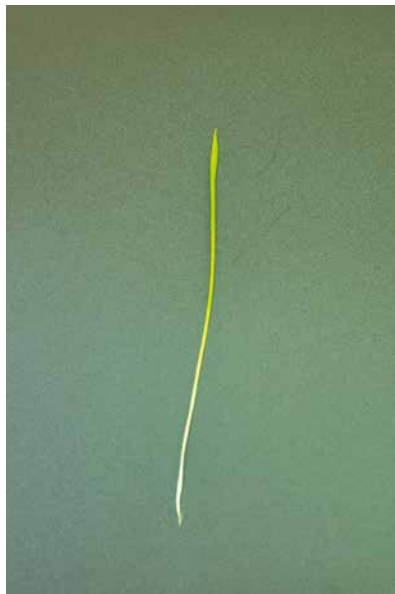


Photography Off the Scale

Technologies and Theories
of the Mass Image

Edited by Tomáš Dvořák
and Jussi Parikka

Photography Off the Scale



Technicities

Series Editors: John Armitage, Ryan Bishop and Joanne Roberts, Winchester School of Art, University of Southampton

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Series Editors' Preface

TECHNOLOGICAL TRANSFORMATION has profound and frequently unforeseen influences on art, design and media. At times technology emancipates art and enriches the quality of design. Occasionally it causes acute individual and collective problems of mediated perception. Time after time technological change accomplishes both simultaneously. This new book series explores and reflects philosophically on what new and emerging *technicities* do to our everyday lives and increasingly immaterial technocultural conditions. Moving beyond traditional conceptions of the philosophy of technology and of *techne*, the series presents new philosophical thinking on how technology constantly alters the essential conditions of beauty, invention and communication. From novel understandings of the world of technicity to new interpretations of aesthetic value, graphics and information, *Technicities* focuses on the relationships between critical theory and representation, the arts, broadcasting, print, technological genealogies/histories, material culture and digital technologies and our philosophical views of the world of art, design and media.

The series foregrounds contemporary work in art, design, and media whilst remaining inclusive, both in terms of philosophical perspectives on technology and interdisciplinary contributions. For a philosophy of technicities is crucial to extant debates over the artistic, inventive, and informational aspects of technology. The books in the *Technicities* series concentrate on present-day and evolving technological advances but visual, design-led and mass mediated questions are emphasised to further our knowledge of their often-combined means of digital transformation.

The editors of *Technicities* welcome proposals for monographs and well-considered edited collections that establish new paths of investigation.

John Armitage, Ryan Bishop and Joanne Roberts

Notes on Contributors

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I Introduction: On the Scale, Quantity and Measure of Images

Jussi Parikka and Tomáš Dvořák

At Which Scale?

AS THE WEATHER and climate seem increasingly off their hinges, so, too, do our images of the world. With the frequency of so-called ‘extreme weather events’ increasing, forms of representation have had to come up with commensurately complex ways of dealing with this new reality that does not easily take the form of an image. Weather and climate models and simulations operate only due to the extensive computational capacities that enable the emergence of visualisations of predictable and increasingly unpredictable events. The imaging capacities that have been handed down since the nineteenth century – data visualisation, graphical information systems such as maps of different statistical quantities, as well as photographs and especially scientific photography – have had to try to keep up with this mass of information, extensive both in scope and impact.

While weather and the climate may be acute reference points and metaphors to discuss how computational culture and big data have transformed forms of photographic discourse as part of visual culture, leading into discussions of data visualisation, cultural analytics by computational means, and the sheer storage capacity for the organisation of images as datasets that throw our usual coordinates for *what is a photograph* off the scale, this also works the other way round – at least as far as the popular discourse about images goes.

Figure I.1 (next page) Erik Kessels: *24 Hrs in Photos*, installation, 2014, courtesy of Erik Kessels/Kessels Kramer. Figure I.1 Erik Kessels: *24 Hrs in Photos*, installation, 2014, courtesy of Erik Kessels/Kessels Kramer.





Indeed, a sense of the catastrophic has crept into how we speak, think and write of photographs in digital culture. The current state of photographic production is often characterised in the apocalyptic terms of a deluge or avalanche, an explosion or eruption, a tsunami or storm. Each of these terms evokes the impression of an unmanageable and unstoppable cascade of images that exceeds any traditional notion of photographic aggregates of series, collections, archives or databases, and their catastrophic overtones indicate a moment in which photographs cease to act as mediators between us and the world, instead making it opaque and obscure. In his installation, *24 Hrs in Photos*, Erik Kessels visualised the feeling of drowning in images by filling a room with the hundreds of thousands of printed images uploaded to online image-sharing sites during one day (Figure 1.1). The promise of total visibility and transparency, whether joyfully embraced or worryingly defied, opens a horizon of blindness, just as looking directly into too much light means we see nothing at all. This horizon of blindness relates to the often perceived quantity of images in cultures of big data: to see an image is by necessity to consider it as part of an extensive dataset or a database.

Despite an increase in methodological attempts to deal with images as data (with computational means such as cultural analytics, for example), and given that the photographic and visual spheres are seen anew and differently through such quantities, the visual and the photographic are not simply resolvable by the calculation of quantities alone. Instead, this book sets out to address and explain why and how questions of scale and its related concepts of measure and quantity are central to contemporary photographic and visual culture. While a conversation about photographic scale in network culture (see, for example, Fisher 2012) has been slowly emerging over the last decade, we aim to offer a strong set of conceptual coordinates and thematic anchors that address the two questions that bind this volume together: first, in what ways are questions of the contemporary technical media culture of photography understood through discussions of scale and quantity; and, second, how does this discussion include issues of politics, subjectivity, gender and technological practice as part of its repertoire in ways that shift the terms of aesthetic discourse into a firm dialogue with broader developments in media and cultural theory?

Could it be that scale is not only a useful entry point to photographic theory and history, but that photography also offers its own contribution to the broader questions of the humanities concerning scale and measure? In many ways, photography already included the possibility of representation and transformation across multiple scales. It also included the possibility of combining varied, dynamic perspectives, for

as Andrew Fisher (2012: 323) points out: ‘a basic function of all forms of photography is also to register the ostensible spatial and temporal state of things, to fix these together at a certain scale and according to a combination of prefigured and anticipated scales.’ Indeed, scales are constantly made and remade, differentiated but also synthesised, in a combinatorial fashion.

In this introduction, we offer a first set of suggestions as to why the question of scale is important, how the insights in this book aim to address it, and where the connections to the broader field of the investigation of digital visual culture are to be located. Our opening chapter is followed by texts that will offer methodological, thematic and critical angles on how to discuss contemporary visual culture of mass quantity and scale. At a time when big science has become normalised as business as usual in terms of dealing with the interdisciplinary scale of complexity of the contemporary world (see Fukushima 2018), with billions of pictures snapped daily, quintillion bytes of data transmitted daily or terabytes after terabytes of data stored in various archives and datasets, we must also assess what the terms of these discussions are. What kind of entity is one billion photos? What kind of perceiver does it presuppose? Do such vertiginous quantifications imply something about the changing nature of photography, and, if so, in what sense? What happens to images when the displays are turned off? Are we producing streams of redundant images just to train machines to see?

These are not merely technical questions. They are also part of how we design our research frameworks, where questions of scale are incorporated into how we formulate our objects of reference (see Lobato 2018) to ensure they are treated dynamically – as they should be. Thus, in our book, scale becomes less a reference to things big or small, many or less, but rather a dynamic of qualification, of positioning, and of valorisation that is part and parcel of such material practices and discourses of quantity and measure.

Photographic Blind Spots

We often assume an abundance of objects when it comes to our contemporary culture of data and images – such as in the rhetoric of an overwhelming quantity of digital data – and see this as part of the current technical condition. But what we assume here also sits as part of a longer-term characterisation of the impact of media vis-à-vis our capacities to interpret and experience the world. The sense of the overwhelming becomes expressed both in vocabularies of experience and in the meticulous search for management and order that one subsequently finds in information systems such as libraries.

The history of information overload, which can be traced back to complaints about the abundance of manuscripts in antiquity and the acceleration of book production after the introduction of printing in the fifteenth century (Blair 2010), teaches us that the experience of overload is tightly connected with the enthusiastic drive to accumulate, collect, memorise, share and make accessible. The experience of information overload was limited to a privileged elite before the nineteenth century when the industrial-scale production of texts and images began to inundate most of the Western population. However, the gradual impact of schemes on how to deal with collections through metadata, knowledge about knowledge, and the quantities of so-called cultural objects through qualitative evaluation persisted as the important link where experience and information infrastructures met – and are continually meeting – every time we dealt with search queries, access, organisation of data, and the excavation of items from a mass that is itself otherwise beyond our cognitive capacities to comprehend. Or as Sean Cubitt (2014: 7) puts it, ‘[e]numeration is a pledge against disorder’, where counting and calculation assure us of an ordered presence when faced with a multitude: the promise of measure underpins many of our epistemological coordinates since modern technical media, and the quantified world of discrete units comes to rule our cultural sphere and experience too.

While valorisation of the unique has persisted in aesthetic discourse since the nineteenth century, new technical media such as photography came along with the promise of the multiple. Since its early days, photography has been praised for its ability to reproduce an image in large numbers. More precisely, certain photographic techniques were championed for their reproducibility, portability and accessibility, as David Brewster’s comparison of the Daguerreotype with Talbot’s paper-based negative process makes clear:

The great and unquestionable superiority of the Calotype pictures . . . is their power of multiplication. One Daguerreotype cannot be copied from another, and the person whose portrait is desired must sit for every copy that he wishes. When a pleasing picture is obtained, another of the same character cannot be produced. In the Calotype, on the contrary, we can take any number of pictures, within reasonable limits, from a negative; and a whole circle of friends can procure, for a mere trifle, a copy of a successful and pleasing portrait. (Brewster 1843: 333)

The ‘reasonable limits’ were breached, step by step: through the perfection and simplification of the photographic process; the proliferation of inexpensive, easy-to-use cameras; the delegation of specific sections of the process to professional services. It was the gradual

automation of all aspects of taking and making photographs. Indeed, the sense of automated mass imagining and its promise of objective images ‘uncontaminated by interpretation’ (Daston and Galison 2010: 139) that characterised early scientific photography already in the nineteenth century finds an echo in more recent discourses about objectivity by numbers and validity through data.

But such images, mass-produced and seemingly automated, come with politics attached. Walter Benjamin’s (2008/1936) notes about reproducibility demonstrate the link between reproducibility, aesthetics, and capitalist modes of quantification and production. One could indeed go as far as to claim that the forms of abstraction and exchange that emerge in technical media since the early nineteenth century – if not earlier – and the contemporary capitalist money form are in close resonance, or as Cubitt (2014: 7) puts it: ‘both are mediations’. Peter Szendy devoted his latest book and an exhibition at Jeu de Paume (*The Supermarket of Images*, 2020) to the economic aspects of the life of images – their circulation, exchangeability, storage and management – or, what might be called ‘the double economic equivalence’, where ‘not only is currency made in the image of the image, but the image, in turn, is made in the image of money’ (Szendy 2019: 7). These questions gain urgency precisely due to the current over-production of images.

Even if the multiple and questions of reproduction were already features of early photographic discourse through a recognition of the technicity of the medium, it is not clear that photographic scholarship has ever been able to fully address the issue of the mass image. Let us consider, for example, two recurring touchstones of theory from the early 1980s, the period when digital imaging started to become increasingly discussed: Roland Barthes’s *Camera Lucida* and Vilém Flusser’s *Towards a Philosophy of Photography*. The two books are vastly different in both their approach and aim and can be seen, at best, as complementary: Barthes has much to say about the way we look at photographs and Flusser about the way we make them. However, if we focus on what they each avoid to address rather than on what they claim, both books reveal a shared blind spot – a blind spot which can be attributed to their (rather unorthodox) phenomenological inclinations and their particular rhetoric in how they address photographs.

The analysis of photography and our experience of photographic images in *Camera Lucida* proceeds through a detailed discussion of several images (Figure 1.2). Twenty-five are reproduced, while one of them, the child portrait of Barthes’s mother and uncle in the Winter Garden, is not reproduced in the book, and another one, Daniel Boudinet’s polaroid from 1979 (which is the only colour reproduction, though not mentioned in the text itself), is included as a frontispiece – and is



Robert Doisneau, 1934



« Un dimanche au boulevard,
par un jour si gris comme... »

« Dimanche », la collection de la galerie d'Art Moderne, Paris, 1935



« Je comptais cette ville
par le nombre de ses places
et la surprise de leur diversité... »

Robert Doisneau, 1934



« ... le dimanche au boulevard par un jour si gris... »

Robert Doisneau, 1934



« La photographie d'aujourd'hui
est une photographie de la vie...
je veux la grande photographie d'un groupe,
le groupe d'un instant,
le groupe d'un jour de la vie...
le groupe d'un instant d'un instant... »

Robert Doisneau, 1934



« Le visage, c'est la vie...
ce n'est pas un objet photographique... »

Robert Doisneau, 1934



« Les rues sont remplies de gens
qui ont une vie si riche...
et qui ont une vie si riche... »

Robert Doisneau, 1934



« C'est là que je me suis arrêté... »

Robert Doisneau, 1934



« Les rues de Paris... »

Robert Doisneau, 1934



« Ce que je veux voir photographier...
ce n'est pas un objet photographique...
c'est la vie... »

Robert Doisneau, 1934



« La photographie d'aujourd'hui
est une photographie de la vie...
je veux la grande photographie d'un groupe,
le groupe d'un instant,
le groupe d'un jour de la vie...
le groupe d'un instant d'un instant... »

Robert Doisneau, 1934



« Je comptais cette ville
par le nombre de ses places
et la surprise de leur diversité... »

Robert Doisneau, 1934



« Les rues de Paris... »

Robert Doisneau, 1934



« Les rues de Paris... »

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« Les rues de Paris... »

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« Les rues de Paris... »

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« Les rues de Paris... »

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« C'est là que je me suis arrêté... »

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« Les rues de Paris... »

Robert Doisneau, 1934



« C'est là que je me suis arrêté... »

Robert Doisneau, 1934

surprisingly omitted in many later editions. If we look at the images Barthes chose en masse, almost as if they were assembled on a contact sheet and so most likely in a different perspective from the one which the author intended, we notice that they have something in common: they all picture faces, human figures or groups of human figures. A few do so indirectly: the Boudinet polaroid shows a bedside with pillows and curtains; there is the *Dinner Table* by Niépce, mistakenly labelled as ‘the first photograph’ and probably included for that very reason; and the house in Alhambra by Charles Clifford, with a tiny, dwarfed figure sitting next to it that Barthes labels with the caption: ‘I want to live here . . .’ Even these three unpeopled images are filled with the traces of human presence: the table is laid out for diners, someone just got up from the bed, the house asks to be inhabited.

Barthes’s preference for human subjects becomes even clearer when he discusses images that do not affect or interest him in any way: ‘There are moments when I detest Photographs: what have I to do with Atget’s old tree trunks . . . ?’ (Barthes 1981: 16). Here we may recall Walter Benjamin’s comments on the emptiness of Atget’s photographs, of the images of a city devoid of humans, of deserted streets, of empty corners, the margins and recesses of the cityscape. Within that same discussion in his *Little History of Photography*, Benjamin pronounces that ‘to do without people is for photography the most impossible of renunciations’ (Benjamin 2005: 519) – a renunciation that seems truly impossible for Barthes but, as we see, is now increasingly a topic for nonhuman photography (Zylinska 2017).

Another, even more revealing example is found in Barthes’s comment on Edgerton’s strobe photography, images that reveal things human eyes could never see:

For fifty years, Harold D. Edgerton has photographed the explosion of a drop of milk, to the millionth of a second (little need to admit that this kind of photography neither touches nor even interests me: I am too much of a phenomenologist to like anything but appearances to my own measure). (Barthes 1981: 33)

Camera Lucida circumscribes a certain field within the photographic realm that is to the scale of a particular human observer. In our context, it also raises the question of what measures are left out, which measures are important, and how measures are themselves an entry point to what photographic theory could be.

In many ways, Flusser takes a different strategy when approaching images but reveals another blind spot, which for our purposes is a useful

cue. Flusser does not discuss individual images, but rather suggests to draw a line between categories of informative and redundant photographs. He selects a handful of meaningful pictures from the vast universe of images:

In the following, no account will be taken of redundant photographs since the phrase ‘taking photographs’ will be limited to the production of informative images. As a result, it is true, the taking of snapshots will largely fall outside the scope of this analysis. (Flusser 2000: 26)

The strategy seems, at first, smart: focus on quality rather than quantity, select exclusive and valuable specimens rather than stereotypical banalities. In other words, define a measure, standard or parameter of what a (good) photograph is. In the mathematical theory of communication that Flusser draws on, the redundant is something conventional, predictable, repeatable and repeated. In the case of photography, the redundant is typically image clichés from birthday photographs to sunsets. In the logic of his apparatus theory, it is not only important that friends or tourists take the same or very similar pictures but that they travel and organise birthday parties to take such pictures in the first place.

The realm of the redundant, ordinary or vernacular has also been traditionally excluded and downplayed by curatorial and historiographical approaches. In terms of numbers, however, it constitutes the vast majority of photographs ever made and to be made. It deserves to be taken seriously and rid of the prevalent depreciation and prejudice. Geoffrey Batchen called vernaculars ‘photography’s *parergon*, the part of its history that has been pushed to the margins (or beyond them to oblivion)’ (Batchen 2000: 262) and stimulated a whole range of scholarly studies (see, for example, Zuromskis 2013; Pollen 2016; Campt et al. 2020) that are beginning to fill this gap in photography’s history. Thus, instrumental and vernacular modes of photography exemplify measures that have certainly shaped what photography theory could be but also what it might become.

The Image as Quantity

Is it possible to argue that contemporary discourses about the mass image and the excluded *parergon* are now even more so the entry point to understanding practices of digital images, from snapshots to machine vision? We find it useful to consider what, besides pictures, are incorporated in photographs; namely, infrastructures, operations, apparatuses, and the aesthetic questions of measures and scales. Our contemporary networked and data-intensive phase of image production adds a further

infrastructural layer to earlier questions about reproduction and the multiple. Online image-sharing platforms not only enable and stimulate image production and circulation but also make it possible to ‘see’ the gigantic proportions of the picture universe while this seeing is, itself, instrumental to the functioning of the current platform capitalist economy (Srnicek 2016). The metaphors of overflow are often supported by staggering statistics, accompanied by vast numbers that tend to grow at an ever-increasing pace: ‘Around sixty billion photographs are taken every year,’ estimated Julian Stallabrass (1996: 13). However, Joan Fontcuberta updated those figures more recently: ‘800 million images are uploaded to Snapchat every day, together with 350 million to Facebook and 80 million to Instagram’ (quoted in Batchen and Fontcuberta’s chapter in this volume). When Josh Lovejoy presented Google Clips, a hands-free AI-powered camera which automatically recognised and captured moments without human intervention, he emphasised the overwhelming amount of images that seem to break away from human vision: ‘This year, people will take about a trillion photos, and for many of us, that means a digital photo gallery filled with images that we won’t actually look at’ (Lovejoy 2018). This does not, however, remove the possibility that ‘your pictures are looking at you’, as Trevor Paglen (2016) argues in the context of machine vision and the primacy of machine-readable digital images, where issues of data and visibility conflate at the centre of recent and ongoing discussions about facial recognition and urban spheres of surveillance.

What these vertiginous figures – or at least, the rhetoric that mobilises such figures – indicate is that ours is an age of image excess; they denote a situation of liminality when a normative order has been exceeded. Excess often evokes negative associations like abundance and waste, matter out of place, pathological and epidemic. Some of this discourse carries with it troubling gender connotations (see Henning’s chapter in this collection), while some of it is based on unchecked disciplinary bias. It is, after all, claimed that the arts and humanities have not considered quantitative imaging, image analysis software, and subsequent expert practices with the same epistemological focus and intensity as the sciences (Elkins 2011). In astronomical proportions, photographs become inflated, trivial, redundant and contaminated; they cannot be measured by traditional standards and norms. In other words, the excessive photograph is not a photograph any more in the sense that the photograph had become a stabilised object of reference during the history of photographic theory: it has become a different kind of image – or perhaps even a different kind of entity. And it is these questions of quantity, data and scale that are the crucial coordinates required to map this transition. For some, this causes anxiety (images exceed the human capacity of

interpretation); for others, it presents a case of the new normal (photographs are simply data, and as such, part of the *modus operandi* of contemporary digital culture).

In either case, data visualisation is often pitched as one response to reformulating data as experiential, but also a new form of visual expression although, as one can point out, it dates back at least to the nineteenth century, with an even longer history in statistics (Beniger and Robyn 1978). Diagrams and graphs might not be part of the history of photography, but they are part of the media archaeology of visual expression of mathematical measures in ways that came later to intersect with photography, for example, through photogrammetry. However, perhaps it is only through data visualisations that the quantity of images can become represented as visual statistics. It is thus essential to note that questions of scale and quantity, as they are posed to photographic practice and theory, are also shared in many of the critical data visualisations. As Richard Wright (2008: 79) explains:

One of the fundamental properties of software is that once it is being executed it takes place on such a fine temporal and symbolic scale and across such a vast range of quantities of data that it has an intrinsically different materiality than that with which we are able to deal with unaided. Visualization is one of the few techniques available for overcoming this distance.

Such arguments concerning the centrality of software and data for our sense of the visual then trigger multiple parallel histories and tracks of investigation for photography in addition to merely the photographic: histories of information systems, data management, and practices of graphs, diagrams and charts (see Cubitt 2017). Or even more provocatively, as John May (2019: 50) argues, current digital and electronic images are not related to the history of photography so much as they are part of the lineage of electrical engineering, telegraphy, television, military intelligence and experimental physiology. According to his reasoning, photography, when understood through its chemical base, is merely an obsolete remainder of a reference that misses the major transformation as to imaging in contemporary contexts of digital data.

The availability of large datasets and the focus on data as a (cultural) resource has also triggered a range of methodological suggestions, especially in Digital Humanities. Dealing with quantities by way of digital tools has produced suggestions such as ‘distant reading’ (Moretti 2013) and other computational methods. Perhaps closest to the field of photography and visual culture remains cultural analytics, mainly promoted by Lev Manovich, as one of the most prominently discussed

techno-methodological frameworks of the past ten to fifteen years. Cultural analytics is premised as a visual analytical method to engage with large datasets, moving beyond what is argued to be the traditional humanities focus on ‘small data’, or even canons (Manovich 2016). Hence, cultural analytics as a form of ‘science of culture’ is suggested both as a way to deal with the vastness of large data (instead of restricted interpretational methods) and as a new way to understand the vernacular visual culture, as Manovich argues (2016): ‘Tens or hundreds of millions of posts, photos, or other items are not uncommon. Since the great majority of user-generated content is created by regular people rather than by professionals, social computing studies the non-professional, vernacular culture by default.’ Photographs, whether from historical archives or from contemporary platforms such as Instagram,¹ are then no longer merely visual objects so much as quantified input for data visualisation and pattern recognition.

Cultural analytics positions its approach not only in terms of existing datasets and units of description (cf. Birkin, forthcoming) but also in terms of how digital objects incorporate and reveal other scales: the images as counted units (one to many); but also what the image contains as multiple dimensions. To paraphrase Manovich, it is not merely a matter of counting existing units, but being able to (somewhat) forensically investigate images at a multitude of scales. Hence it calls for importing some methods from machine vision and computer science to the arts and humanities:

In the fields of computer media analysis and computer vision, computer scientists use algorithms to extract thousands of features from every image, a video, a tweet, an email, and so on. So, while, for example, Vincent van Gogh only created about 900 paintings, these paintings can be described according to thousands of separate dimensions. Similarly, we can describe everybody living in a city according to millions of separate dimensions by extracting all kinds of characteristics from their social media activity. For another example, consider our own project *On Broadway* where we represent Broadway in Manhattan with 40 million data points and images using messages, images and check-ins shared along this street on Twitter, Instagram, and Foursquare, as well as taxi ride data and the U.S. Census indicators for the surrounding areas. (Manovich 2016: 14)

Wide data expresses potentials in ‘very large and potentially endless numbers of variables describing a set of cases’ (Manovich 2016: 14). The digital image, whether photographic or other, is itself already always a quantity that can shift across scales of description, analysis and comparison in ways that puts measure into focus, and in novel ways. The image

then contains a multitude of scales of potential interpretation that redefine what counts as a photograph in the age of the quantified, calculated image that was, in the first place, a sensorially sampled bit of light transformed into discrete signals. If photographs have been fundamental in the quantification of cultural reality since their origins in the nineteenth century, current electronic and digital images have opened up any image as a multitude of scales of reference, zooming in and out, across pixel space and its multitude of combinatorial possibilities.

However, such methodological suggestions do not resolve the complex ecology of aesthetic and epistemological concerns about the constitutive conditions of scale and quantity. In other words, we are interested in how such a mass mobilisation of photographs and images as data relates to questions of infrastructure as well as the material loop between methodologies of visualisation of large datasets as part of the restructuring of, for example, urban patterns. Is there enough range, then, to question how these methods work, instead of mobilising them as computational solutions to fundamentally social, political and aesthetic concerns (see also Drucker and Bishop 2019)? This book's chapters provide responses to these issues.

The Structure of the Book

This introduction works to set the scene for the in-depth and detailed analyses that follow. The book is written by a wide range of authors with different disciplinary backgrounds but the same brief and task: to engage with the mass image and its variations in cultural and media discourse of photography and visual culture to provide us with a set of coordinates as to how images scale, and what measures we need to take to understand this.

The five chapters in the first section, 'Scale, Measure, Experience', link epistemologies and rhetoric of measure with the embodied and political realities of experience. How are the operations of measured normalisation and photographic scale related to embodied forms of socio-political realities in contemporary visibility? How are archaeologies and genealogies of photographic practice informative of insightful analysis of the current data-driven mass-image culture? What is the formative function of a visual aesthetic that builds on notions of scale but also embeds questions of scale as an approach into the online circulation of images?

This section responds to the seemingly incommensurable question raised by Sean Cubitt in his text; while images seem meaningful to many of the people taking, looking or uploading them, the 'images themselves are insignificant', functioning as mere data points in databases and big data analytics. Cubitt builds on the history of photography towards an

analysis of the non-representational operations of images now in the context of contemporary powers of data-driven image practices. Tomáš Dvořák's chapter continues this line of thought by offering a more detailed genealogy of the history of photography. Seen through issues of scale and measure, he asks how this history is entangled with questions of aesthetics such as scales of the sublime. Moving in and out of specific genres such as scientific photography, Dvořák presents these themes as one way to narrate the implications of the gigantic and the immeasurable as they sometimes attach to practices such as astronomy – for example, the black hole imaging project of 2019 – but also as ways to re-narrate the media archaeology of photography. In his chapter, 'Living with the Excessive Scale of Contemporary Photography', Andrew Fisher renews the discussion about aesthetics and philosophy of photography in the contemporary context. In dialogue with the writings of Jean-Luc Nancy, Fisher develops an elegant argument about the qualitative impact that comes from vast amounts of photographic images; from the mere registering of the plentifulness of images, there is a much more fundamental question of aesthetics and subjectivity at play that articulates 'asymmetrical, heterogeneous and variable modes of being in relation to others'. Here, as Fisher makes clear, such a question is not merely tied to the rigid division of analogue versus digital photography. Fisher takes Nancy's philosophical discussion even further, making connections to themes that Cubitt raised earlier, of the possibility of thinking photography beyond the human subject of the click to 'include all sorts of functions, machines, distributed forms and artificial intelligences . . . which have the ability to inaugurate a photographic event'.

Michelle Henning's chapter maintains the politics of the subject in a different way, offering additional nuance by way of discussions of gender. 'Feeling Photos: Photography, Picture Language and Mood Capture' links the book's discussion to the twentieth-century development of a universal language with references to Edward Steichen and Otto Neurath, the inventor of Isotype. According to Henning, in 'the mid-twentieth century, it became commonplace to argue that photography is the one "language" able to transcend national and cultural boundaries, matched only by the presumed universality of human facial expressions'. This pronouncement leads into a discussion of the contemporary online culture of emojis as part of this innovative genealogy of photographic emotion leading to mood capture. More than merely noting this genealogy and its ties to photographic discourse, Henning brings into play a necessary specification as to the gendered discourse of photography of the mass image often branded as kitsch and how this reads in relation to the current politics of emotions. Consequently, the vocabularies of a 'flood of information', tsunami, deluge, and so on, come with the

historical baggage of being heavily gendered through the political history of the masses depicted as both feminine and passive, where emotional capitalism relies considerably on the strategic mobilisation of discourses of authenticity and affective investment.

Henning's detailed discussion offers a platform for Tereza Stejskalová's chapter, 'Online Weak and Poor Images: On Contemporary Feminist Visual Politics', which examines US Democratic Party politician Alexandra Ocasio-Cortez's public image (including her Instagram feed) in relation to theoretical discourses ranging from Hito Steyerl to Lauren Berlant. The generation of empathy relates both to the often unacknowledged labour of emotional expression and sharing as well as to the collective politics of empowerment. Stejskalová connects these multiple registers to current debates about images and empathy, from experimental VR (such as Hyphen-Labs) to the politics of online images. Here, questions of gender and women of colour are crucial reference points for Stejskalová as she carves out one response to the question of capitalist contexts of social production and reproduction: activist histories of feminism can be storehouses, leveraged for the political use of social media.

In the second section, 'Metapictures and Remediations', articulations of different practices and their discursive repetitions problematise clear divisions between the analogue and the digital, investigating both historical and institutional circumstances of what scale has meant in different contexts. A key concept that the section mobilises is the metapicture, defined by W. J. T. Mitchell as a picture that also reveal things about a picture: metapictures embody a self-referential quality that triggers a metalevel discursive opportunity to consider what and where, when and how pictures operate: 'Any picture that is used to reflect on the nature of pictures is a metapicture' (Mitchell 1994: 56). As such, one can already see metapictures as being at the centre of questions of scale and measure as they conceptually enable the understanding of scalar shifts and repositioning of pictures and photographs in visual culture.

Annebella's Pollen's chapter, 'Photography's Mise en Abyme', discusses the repurposing of slide libraries as metapictorial devices, where a core infrastructure that has sustained art history – slide libraries – is approached from the point of view of the metapicture. Mentioning theoretical entry points from writings by other contributors to this volume including Andrew Fisher, Michelle Henning, Geoffrey Batchen and Joan Fontcuberta, Pollen's take on the post-photographic context includes not only a discussion of recent photographic art such as that of Erik Kessels and Oriol Vilanova but also calls attention to slide libraries as original sites of collection and accumulation, where the quantity of images turned into qualitative techniques of image analysis. Pollen's chapter

thus shows how such seemingly obsolete ‘media infrastructures’ of education and interpretation harbour fascinating points about quantity in ways also expressed in conceptual art.

A different sense of the obsolete is negotiated in ‘The Failed Photographs of Photography: On the Analogue and Slow Photography Movement’. Here, Michal Šimůnek addresses the Lomography movement as a seeming resistance to the abundance of digital images that contemporary scholarship often addresses. The chapter’s discussion of counter-practices of photography opens to what at first appears to differ from the digital and yet, is completely embedded in digital platforms and digitally enabled practices. Šimůnek mobilises Marc Lenot, Ernst van Alphen and Vilém Flusser’s theoretical work – among others – in order to understand the hybrid status of such practices, all the while focusing on Lomography. A position of against the mainstream is not, however, one easily resolved. What come to the fore are various contradictions and frictions that characterise the apparently singular in the context of the mass image. Questions of the unique and the generic are maintained, albeit in a different fashion, in Josef Ledvina’s chapter, ‘Strangely Unique: Pictorial Aesthetics in the Age of Image Abundance’. The chapter draws a link from the earlier, assumed period of image scarcity to the current proliferation of the image in and across digital platforms, from issues of scale that hone in on the image at the level of its pixels and glitches to the question of the copy and its identity. Ledvina’s discussion draws from philosophical aesthetics and art history, from László Moholy-Nagy’s *Telephone Pictures* to contemporary digital images, including the artistic practice of Penelope Umbrico. While Goodman’s *Languages of Art* offers one point of reflection, Ledvina moves to a provocative but much-needed proposition: even in the age of seemingly freely multiplying images every single image inscription can be addressed as a unique instance, begging for a more careful methodological and conceptual consideration.

One of our book’s aims, addressed explicitly in the third section, ‘Models, Scans and AI’, is to elaborate the transformation of photography in the context of technologies of automation and artificial intelligence, including the new kinds of mechanisms of imaging that emerge in systems such as autonomous vehicles. In cases such as those discussed, it becomes clear that photography becomes a historical reference point, whereas the actual imaging processes are closer to genealogies of calculation. While our book steers clear from structuring our arguments around the assumed change that comes about with the switch from analogue to digital, or old media to new media, it is important to track the post-optical, post-lenticular landscapes that define practices of visibility in computational culture. In such cases, issues of infrastructures