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The photographic surface: between substances and spaces

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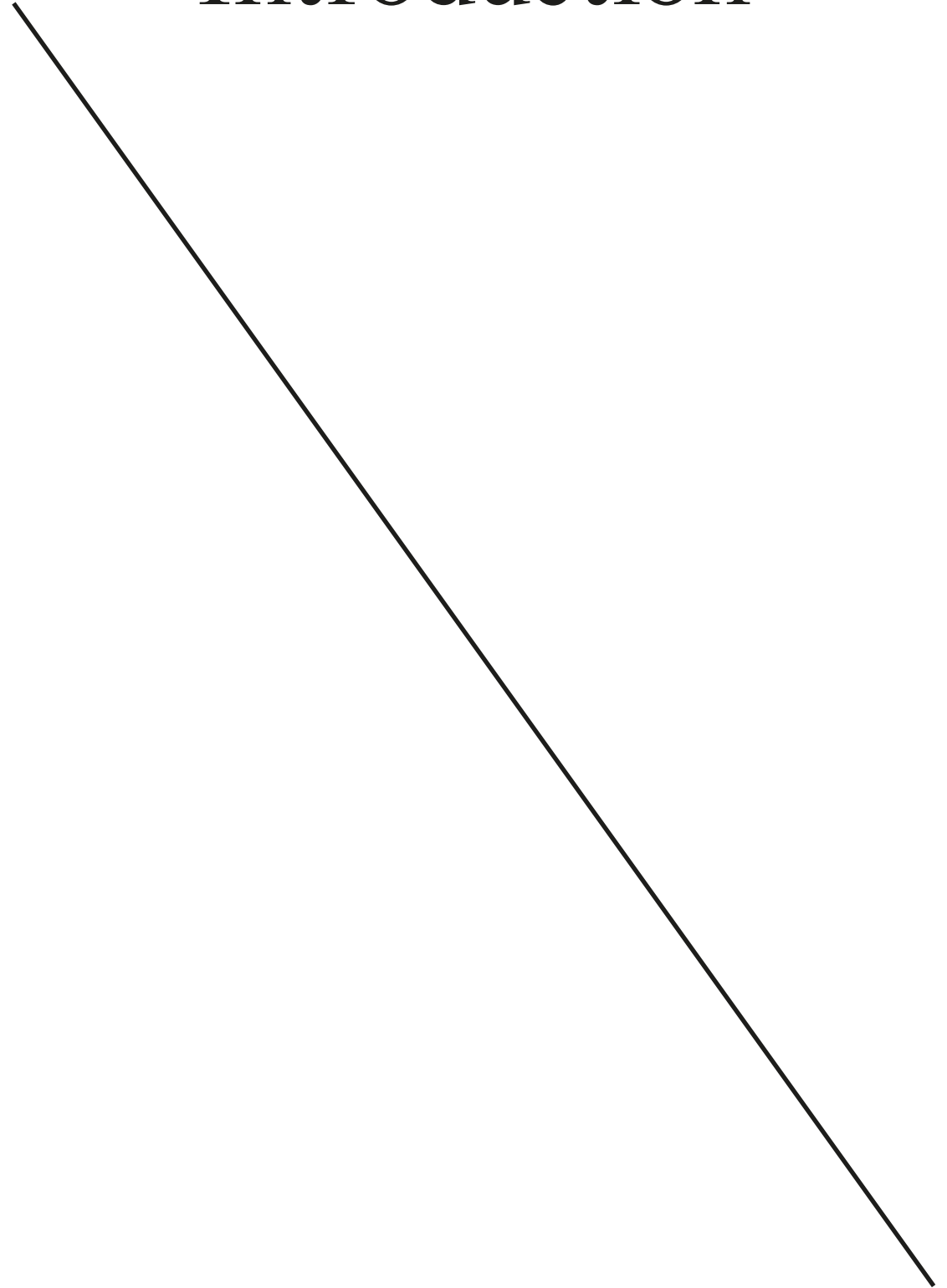
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Introduction



PHOTOGRAPHS ARE SIGNIFICANT SURFACES

My research's central focus is how photographic surfaces become significant and the processes through which they pass. When Vilém Flusser opened his book *Towards a Philosophy of Photography* with "Images are significant surfaces" (2005 [1983], 8), he did not take note of the multidimensionality of the processes that bring images into being. Flusser was concerned with the translation of a three-dimensional world into the two dimensions of the image, but he ignored the dimensionality of the actual process of translation. What are these photographic surfaces made of? Which materials, gestures, and other forms of interactions are (at) the core of their shape and significance? I opened this dissertation with one of the canonical works of photography theory because Flusser's text epitomizes the approach of many phototheoretical texts that neglect the materiality of photographs, and place emphasis on their surface as the carrier of meanings. The translation of Flusser's text refers to "images". In this context of a philosophy of photography, written at a time when the world knew only chemically created photographs, I am able to read this as saying that photographs are significant surfaces. Are they?

The photographic surface, a concept that was rooted in the photograph's material constitution, soon revealed its complexities. The simple question – what is the photographic surface? – appeared more complicated than one would initially guess. Roughly stated, the photograph's surface is the edge of its outer layer. But is this affected by the revelation that the image of a photograph is actually situated neither *on* nor *in* its surface, but is created in gelatin layers *beneath* the surface? Can we then state that the photograph is still a significant surface? While photographic processes can vary, so too can the physical sites of the active substances, ranging from a single subsurface-layer to multiple subsurface-layers. It is only in an exceptional (historic) technique, carbon print, where gelatin relief actually makes the image *on* the surface. The character of the photographic surface is inherently complex, both materially and conceptually. Because of this, I move back and forth between different approaches from the disciplines of (art and photo) philosophy, phenomenology, conservation, and natural sciences, combined with visual analyses, in order to contribute to my own discipline of photo theory. Within this theoretical framework I analyse case studies by combining insights from different disciplines. There is no such thing as one single definition of the photographic surface in this dissertation, instead, there are plenty of interpretations.

Understanding how the photographic surface interacts with its surroundings enables us to acknowledge that it is necessary to take fundamentally different theoretical approaches to the chemically created photograph and its digital contemporaries. Now, in the twenty-first century, a short-lived appreciation of shared photographic images forms the basis of our experience of photography. We are very much in need of a profound ontological clarification regarding what determines the chem-

ically created photograph as an object, in opposition to its digital counterpart. As relics of personal memories, as objects of cultural, political or sociological significance, or as artworks, chemically created photographs require this differentiated thinking and handling. My fundamental claim is that a digitally generated photographic print simulates an analogue photograph, but as objects they are worlds apart.

From the moment of exposure, an analogue photograph passes through many processes and hands: development, 'destruction' through chemical degradation, ripping gestures, or simply falling into oblivion. Hence my central claim: that the truly photographic surface acts as an interface between the substances (which physically and chemically shape the photograph), the times, and the spaces, that it inhabits. 'Substances' here refer to particular materials that enter into the composition of the photograph and determine its characteristic properties and appearance. While, for instance, paper and gelatin are the constituent materials of the analogue photograph, its substances are the silver particles in the gelatin layer, which create the image, together with the water used in the developing process. A more profound specification of the substances, materials, and matters in the photograph's realm will be explained in a separate section on substances.

My focus on the photographic surface has its roots in the Science4Arts research project 'Photographs & Preservation. How to save photographic artworks for the future?' which was initiated out of an urgency to conserve some visibly degrading photographs and photographic artworks that were held in various Dutch art collections. Funded by the Netherlands Organization for Scientific Research (NWO) and supported by the universities of Leiden and Utrecht, the Stedelijk Museum Amsterdam, the Kröller-Müller Museum in Otterlo, the De Pont Museum in Tilburg, the Van Abbemuseum in Eindhoven, and the Cultural Heritage Agency (RCE) of the Netherlands, this 2012–2017 collaborative research project aimed to identify and examine undesirable material interactions in photoworks.

Photoworks can be as diverse as any other form of art. *Photowork* as descriptive term involves a photographic form and refers to certain photographic aesthetics and media. The photoworks studied in our Science4Arts research project are characterized by their uniqueness as artistic objects due to the superposition of other materials in addition to analogue photographs. As a research team we chose a handful of case studies from various Dutch art collections. We wanted photoworks that pose challenging questions for conservation (science and practice), chemistry, and photo theory, in accordance with the three main researchers' fields of expertise. In order to delimit the corpus, we decided to focus on post-1960s photographs with surface applications such as paint, tape, or paper, as a defined starting point for the vast and varied area of photoworks. Organic chemist Bas Reijers (PhD) investigated and diagnosed the chemical and physical interactions taking place in these works, exploring the implications for future conservation. The dissertation 'Forever Young. The Reproduction of Photographic Artworks as a Conservation Strategy' (University of Leiden, 2017) by Monica Marchesi (PhD, and paper conservator at the Stedelijk

Museum Amsterdam) looks at photoworks by Jan Dibbets and John Baldessari and two by Gerald van der Kaap. Marchesi questions and analyses the methods used over the past two decades, by conservators at the Stedelijk Museum Amsterdam and at the Van Abbemuseum in Eindhoven, in collaboration with the artists, to reproduce these photoworks.

All our case studies highlight photographic materiality and the medium's specificity, through the works' confrontation with other physicalities – added paint, in Bas Reijers's and my research. The photographic surface takes on an interfacial character here, and this is where it becomes the pivot of my dissertation. It is the site of encounter between the substances belonging to the photograph and to the paints, between the moments of the photograph's creation and the moments of painting over them, and between all the different spaces involved in these processes. We have two layers, each with their own referential, visual, and chemical content, which encounter a further visual and chemical interaction that happens on the photograph's surface. The layers' hybrid nature brings up new theoretical challenges and offers new insights on analogue photographs in general, and overpainted photoworks in particular.

My three case studies, *Crowhurst II* (2007) by Tacita Dean, and two photoworks by Ger van Elk, *Dutch Grey* (1983–84) and *Russian Diplomacy* (1974), originate from three different decades (fig. 1.1, fig. 3.1, fig. 4.1). I selected these three photographs because they represent the two most common photographic processes: the black-and-white silver gelatin process in the first two and the chromogenic colour process in the latter. But their degree of photographic deterioration is also significant. This ranges from almost no deterioration in *Crowhurst II*, to unintended apparitions on the surface of *Dutch Grey*, and a disruptive, unacceptable colour shift for *Russian Diplomacy*.

My analysis of these three photoworks 'thinks' methodologically along with their materiality and subject matter, rather than reflecting on them theoretically. In this manner, the three case studies are addressed equally as objects of analysis and as "theoretical objects".¹ Their hybrid nature raises theoretical questions that suggest the possibility not only of applying theories exegetically, but also of showing existing theories under a new light. Therefore my method is characterized by close reading of the three case studies, using visual analysis and conservational, technical, and material insights. These approaches form the basis for an interdisciplinary literature study, which is especially attentive to photo theory and to publications from the discipline of philosophy. By oscillating back and forth between the photowork, the auxiliary disciplines of phenomenology, (photo) philosophy, conservation, and natural sciences, and my main discipline of photo theory, I hope to establish a more holistic understanding of (mutative) photographic materiality in an artistic and theoretical context.

Taking the smallest actants in the photographic process – such as photons, (light-sensitive) particles, gelatin, water, or other chemicals – as the analytical starting point enables a profound and critical examination of existing photography theories and some of their key notions. Following the photograph's interactions throughout its

existence sensitizes us to aspects that have been either overlooked or simplified by those theories. There is one exception: Henri Van Lier's *Philosophy of Photography* (original title *Philosophie de la Photographie*, 1983). I would like to pay tribute to this small but exceptional book, in which the Belgian author extracts theoretical meanings from photographic materialities and behaviours in an exemplary way. I use it as my guideline throughout this dissertation. However, even Van Lier's concepts cannot elude some shifts after they have been drawn into dialogue with my case studies, particularly in the first chapter.

The overall purpose of this dissertation is to find a theoretical foothold on the ground of the mutative photographic materiality that literally shapes these photoworks. And also – the flipside – to discover how this mutation challenges theoretical conceptions such as photographic indexicality or photography's relation with death. This expansive scope aims at an awareness and acceptance of mutative photographic materiality in the context of a practical and theoretical engagement with photographs. The changing nature of (artistic) analogue photographs has hardly been represented or discussed in any form of visual record. Artist books, exhibition catalogues, (online) databases, (digital) reprints are, functionally, the places where we preserve and store canonical images in our consciousness. As our points of reference, they withhold awareness of the transmutability (and vulnerability) of any 'original' photograph or photographic artwork that we admire on the exhibition wall. Institutions tend to be quiet about visual changes, while photographers and artists are rarely fond of the photograph that stubbornly follows its inner material logic and changes its outer palette of colours. These are stories that my case studies will tell. The celebrated beginnings of photography (for instance, Joseph Nicéphore Niépce's well-known window view photograph) have long ago vanished in chemical oblivion. As plates (or paper) covered with abstract patterns, these historic objects are hidden in dark, cooled storage drawers, away from public display. Other, newer photographs, such as chromogenic colour photoworks from the 1970s on, have been reproduced, or, in some cases (when the originals are discoloured) permanently destroyed. Institutional decision-making (in collaboration with artists where they are still alive) shapes the ways we perceive photographs and photoworks.

I have written this dissertation for a broad readership: for curators who seek deeper knowledge of and respect for photographic materiality; for photographers who seek to acknowledge their 'felt' craft and to give a theoretical voice to their intuitive choices and gestures; for academics and critics who wish to nourish future theoretical engagements with material insights; and for conservators who are already aware of many of the material aspects discussed here, but who may not yet guess at their far-reaching consequences for theory. I will now introduce the conceptual pillars of this dissertation, the five key words of the title: *photographic*, *surface*, *interface*, *substances*, and *spaces*.

NOT EVERY *photographic* IMAGE IS A PHOTOGRAPH, BUT EVERY PHOTOGRAPH CARRIES A PHOTOGRAPHIC IMAGE

There is still no precise etymological differentiation between the photograph, the photo, and the photographic image. This is understandable, given that many key texts in photography theory were written in the period before the advent of digital photography. Today, as we deal with very different processes that generate photographic images in incomparable ways, how can we differentiate etymologically between the two most prominent versions? I suggest the following:

A photo or a photographic image does not presuppose a particular material appearance. The 'photographic' refers to the way the image was generated: through the 'writing of light'. Deriving from the Greek *phōs* (φῶς) or *phōtos* (φωτός) for light, and the verb *gráphein* (γράφειν) for writing, 'photography', as a term, pays tribute to light as the essential element for producing a photographic image. The resulting 'photograph' is the actual physical imprint. Hereafter, when mentioning the photograph, my argumentation builds on this idea of a material object that is physically generated, inscribed, and changed through light. By contrast, the photographic image is and remains foremost a description of an image and not of a physical object. Not every photographic image is a photograph, but every photograph carries a photographic image. The same logic applies to the abbreviation 'photo': it refers to an image that has been created through the working of light. In the very few cases where I use the word 'photo', these are not material objects but (digital) image files. When 'photo-' appears as prefix, it is as an abbreviation of photography, and characterizes a certain area dealing with photography (such as photo theory, photo history, photo journalism), or as a technical object description such as photomontage, photo collage and, throughout this study, photoworks. Photoworks, like artworks in general, do not refer etymologically to any specific material constitution. The three photoworks I write about all shed light on the ontological meanings of photographs.

Before the inception of the digital, the medium of photography was determined by chemical reactions, which occurred at the moment of taking the photograph and also during the development of the print in the darkroom. Weightless photons, emitted and reflected by the objects in front of the camera, physically change the light-sensitive film inside it. They materialize from immateriality. Or more precisely, the bodiless light transfers or even translates the materiality of the photographed objects into the appearance of the exposed film.

Image sensors have superseded film in the digital camera. These sensors 'read' the intensity of light, and store the extracted information on the digital memory device, and so the weightless photons are no longer made material in the direct way that they are on film. In a digital practice, the body of the storage device determines the material existence of the image, or, a carrier object can bear a printed image. The image file itself is bodiless and stable, but dependent on the precision and physical qualities of the carrier. This means that the digital image in any form has no physical link to the photographed objects from which it originates. By briefly specifying this physical relation between the photograph and the photographed objects, I will now introduce one

of the fundamental disparities between the chemical-based photograph and the digital photo.

Chemical reactions are the main causes of changes to the photograph, during its genesis and throughout its lifespan. This means that the analogue photo exists in a process of becoming rather than in a state of being (as its digital counterpart does). It is very likely that the appearance of any given photograph will change over time. We need to distinguish between the short-term chemical reaction (light hits the negative film or sensitized paper) and the long-term reactions (the lifetime condition of the photograph). Every chemically created photograph is made through a material, substantive process, and retains a certain receptiveness towards outer and inner influences that can change its visual appearance over time. There is no such thing as a permanently fixed photograph.

For the photoworks studied here, the photograph's instability can be a serious threat to the artwork. To understand the changes in and to these hybrid photoworks, it is first necessary to acquire a full understanding of the material conditions of photography. But another question arises: are these changes inherent to the medium? How far do eventual changes belong to the characteristics of photography, and should they therefore be taken into account in our thinking on photography? Changes to the print take place not only on its surface – where they eventually become visible – but also 'within' the print. Depending on the condition of the image carrier, but also on the framing, the encounter of the photographic print with other materials can lead to a surface change that comes from within the print. This explains why the literal depth of the photograph is as important as its surface.

Surfaces ARE THE WARDROBE OF BEING

Photographic images pull viewers immediately into the depicted scenes. The material surface of a photograph is often transparent to vision, when compared with the texture of handmade pictures. As James Elkins rightly states in his book *What Photography Is* (2011), most theoretical writings on photography overlook the "optical feel of a photograph's surface" (Elkins 2011, 26). The surface of the image was (as Joel Snyder elaborates in his essay 'Picturing Vision', 1980) and still is supposed to open up as a window onto the view of the subject. Only contemplation can allow us to rest for a moment on its surface, photography's window glass. Strictly speaking, it is this surface that we encounter. Our perception and interpretation automatically and immediately transcend it in order to perceive the (imaginary and imaged) space 'behind'. This makes the photographic surface a physical manifestation of mediation *par excellence*. Sean Cubitt, in the preface of his genealogy of visual techniques *The Practice of Light* (2014), describes mediation as "the ground of relationship, the relationship that precedes and constructs subjects and objects" (Cubitt 2014, 2). As the term mediation knows many definitions, I will refer only to authors whose publications will appear in the course of this dissertation, to establish a common understanding of certain key ideas and concepts. By putting the photographic material under the magnifier, the material characteristics and behaviours will appear more clearly, but the relationship we

have with photographs – that which Cubitt describes as mediation in its most basic form – will also stand out. What are the consequences of this variable condition, and of the constraints of photographic materiality, for the relationships we have with the medium and its artefacts? How can we engage with changing photographs whose surfaces are the “wardrobe” of photography?

Joseph A. Amato uses this description of surfaces as the “wardrobe of things” while approaching all kinds of surfaces in his book *Surfaces: A History* (2013). Many of his general reflections emphasize the importance of studying (photographic) surfaces, and I will draw attention to a couple of these reflections as particularly relevant. Surfaces, he argues, “furnish our primary encounters with the outer and the inner layers of things” (Amato 2013, xv). As outer layers he names cover, epidermis, membrane, bark, rind, hide, and skin. My first case study *Crowhurst II* by the English born artist Tacita Dean (b. 1965) very prominently features and celebrates the gnarled bark of an ancient yew tree (fig. 1.1). Dean’s gigantic black-and-white portrait of this tree uses very delicate paintwork around the outer edges to efface the background. The depiction, the texture of the monotone white brushstrokes, and the undulated photographic paper, all enhance our sensitivity to the epidermis of both tree and photowork. *Crowhurst II* awakens our awareness of texture and haptics in the photographic realm. Seeing ourselves as bodies of surfaces, and thinking of Amato’s argument that surfaces “are taken in by eye, mind, and hand” (2013, 3), reveals that an exploration of photoworks which approaches them as purely visual artworks underestimates our full perceptual capacity.

By giving rise to elemental pairings such as up and down, back and front, inner and outer, visible and invisible, surfaces form and are organized, as Amato writes, into a series of “scapes” – just as there are bodyscapes, sensescapes or landscapes (2013, xv). My second case study *Dutch Grey* – a landscape view with a flat horizon by the Dutch conceptual artist Ger van Elk (1941–2014) (fig. 3.1.) – draws attention to some of these pairings. When we change perspective or viewing angle, horizons of expectations towards a photowork shift accordingly. That which is usually obscured by the (photographic) surface – the down, back, inner or invisible – becomes as important as the ‘landscape’ we primarily perceive – the up, front, outer, or visible part of the artwork. This isn’t news to science or technology: pure surface observations are often shallow, and verifiable truths can be found in subsurface theories (2013, 10). Amato refers to interior body expeditions through x-ray technologies, CT scans or magnetic resonance imaging. Only recently, conservation scientists have deployed x-ray fluorescence analysis (XRF) to explore the internal make-up of photographs. An XRF-analysis of the photograph’s subsurface, combined with a thorough surface analysis through enhanced photomicrography and polynomial texture mapping, can deliver individual data-sets giving information on a photograph’s material composition. The photographic surface is only a fraction of what we (think we can) perceive when looking at a photograph. This is why my methodological approach is influenced by phenomenology in the work of Martin Heidegger and Maurice Merleau-Ponty.

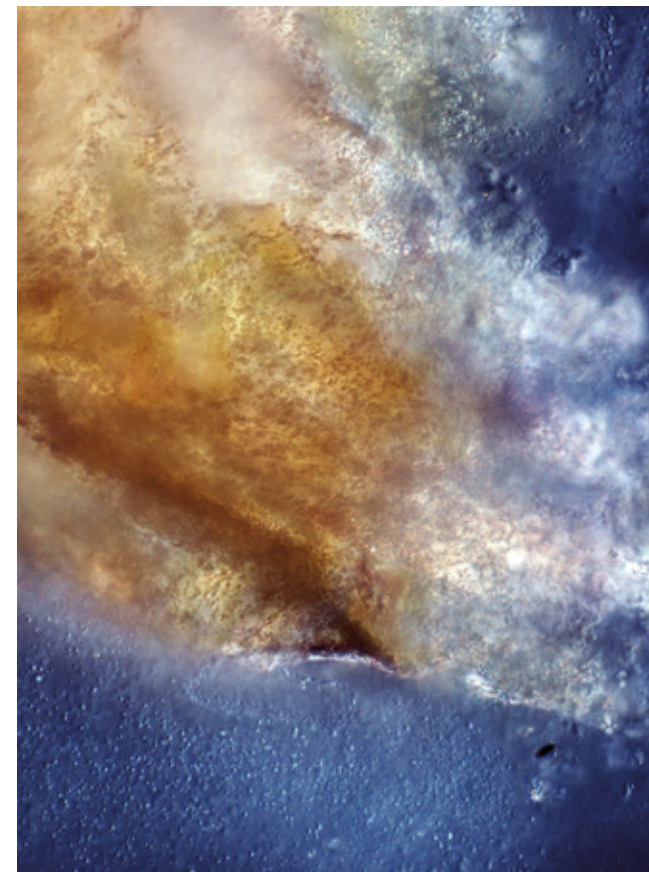


FIGURE X.1. Joris Jansen, *stelsel 8* from the series *Kosmos*, 2011. C-print, 90×120cm.

My first encounter with the material universe of an analogue colour photograph was through Dutch photographer Joris Jansen’s (b. 1980) series *Kosmos* (2011). It delves into the microcosmic dimensions of one simple photograph – Jansen purposefully deployed an estranging use of photomicrography (fig. X.1.). *Kosmos* changed my perspective on photographs profoundly. I might even admit that it caused an ontological shift: it belongs in this introduction less as a visual demonstration of photographic materiality than as a theoretical object as such. *Kosmos* reveals almost organic (image) particles, colour clouds, and other topographic surface appearances. These *photoscapes*, which can linger in a simple chromogenic colour photograph, resemble fragments of stellar constellations. The visual and titular reference to the cosmic triggers alternative understandings of a photograph’s spatialities and therewith temporalities.

One way to make sense of the photograph’s changing appearance is to revalue its material mutability so as to see it as one whose constellations can shift. The overall change of colour in the photographs, a deteriorating process that forms the basis of *Russian Diplomacy* (1974), my third case study, is another example of this (fig. 4.1.). The blue dye of the chromogenic prints has lost its density, causing the photographs to take on a red-tinted appearance. The photo-

graphic depiction no longer corresponds with its overpaintings: the colour photograph's wardrobe has changed.

THE PHOTOGRAPH IS AN INTERFACE EFFECT

Applying the concept of the 'interface', as it derives from screen-based and device-driven digital culture, to the physical photograph, as a remnant of analogue culture, could be surprising. My central account of 'the photographic surface as interface' therefore needs an elaboration of this term and a delimitation of my usage. My interpretative tools here come from Johanna Drucker's article, 'Humanities Approaches to Interface Theory' (2011), and Alexander R. Galloway's book *The Interface Effect* (2012). The overall argument behind my characterization of the photographic surface as interface is that such interface theory, as Drucker briefly explains, takes "[...] into account the user/viewer, as a situated and embodied subject, and the affordances of a graphical environment that mediates intellectual and cognitive activities" (Drucker 2011, 8). The photograph is in a co-dependent network of relations between all kinds of actors, human and non-human. It is more than just this material thing. Or, as Galloway phrases it, "an interface is always an effect. It is always a process or a translation" (Galloway 2012, 33).

When interpreting the photographic surface as interface, it was, at first, in the classic sense of this two-dimensional plane which was apparently transparent to the photographic image because it was actually being shaped by the processes and logics of the material 'behind'. In this interpretation, the surface as interface is embedded with meanings, or, in Galloway's words, meanings are delivered "through" it (2012, 30). Here again, the recurring challenge is that the image is paradoxically situated *in* the photograph and not (as in drawings, paintings or (inkjet) prints) *on* the object's surface. Like a window, the surface as interface separates and mixes two worlds at once. The effect of this mixing seems optically identical between window and photograph. But in contrast to the window, the 'transparent' surface of the photograph holds a direct physical and partially visible relation with the layers beneath. This means that determining how 'deep' the surface's materiality reaches into the multi-layered sandwich of the photograph is a complex challenge. To do so, we need to consider each subsurface layer as an equal part of the photograph's interface. Comparing the photographic surface with a kind of landscape – as I do in Chapter 3 – aligns with this proposal that what lingers in the 'invisible' subsurface is what ultimately shapes the visible and therewith determines the horizon of our vision.

The photograph's invisible interior, another (material) form of interface, is experienced as an impermeable threshold. Something is evoked on the outside, while something (else) takes place in this interior threshold. In our case: the photographic image is evoked, while the photograph takes place. Of course Galloway hints at a far wider scope for his interface analysis, but when introducing the subject matter limited to the threshold-interface-idea of digital media, he admits that "[...] there are complex things that take place inside that threshold; the interface is not simple and transparent but a 'fertile nexus'" (2012, 32). This leads him to questioning what counts as an edge of that threshold and what as a centre, questions that are applicable both

to the photograph's surface and inside. And we may not forget that every photograph also has a *backface*. This (physical) interpretation of an interface focuses on what exists between the transparent surface layer and the backface through the photograph's lifespan. It concludes that the photograph as interface is embedded in a network of relations, and therefore requires a multi-angled approach.

The photograph, interfacing with many persons in different spaces and times, triggers different engagements. The photographer deals with it one way, the viewer another, the printer, the curator, or the conservator, are all distinct too. This is to name only a few and in a solely artistic context. Drucker proposes that the "[i]nterface and its relation to reading has to be theorized as an environment in which varied behaviours of embodied and situated persons will be enabled differently according to its many affordances" (Drucker 2011, 12). The second chapter, in particular, sheds light on the various (tactile) engagements a photograph can have or evoke.

The thesis culminates with my proposal, in the final chapter, that we conceptualize the intended and unintended alterations of a photograph in a spatiotemporal framework as photographic interface effects. Galloway's conception was that interfaces are not objects but effects that "bring about transformations in material states" (Galloway 2012, vii). In line with this, I want to demonstrate how the photographic surface as interface embodies the effects of many circumstances and "thus tell the story of the larger forces that engender them" (ibid.). As Galloway generalizes for interface theory, I also advocate for the transgression, ultimately, of the window or threshold metaphor that marks the classic idea of interfaces and of photographs. At the end "[a] window testifies that it imposes no mode of representation on that which passes through it" (2012, 39–40). As we differentiate the stages that the photographic surface passes through, it becomes apparent that the window-analogy does not work out for photographs. Every phase can leave marks on its appearance – from the very beginning right up to the present moment, as we stand before a photograph. Conceptualized as a *processual interface*, the photograph accumulates possible layers of interaction in which its transforming nature comes to the fore.

THE PHOTOWORK IS *spaced* INTO BEING

Although a photograph does not stand out as spatial object at first sight (because it is flat), this only makes it more important to highlight its relation with the spaces that it inhabits or travels through. I refer here to the photograph's spaces of production, exhibition, and preservation. In a literal and basic sense, the list of spaces can include the inside of the camera during first exposure, the dark room during development, the artist studio (for our photoworks), exhibition spaces, and (archival) storage rooms. These five core spaces are investigated through the human and non-human interactions with the photographic material that take place within them. The physical photograph thereby always 'inter-faces' between the place of its depiction and its current space. This ontological tension holds centre stage in the volume *Take Place: Photography and Place from Multiple Perspectives* (2009), edited by Helen Westgeest. My own theoretical engagement with the ways in

which spaces shape and influence the photowork was stimulated by the theoretical approaches of the essays in this book.

The first two case studies *Crowhurst II* and *Dutch Grey* deal and play with a particular sense of place. While the first is the name of a village in East Sussex, England, and the second refers to the Dutch landscape in general, both photoworks are characterised by their lack of photographic spatiality because they have paint added to them, somehow obscuring the image. The artists' interventions on the photographs' surfaces become part of the space the viewer inhabits later, in an exhibition context. Although these interventions took place earlier, in the artists' studios, and then dried, the paint adds another layer to the photograph's own spatial dialectic tension between here and there, now and then: all the temporal and spatial dimensions of the photowork. The spaces are not only tied to specific times, they also automatically involve and encompass many actions, acting codes and forces. The space of the photowork, as a crucial focus of this dissertation, can be a capsule in which the physical, temporal, social, and mental engagement with that photowork comes as much to the fore as the spaces' specificities. The 'boundaries' between these spaces are more fluid than we might assume, however, and the photowork, like the photograph in general, exists in a continuous state of formation, transformation, and deformation.

I am leaning here on the contribution to *Take Place* by Barbara Hooper, a human geographer who explores photography's relation to place and space. Hooper argues that matter, time, and space are always inextricably connected. That which we habitually call time and space is rather "formed matter spaced/timed into being" (Hooper 2009, 204). The photograph needs to be regarded through its transition through multiple stages and spaces, interacting and acting and thereby transforming as a part of its nature. Hooper rolls this up:

The photograph itself [...] both gathers together and disperses the event photographed, the photographer, and all subsequent spectators into a single becoming. [...] We are now unable to say, with certainty, where and when the photograph begins and ends, who and what acted, who and what were acted upon (2009, 210).

Russian Diplomacy (1974) very clearly testifies to its own journey through darkened and lightened spaces. The dramatic colouration of its chromogenic photographs can derive from the time that the photowork spent in sunlight or in spaces illuminated by standard fluorescent lights (both are strong sources of destructive UV light), and/or also from spaces in which the humidity and temperature were so high that they sped up deterioration, causing the colour dyes to shift and fade. Stored in the presence of paintings, this photowork has certainly been exposed to temperatures far too high for colour photographs to withstand for a long period. The recommended temperature for chromogenic prints is around 2–4 degrees Celsius, which differs by more than 10 degrees with common art storage conditions. This is just one possible explanation of how *Russian Diplomacy*, as it is today, has been shaped through its storage in an environment, which was too warm for chromogenic prints.

Enlarging on the physical and technical characteristics of a photograph's most prominent spaces enables us to perceive it more precisely as a spatial multidimensional object. I will now give a brief

introduction to each of these spaces. Starting with the inside of the camera. Shrouded in total darkness, an image comes into being when a glimpse of light is very briefly admitted during exposure. It is formed as it materialises on photographic film (and later paper). Intentional, mechanical, and physiochemical actions have the lead. The camera is like the darkroom or a camera obscura: a space constructed for artificial darkness. Indeed, any space – the artist's studio, or even a storage room or archive – can be darkened and turned into the black box that is needed to control the photograph's interaction with light. In order to shed light on what takes place in these usually enclosed spaces, in the second chapter I introduce some strategies developed by contemporary artists, including Danica Chappell (b. 1972) and Gwenneth Boelens (b. 1980), who engage actively with photographic material in darkened spaces, and who exaggerate the workings and characteristics of these various darkened spaces. An historical reflection on darkened spaces is offered to me by Noam Elcott, who uses artificial darkness as the dispositive for laying bare the media circuit between photography, cinema, and theatre in his dissertation *Artificial Darkness: An Obscure History of Modern Art and Media* (2016). Although the camera, the darkroom, the artist studio, and even the storage space can share common ground – they are all spaces dominated by darkness (in which light is admitted intentionally and only for a very brief moment) – they differ in the actions and intentions that take place inside each one. These physiochemical interactions are discussed intermittently throughout the dissertation, whereas the human engagement with the photograph in darkened spaces is explored most fully in the second chapter's subsection on tactile interaction.

There are also spaces in which a clear code of conduct sets the parameters for our engagement with photographs and photoworks: the exhibition space, and also the storage room or, more generally, the archive. I will return to the latter later in this introduction. Considering a haptic perception of photographs and photoworks in exhibition spaces, it becomes apparent that both viewer and photograph are commonly treated as 'disembodied' beings. Only a careful and deliberate orchestration of a variety of photographic prints on exhibition walls, like those we encounter in the curatorial and artistic practice of Wolfgang Tillmans, can unravel the established codes of spectatorial engagement.

Substances AND THEIR RELATIONAL PROPERTIES SHAPE THE PHOTOGRAPH

Light reflections 'write' the photograph's image. The image that is created in this way leans on the transformation of and by substances through multiple processes. How can we understand these substances within the relational field of a photograph's existence? The relational field represents the environments whose heart is the photograph, with its partial receptiveness to interaction with all kind of actors and actants, humans, animals, substances, or other beings. My use of the term 'substances' refers to a particular range of materials that enter into the composition of the photograph during its manufacture, exposure, and development, and over the course of its existence. 'Material' as synonym for 'substance' applies only when it concerns a constituent of the phys-

ical, made thing of the photograph. Therefore I focus on substances as they encompass both the substances that are already *in* the manufactured photograph (its materials), and also those that are entering from the outside *into* the photograph. In brief, every material of the photograph is or consists of substances, but not every substance involved in the photographic process is part of the photograph's material.

Van Lier calls for a careful consideration of the physio-chemical event that gives rise to every photograph. He argues that “[a]ll the inexactitudes in theories of photography can be attributed to the rash overlooking of the strange status of those very direct and physical luminous photonic imprints, which are but the very indirect and abstract imprints of objects” (Van Lier 2007 [1983], 11). His aim is therefore “to enumerate and describe the characteristics as scrupulously as possible, while keeping in mind that this is *the place where everything is played out*” (ibid., emphasis added). For me this sentence resonated with another quote from James Gibson's book *The Ecological Approach to Visual Perception* (1979). In his statement that “the surface is where most of the action is” (Gibson 2015 [1979], 19), Gibson explains the importance of surfaces within the triad of medium, substances, and surfaces that he establishes in order to describe the physical visual world and its reception by the perceiver. Amato's book on surfaces characterizes Gibson's approach as follows: he “[...] declares that human perception and vision are rooted in man himself as an ambulant and ambient being” (Amato 2013, 2). This creature perceives and examines its environment. I will delve deeper in Gibson's approach in Chapter 1, exploring photographic textures. For now, I want to establish a common understanding of substances in the context of this research, through reference to his conception.

Gibson defines substances in a solid or semisolid state as more or less resistant to deformation. They can be distinguished by relative hardness, cohesiveness, elasticity, plasticity, and viscosity (Gibson 2015 [1979], 15–16). His basic examples of environmental substances are soil, sand, oil, wood, minerals, metal, and, above all, the various tissues of plants and animals. This list already includes the main substances of a manufactured silver gelatin print: wood (or plant tissues) in the paper carrier, animal protein in the gelatin layer, and metal in the silver particles. During the long process of a photograph's creation, from the shoot, to the developing of the exposed film and print, liquid chemical solutions and water come into play. Although Gibson initially describes substances as more or less resistant to deformation, he affirms that substances in the environment can change both structurally and chemically. Accordingly, they also need to be also distinguished by how susceptible they are to chemical reactions. This susceptibility includes their degree of solubility in water, their relative volatility in air, and the degree to which they absorb light (2015 [1979], 16). The degree to which the substance permits chemical transformation is influenced by the landscape of its surface.

I came across Gibson's remark that “the surface is where most of the action is” in the article ‘Materials against materiality’ (2007) by British anthropologist Tim Ingold. Ingold's main critique here holds that the subjects of materiality and material culture stud-

ies can tell us little about materials and their properties, or the other way round. I propose a similar critique for the theory of photography, which rarely brings the material quality of the photographic print into close focus or into direct relation with conceptual notions. Ingold criticizes an approach, which focuses on the materiality of objects at the expense of understanding the properties of the material, properties which to him are not fixed attributes of matters but are processed and therefore relational. In order to gain a full understanding of photographs, the relevant substances must be explicated in-depth, with mention of their properties including their (possible) agency. More specifically, I assess which inherent qualities of the photograph's materials are consciously expressed, and which suppressed, in the studied photoworks. This should indicate whether the changes are inherent to the condition (and the flux) of the medium and can, in consequence, be accepted as matters of fact. Differentiating between the material, the substances, and the materiality, and the significance of each, for both the artwork and the perception (behaviour) of the viewer, brings me finally to new materialism studies.

Attending a lecture by Diane Coole on new materialisms in Munich (Akademie der Bildenden Künste, October 25, 2012) shifted my understanding of the nature of the photographic print, and especially of the qualities of its changes. New materialism studies aim to retrace and to re-engage with matter. One of Coole's starting points was the material change caused by shifting relations between matters. Encounters between matters and the constellation of matter – in its broadest sense including human, animal, mineral, and others – can be understood by focusing on material changes. Coole underlined the simultaneity of touching and being touched, which relates directly to Ingold's argument. One fragment caught my attention in the introduction to the *New Materialisms* (2010) reader edited by Coole and Samantha Frost. They explain their approach to matter as

[...] returning to the most fundamental questions about the nature of matter and the place of embodied humans within a material world; it means taking heed of developments in the natural sciences as well as attending to transformations in the ways we currently produce, reproduce, and consume our material environment (Coole and Frost 2010, 3).

In the context of my research on photoworks, this can be applied as a call to return to “the most fundamental questions about the nature of analogue photographs”, taking into account new insights from conservation and preservation studies that emerge through advanced chemical research and an increased awareness of the behaviour and perception of the viewer in contemporary encounters with photographic prints.

OUTLINE

The photographic surface is the pivotal point that we confront when facing a photograph. The ensembles of paint and photograph in the studied photoworks further draw attention to its crucial role. A key question arises: how does this surface actually interface between substances and the spaces that surround it? The first two chapters of *The Photographic Surface* explore and map the physical and material

characteristics of *Crowhurst II* by Tacita Dean, of other photoworks and photographs in general. *Crowhurst II*, the case study in both chapters, speaks through its distinct textural and haptic qualities. In this work, overpainting precipitates a departure from the smooth undulation of the glossy photographic paper. Chapter 1 interrogates the photowork's material mimesis of the depicted yew tree through the texture of its surface. How can the surface's texture relate to the photograph's subject? Physical analogies drawn with the photograph in ontological writings are assessed in light of the photograph's actual physiognomy. What does the surface texture tell us about the photowork, beyond depiction? Conversely, how do the surface and make-up of the photograph's structure ultimately determine the depiction? To respond to these questions, material surface textures (of various image carriers) are considered as much as visual textures (of grains, clouds, and pixels). My first theoretical text here is the first part of Belgian philosopher Henri Van Lier's *Philosophy of Photography* (original title *Philosophie de la Photographie*, 1983), concerning the texture and structure of the photograph. Van Lier considers the various elements that bring a photograph into existence, both literally and philosophically. My second theoretical text is *The Ecological Approach to Visual Perception* (1979), a canon of the discipline written by the American psychologist James Gibson. Gibson's book has influenced my own terminology and characterisation of substances, textures, and surfaces.

In the second chapter, the idea of affordance that Gibson pioneered in the same book is used to approach the photograph as a tangible object, which can be understood in terms of what it "affords". During the exposure of a photosensitive paper in an analogue process, light does change the photograph's physiognomy on a molecular level. But rather than 'moulding' the photograph's surface, as the frequently drawn analogy with a footprint suggests, the light only touches this surface, which is the vantage point of the second chapter. And given that this is a physical phenomenon on molecular level, what other tactile qualities of the photographic surface can be understood via the concept of touch? A closer investigation of tactile and haptic encounters with photographs attends to our physical engagement with photographs. We start from the moment of development in the darkroom and move through the lifetime of photographs, either as (untouchable) photoworks on an exhibition wall, or as cherished (and touched) personal objects. The chapter opens with the fingerprint as a visible and physical remnant of interaction that is as much a sign of affection as a conservational threat. Developing a photograph in the darkroom means, beside chemical processes, a choreography of controlled gestures to place and lift the photographic paper in and out of solutions and light. The encompassing darkness of such darkrooms enhances the importance put into the developer's hands. An essay on photograms, 'Contact Images' (1997), by French philosopher and art historian Georges Didi-Huberman, is a useful theoretical starting point, for it examines physical origin and effect at once.

Chapter 2 culminates with an exploration of the reciprocal effect between physically touching a photograph, and being touched emotionally by found photographs such as those used by Tacita Dean

in her book project *Floh* (2001). If a photowork like *Crowhurst II* does *not* allow direct cutaneous contact, how can it evoke to emotionally affect a viewer? The affective qualities of a photowork can be either pronounced or neglected by the way it is presented, framed or hung – all curatorial and artistic measures that determine the viewer's sensory apprehension of a photowork's haptic qualities, as considered towards the end of this chapter. The book *The Senses of Touch: Haptics, Affects and Technologies* (2007) by sociologist Mark Paterson is of particular help here. More generally, *The Senses of Touch* is a guide throughout the second chapter, helping me to finding a way through the multiple present forms of a tactile, haptic, and tangible perception, and its position within the longstanding debate concerning the optic and the haptic within art historical tradition.

The first two chapters pursue an ontological exploration of the photographic surface in terms of its materiality and our engagement with it. The final two chapters advance this ontology by bringing into focus the times and spaces that environ the photographic surface. The surface appears in its interfacial character, formed by its surroundings and by the inner material logics of its 'subsurface'. Chapter 3 seeks to understand the workings and meanings of the photograph's invisible 'inside', which separates and mediates between different spaces. How does the material thickness of the photowork shape the photographic surface? And what are the consequences, for our perception of the photowork, of the surface's acting as an interface between substances and spaces, between the visible and the invisible? French phenomenologist Maurice Merleau-Ponty's posthumous *The Visible and the Invisible* (original title *Le Visible et l'Invisible*, 1964) will shape my own answers, as will Martin Heidegger's philosophical inquiry, *The Origin of the Work of Art* (original title *Der Ursprung des Kunstwerkes*, 1935–36).

The chapter begins by taking up the metaphor of landscape to help us understand what the photographic surface conjures, what is beneath or behind it. In the case study for this chapter, *Dutch Grey* by Ger van Elk, the photographic surface is mostly hidden under multiple layers of alkyd paint. Its landscape depiction rises out of painted abstraction on a photographic ground that is dominated by a horizontal line in the middle of the photowork. *Representing Place: Landscape Painting and Maps* (2002) by the American philosopher Edward S. Casey sheds light on the representation of landscape in general. I take up Casey's ideas to guide my metaphorical re-visioning of the surface and the depths of Van Elk's photowork as another form of landscape.

Van Elk's horizon motif gives ground to my theoretical elaboration of the photographic surface as a horizon-interface. In landscape, the horizon separates the visible and invisible; it is subject to the position of the person who perceives it, or the other way round: a person's view is determined (and framed) by the horizon, as elaborated by Merleau-Ponty in his account of the "see-er" who is always encompassed by the horizon. Behind or beneath the horizon of the photographic surface there is a sandwich of multiple layers. My third chapter goes on to consider how to find a theoretical foothold in this invisible subsurface. I look deeper into material constitutions and behaviours in

order to develop a method for actually relating to the invisible thickness of photoworks. An awareness of a photograph's thickness enables a new understanding of the surface as determined also from 'within' the print. This has consequences for existing theories and for the extension of what we define as the surface into deeper layers. What we assume to be invisible to us – the interior horizon of *Dutch Grey* – forms the exterior horizon of the photowork to such an extent that we cannot characterize it as merely invisible, but as a matter of our own visual limits: an unawareness of a photograph as an inherently multi-layered object.

The last part of Chapter 3 covers the intra-action between the inside and outside of the photowork and the extension of this intra-action through the spaces and times of the 'extra-face' – that which encircles the photographic surface. In what ways does the photographic surface mediate between different extra-facial spaces and timeframes? How can we understand its *intra-action*? The term was coined by the feminist scientist and philosopher Karen Barad, a prominent figure in new materialisms studies who was trained in theoretical physics. Barad's book *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* (2007) appears intermittently as theoretical guideline.

While the photographic depiction refers to a specific time and space in the past – Roland Barthes's *noème* of photography as the *ça a été*, the *that-has-been* – the physicality of Van Elk's overpaintings also leads to the artist's past action as well as remaining physically in the present moment, as the viewer faces the photowork. Hybrid additions to photographs in photoworks trigger awareness of other temporalities that can always be linked to spaces in which the photowork's biography is written. As an example, the backface of photoworks and photographs offers insight into their history. It can expose the network of changing collection and conservation strategies a photowork is always bound to, with which the chapter closes.

The purpose of the last chapter is to understand the processual character of photographic material through different periods of its existence. How does the photographic surface transform through processes with and without the intervention of human actors? Covering the whole lifespan of photographs through processes of creation, of conservation, and of (unintentional) destruction, Chapter 4 demonstrates how the photographic surface relates and how it acts as processual interface in each encounter and circumstance. *The Interface Effect* (2012), by media theorist and programmer Alexander Galloway, characterizes interfaces as effects that cause "transformations in material states" (Galloway 2012, vii), rather than as things. Galloway's definition offers a more precise understanding of the photographic surface as interface. Are there particular processes that reveal the photographic surface to be an active force (and interface) when it comes to its appearance and our resulting viewing experience?

Intentional gestures as well as unintended effects are 'recorded' by the photograph's appearance. Chapter 4 opens with an analysis of various imaging phases through which photographs can come into existence with the help of chemical processes and human gestures. The disturbing colour shift in this chapter's case study, *Russian*

Diplomacy (1974) by Ger van Elk, leads me to question whether such instability is inherent to the photograph's material logics, rather than a result of unfortunate conservation measures. How can a changing photographic surface ultimately ontologically shift our understanding and engagement with photographs? The materialist ontology of the work of art put forward by Australian artist and art theorist Barbara Bolt in *Art Beyond Representation: The Performative Power of the Image* (2004) serves as a theoretical guideline for me here. Bolt's conception of the work of art as a performative process, rather than merely a representational practice, can assist in my opening new ways of understanding photographs. In the final part of the chapter, I evaluate this analysis of the photographic surface as an active interface processing both inner and outer influences. The argument culminates by discovering a new imperative to acknowledge the transformative nature of each photograph, and of our photoworks specifically. This is one of the dissertation's key arguments and one that has murmured, intermittently, throughout the text.

ENDNOTES

1

Based on the tradition of Mieke Bal and Hubert Damisch as outlined by Marcel Finke in his article 'Denken (mit) der Kunst oder: Was ist ein theoretisches Objekt?' (2014) ('Thinking (with) art or: What is a theoretical object?').