Editorial

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Editorial: The Skin of Things

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Material perception — the visual perception of stuff — is an emerging field in vision science, as Filipp Schmidt states in this special issue on *The Skin of Things.* Remarkably, this can also be said for research in art history. In art studies there has been plenty of attention for the perception of space, depth cues, and various perspective systems to create 3D-worlds. One might almost call it an obsession – from White (1957) to Willats (1997), from Panofsky (1927) to Kubovy (1968). All the while, preciously little has been done on the recognition and rendering of stuff.

It is not so easy to explain this situation – particularly when we look at the history of art. During approximately the last 500 hundred years of Western painting for instance, the rendering of material properties was of paramount importance for artist and audience alike. One can think of the reaction the Englishman John Pepys jotted down in his diary in 1669, upon viewing a flower still life by Simon Verelst. Here poppies and a tulip were delicately painted, each flower with the subtle surface characteristics of its petals: "I was forced again and again to put my finger to it to feel whether my eyes were deceived or not." There are many more statements to indicate the wonderment and admiration painters could elicit when mastering material properties. From a critic in the 18th century we learn for instance how the 17th century painter Jan de Heem "… was praised especially for his desire to imitate gold and silver, […] so natural that it seemed to be real gold and silver." Indeed, De Heem's fame and fortune were precisely based on such skills: refined visual evocations

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of a great variety of materials, from his famous glittering gold to much more humble and dusty stuff.

Both quotes are taken from an article by Lisa Wiersma in this issue, about the discourse of the 17th century about the craft of rendering materials. The Dutch term by eminence of the period for this type of work was "coloreren", we learn from her, and it was deemed of great importance. There was a collective know-how for doing this, and various recipes travelled from studio to studio, as becomes also quite clear in the article by Carol Pottasch about the miraculously technical range of the painter Van Mieris. But one could not very well rely on tricks alone – there had to be a constant interplay between concentrated observations on the one hand, and choices from the available pictorial tool kit on the other.

In later art theory and aesthetics this fine art of 'coloreren' or 'coloriet' (later called 'stofuitdrukking', the expression of stuff) seems largely to have been neglected or forgotten, while concepts of beauty, proportion or depth were discussed incessantly. One great exception in the art theory of the past was the work of the German aesthetician and art historian Konrad Lange. For him 'the illusion of materials' (*die Stoffillusion*) was of the essence in aesthetics, and he wrote and theorized about it extensively. Typically, his work fell largely in oblivion during the 20th century. We are happy to be able to present a lucid discussion in this very volume by David Romand of his pioneer views. Here we read among other things about Lange's 'illusionistic aesthetics' (*Illusionsästhetik*), the experience that lies in a process of 'conscious self-delusion' (*bewusste Selbsttäuschung*) by a contemplating subject, a mental oscillation between 'semblance' and 'reality' when viewing a well-made pictorial evocation of materials. For all its philosophical jargon, this seems to describe Pepys's reaction very well, when he jumped from visual to tactile perception and vice versa. Interestingly, this cognitive feedback-loop between 'reality' and 'medium' of the art-*viewer*, seems to parallel the interplay of the art-*maker* between attentive perception and selection of items from the painterly idiom. Is the former (scrutinizing the painted image to somehow entertain an experience of reality) a cognitive antipode of the latter (experiencing reality through the prospective filter of paint)?

Konrad Lange argued how illusion may be a qualified thing, where the viewer is not completely deceived like in a delusion, but has a twofold experience of something presented through a medium, and of the depicted objects as real. In this respect the illusions of space and of stuff are much alike. Just as a painting may evoke a sensation of depth while being flat, it may also suggest very different material surfaces, in spite of having a near uniform surface all over.

Some of this is discussed in the intriguing article on the play with rendering materials in puzzling paintings by René Magritte. It is written by J. Brendan Ritchie and Benjamin van Buren, and aptly titled: "When Scenes Look Like

Materials: René Magritte's Reversible Figure–Ground Motif". It demonstrates that material illusions can come in different forms: a pure material illusion like painting lifelike grapes, but also more complex ambiguities where texture is either attributed to object or scene. One illusionistic step further is to exit pictorial space and investigate the interaction with the pictorial plane: the panel or canvas that serves as a medium to the pictorial illusion. Hannah De Corte investigated the use of making the canvas visible, and thus sabotaging the pictorial illusion. Interestingly, David Hockney created visual awareness of the canvas in a selective manner, and therefore creating some kind of non-uniform illusion. The article "Selective Preparation of Canvas as an 'Artistic Device' in David Hockney's Early Paintings", written by Hannah De Corte further draws attention to the interplay between the physical material of the painting and the material depiction, a topic that seems both promising and rather unexplored.

All this is about visual art, where one can easily appreciate the importance of *Stoffillusion*. But what is the special interest in rendering and pictorial images for those who do vision research on the perception of stuff? Both computer and human vision research aim to find recipes of 'reality', just as artists have done throughout art history. Artist helped to crack codes of our visual system long before science even started thinking about it. The contribution by Di Cicco et al. directly connects (historical) art practice with perception research. It is well known that 17th century painting was not a spontaneous act but demanded careful planning. Paintings were meticulously produced layer by layer and by reproducing this process, Di Cicco could quantify the contribution of layers and thus the ingredients that lead to perceptual awareness. In a related perception study, Wijntjes et al. investigated the pictorial rendering of translucency by investigating sea depictions. In this case the recipes are not explicitly known and thus need to be retraced by explicitly asking observers what information they use. While introspection is a notoriously unreliable scientific instrument, it can be used to formulate hypotheses. The authors used introspections to quantify the various cues leading to translucency. Also, they made a methodological contribution by demonstrating how to quantify the distinguishable levels of a material property. This relatively basic empirical instrument to quantitatively investigate material depiction indicates that the field is still in its infancy: there is a definite need of methodologies to cross the bridge between perception and art history.

A field that likewise seems to linger between infancy and adolescence is that of computer vision. While major progress has been made over the past decade that changed not only science but also society, computers are still not well able to identify stuff, or process non-photographic input (like sketches and paintings). This problem is analysed by Padraig Boulton and Peter Hall in the paper "Under Material Skin Lie the Bones of Identity". They offer an accessible introduction to the field of computer vision while simultaneously

addressing and analysing important findings in the so-called cross-depiction problem: that computers experience difficulties that humans hardly encounter when seeing the same thing depicted in different styles. This touches upon the remarkable phenomenon of perceptual constancy: the ability to discount for changes in the scene while maintaining a constant perception. A well-known example is colour constancy where the perceived object colour does not change despite changes in illumination (e.g., from cold to warm colours). That humans can perceive a similar motif (e.g., a face, or tree) painted in different styles could perhaps be gathered under perceptual constancies. Interestingly, perceptual constancies are not flawless. It is well known that material perception is influenced by lighting, and thus not constant. These constancy breakdowns are often employed by artist: they know how to compose the light and choose the viewpoint to optimally signal their intention.

An interesting example of playing with perceptual constancy outside pictorial space is given by Filipp Schmidt who examined the 3D world of sculptures. These can be especially intriguing in the manner in which they play with our expectations and visual inferences, and in exploring perception of material in relation to form. The article is among other things on shape as an important source of information about material identity, and on ways artists may use shape to create the impression of a particular material – but also employ cognitive aspects like association and causal inference.

In modernist aesthetics, the artist had to maintain 'truth to material', but here we witness the opposite: sculptors who explore wonderful ways in which art may precisely lie about material. Such works not only explore unexpected possibilities of their material; they also probe into some of the cognitive and perceptual mechanisms the human brain employs to deal with the stuff surrounding us. In this way, art may become another, very special branch of perceptual research.

Schmidt ends his article with a series of questions and challenges for the relatively young field, such as investigating the role of object familiarity, or of context effects on material perception. He also notes that there is little research on the *consequences* of material perception. What are the aesthetic and emotional effects for instance from looking at particular materials or transformations?

As this special issue hopes to show, the combined study of art styles and material perception is a rewarding and intriguing endeavour for all kinds of research dealing with vision. This volume is in fact the product of a three-day conference in November 2018, called *The Skin of Things; A Symposium on Perceiving and Painting Material Properties*. We were lucky to be able to organize this meeting in and around the Rijksmuseum of Amsterdam, where we had several excursions and workshops, sometimes in front of the works of art themselves. The idea was to have a true meeting of researchers of different

fields that could contribute to the central theme. Art historians, restorers, vision scientists, psychologists and computer scientists had to communicate and discuss with one another across various fields.

In spite of the diversity in styles and traditions of research, it worked wonderfully well. Some of the excitement may be perhaps be felt in this special issue of *Art and Perception*.

Acknowledgments

The conference *The Skin of Things; A Symposium on Perceiving and Painting Material Properties* was held from Monday November 26 to Wednesday November 28, 2017 in the Ateliergebouw in Amsterdam. It was part of the NICAS/NWO project "Recipes and realities; an analysis of texture rendering in still-life painting and the pictorial procedures of Willem Beurs (1692)", and the NWO VIDI project "Communicating Materials Visually". The symposium was also co-sponsored by Royal Netherlands Academy of Arts and Sciences, and generously supported in terms of organization and facilities by the Rijksmuseum, Amsterdam.

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