

Quality in digital times (short version)

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Is there a digital look as a new aesthetic value emerging?

Everybody asks himself the question what is the scientific-technical concept for the best reproduction of a scene or an image. I would at the contrary ask myself: how efficient is this reproduction for the composition of our awareness, of our senses. This question has become the big overall issue, because now all steps in the creation of an image or scene have become an inseparable unity between Camera and Postproduction and sometimes even simultaneously. This way every retrospective correction or change gets impossible under these specific circumstances.

The Philosophy of the Enlightenment, in particular Immanuel Kant, comes to the conclusion that within the structure of our perception we no longer can assume the separation of **Material** and **Surface**. Our perception begins straight with the experiences of our varied senses; aesthetics expresses this cohesion of experiences. Kant therefore called the aesthetic „The science of the rules of sensibility in general at all.“¹⁾

Aesthetics are therefore an experience with matter itself. It is not a science of beauty or exaltation. **The digital surface becomes the medium itself.** The aesthetics that create the image originate from the material and cannot be seen apart; both build a harmony in the observation of the eyes.

My question should be different: Does the digital image in its own form of existence creates a new appearance in the way we create our images, one that will lead to a changed aesthetic in cinematography? Has the digitalization of the image created new styles, or will we see new signatures from cinematographers?

The development of digital cinematography has been focused from the start on technology, which at best shows a preferred realistic illustration. All technological developments that are created in this context deal with the elimination of artefacts in the image that could disturb a realistic presentation of the image. Digital images have the tendency, much more than classic photography, to become realistic as we capture it. This is because of the technical possibilities of manufacturing and reproducing an error free image today, which is much more advanced now then for example when colour photography was developed. But obviously it does not involve the representation of the features of nature in the most fantastic way. Even when you look closer at colourfulness it is not a standard and no evidence for authenticity of a realistic image. Black and white images – just think about the pictures of wars in the past – are experienced just as real as colour pictures. The horror that they evoke is the same. In both cases it is about the abstraction of the event through the image; also colour can be misleading and lead to a certain abstraction of the image. Altogether it seems to me that colour with all its complicated reproduction technology today became to obtain an objective of by definition and essential unrealistic expressions in the digital image.

¹⁾ Immanuel Kant: *Kritik der reinen Vernunft. Transzendentele Elementarlehre. Erster Teil: Die transzendentele Ästhetik.* Hamburg: Felix Meiner 1956, S. 63ff (*The Critique of Pure Reason, Transcendental Doctrine of Elements, first part: Transcendental Aesthetic*).



1. Sequence MEMENTO [0'50] Christopher Nolan 2000 C: Wally Pfister, Panavision 35mm CS 1:2.35



2. Sequence LIFE OF PI [1'26] Ang Lee 2012 C: Claudio Miranda, Alexa ARRIRAW, Master 2K

Abstraction as artistic method – does this apply in the digital world?

Extracting the essence from the visual material, the abstraction of overabundance of details has proved the right way alongside other art forms like painting, to concentrate on the essence of artistic ideas. But the tendency of the digital image for true to nature images is counter effective to this. Since abstraction is all about artistic principles, it does not evolve out of the characteristic of the medium, but **out of the search for simplicity and clarity of expression in its form**. We need image technology that visually supports the cinematographers in the abstraction of portrayal. Perhaps an authentic special made picture at the illustration can help simplified, abstracted forms and structures. We need image technology that visually

supports the cinematographers in the abstraction of portrayal. Something totally different is decisive: that the mechanisms resp. the algorithms that result in the image rendering processes **allow possible unstructured, unknown, irregular, structures in the image and not analyse them as alleged errors and eliminate them**. But how advanced is the sensitive calculation process of the digital image – for example the complex process of Debayering – based on the paradigm of **probability** and **renown** of certain pixels, and how strong is it influenced by them? **The method of abstraction in art has the goal to allow for unknown, irregular, unsmooth one single creative and distinctive moment or even to create it**. That may also be part of the objectives in further development of digital cinematography indeed, but the processing information of the image of a camera points by definition, whose application possibilities should be as widely diverse as possible, on many simultaneously existing options.

With film emulsions you had little possibilities for specific control of the recorded image structure. It was per se consistent and due to the structure of randomly shaped film grain as accidental and physical hard to manipulate. The structure of the image was only controlled by the choice of film stock and some specific laboratory processes like ENR-silver retention, Bleach by-pass or Flashing. On the other hand these film emulsions had the experience of the last 50 years of photography in them; it came to the audience with a specific image structure and colour design on the white screen. Today all of us work mostly with the same camera in any situation, and all modifications of the image are executed through parameters of the camera's technical systems and its self imposed limits. What looks at first glance like a limitless variety of options in a digital camera, will be carried out in a pre-defined logic in data processing of colours and contrast which provide an indeterminate impression of the appearing image.



3. Sequence DAS WEISSE BAND [The White Ribbon, 2'04] Michael Haneke 2009 C: Christian Berger
S35mm 3-perf 1:1.85



4. Sequence L'ANNÉE DERNIÈRE À MARIENBAD 3 [Last Year in Marienbad, 1'30] Alain Resnais 1961
C: Sacha Vierny 35mm CS 1:2.35

More details, higher resolution – is this the road for the development of fine arts?

Is the creation of our images which we want to express ourselves with, helped by enhanced resolution of the sensor and the reproduction of more details in the resulting image?

I really think that the increase of picture quality can be an important tool in the hand of the cinematographer, **but only when it's used to translate his/her artistic aims through better control over all image design elements.** The focus on their own visual language that is always accompanied with a reduction and selection of the photographic material sets the foundation for a move towards a personal signature as expression of their own purest vision. It is clear that the cinematographers are certainly not helped by a blurred or poorly defined image, and it has to be obvious that the abundance of detail on its self is no value in achieving certain artistic goals. The precept of simplification in the visual concept is taking place for us from painting to photography towards film and has first of all not so much to do with the permanent struggle of the increase of image details.

It is not the technical restriction that I want to speak about. But it is a mistake to see the increase of image resolution of a camera in general as the most important improvement for its quality to create our images; it might be a tool on that way. Let's prove this question by a concrete observation of some paintings of different eras of painting.

1. Painting: DE ASTRONOOM [The astronomer] Jan Vermeer, Delft 1668



Jan Vermeer: *De astronoom*

While the details of the earth globe and the items on the table are painted in all its richness of detail, the body and face of the astronomer look as if slightly abstracted through a diffuser.

Very faint yellow light, that only shows in the highlights on the paper and merges in white.

Interesting desaturation of the warm colours as contrast effect. In the face – on the cheek and next to the nose – there is a rare reddish, as skin tone unnatural light. The same red we will find (weaker) on both back sides of the hands

The painter Jan Vermeer has in his painting THE ASTRONOMER, painted in Delft 1668 already used in his age soft focus as part of abstraction in the wealth of detail; something that we have rediscovered in the 20th century through the development of cinematography. This we could use now with Super35 sensors in digital cine cameras as an important factor for the film language of movies. Not the astronomer and his face are what matters to Vermeer, but the relation to the earth globe, which embodies the revolutionary vision in this image and does focuses subtle the eye of the viewer. He achieves this through

putting the face and arm of the protagonist slight out of focus and position the earth globe in the focus of the picture. For this scene, if you would stage it in a film, you would need the highest resolution in recording technique available but at the same time the out of focus capability to achieve the effect.

2. Painting: HET GLAS WIJN [The Glass of Wine] Jan Vermeer, Delft ca.1658-59



Jan Vermeer: *Het glas wijn*

In an entirely different way, namely with the highest possible precision in performing all the details of the location, of the protagonist's attitude and the expression of the mood in their faces Vermeer works in this painting. With a great virtuosity in lighting and the composition of colours he creates a richness of spatial relations between themselves which impressively support the perspectival arrangement of the scene and the sensation of a large depth of space.

This painting anticipates in a sense an element which the cinematography will later create as the "deep focus"- style in the 40's through the development of wide angle - lenses with the use of a maximum of depth of field within the image. Elementary part of this film style is an optimal resolution of the image recording system.

3. Painting: SOUVENIR DE MORTEFONTAINE [Recollection of Mortefontaine] Camille Corot 1864



Camille Corot: *Souvenir de Mortefontaine*

The painter Camille Corot has painted 200 years after Vermeer *SOUVENIR DE MORTEFONTAINE* (1864); his touch seems to anticipate on a method of impressionist painting and has made the retraction of detail his style-forming principle of his work. Especially the most precise representation of details, that in this occasion would mean the death of the artistic vision in this image, shows that guidance in details work. With schemes instead of totality and with a sensitive light mood and little contrast instead of a striking representation of the wonderful, light-filled place. Interestingly enough Corot owned a collection of landscape photographs, with all it's technical limitations at that time; these showed a characteristic definition loss for technical reasons, and Corot was possibly excited by this in his work. Wherever the vision came from – the softness and abstraction of the detail accuracy are basic elements in this painting and a starting point of the great effect it had on many other painters.

4. Painting: NIGHTHAWKS Edward Hopper 1942



Edward Hopper: *Nighthawks*

Also in modern art we can find this style: Edward Hopper's famous painting NIGHTHAWKS from 1942 achieves this particular effect first of all by the abstraction of detail in the chosen lighting and colour distinctions, in favour of almost combined monochrome appearing colour surfaces. He chooses the simplification of details (for instance at the coffee machine) and deduction of nuances in the many surfaces that emerge from varying light to favour a concentration on some highly saturated primary colours. They structure the image graphically and divide them in almost monochrome blocks; this is the road to abstraction that Hopper chooses for his picture. The displayed image is never not defined or even arbitrarily. In contrast of the blind surfaces of the walls and the bar, the painter stays with sensitively emphasized depiction on the faces of the pair, which he achieves through a fine detail rendition. Abstraction, applied for both this painting as for photography, does not imply poor resolution or lack of attention to detail. This is especially visible in the lighting of this image, that Edward Hopper specially emphasized: The faces of the couple come alive through intense sculpted contrasts. And even in the window of the business on the opposite side of the street, the light with its characteristic shadows are still accurately painted. The light plays an important role in the artistic abstraction; we find this significance equally in photography. Therefore we need cameras that are not only able to capture high contrast but also fine details in lighting.

5. Painting: SELBSTBILDNIS [Self-Portrait] Carel Fabritius ca.1648-50 (Rembrandt-Schule)



Carel Fabritius: *Selbstbildnis*

This painting of Carel Fabritius, which has been regarded for a while to be a painting from Rembrandt, embodies the style of Dutch painting which here refers in a complete different and new way to the expressive power of abstraction. Fabritius paints his own figure as well as the background in bold, broad brushstrokes; occasionally he left even the canvas visible because the painter's most important aim is not the completeness of his painting but its mode of expression. With strong shadows on his face caused by the contrasty light coming in a steep angle from above he creates a kind of harsh relief with his brushstrokes and the physical structure his paint application. With its bold realization, vigorous lighting and range of colours this painting shows clearly the painter's influence by the Rembrandt School.

6. Painting: PORTRAIT VON TITUS, SOHN DES REMBRANDT [Portrait of Titus, Son of Rembrandt]

Rembrandt van Rijn 1662



Rembrandt van Rijn: *Portrait of Titus, Son of Rembrandt*

As a summary of my reflections about abstraction I would like to show you a picture that has all these elements combined: it's the portrait that Rembrandt van Rijn painted of his son Titus. The hair of his son is painted with only very little details in his hair; completeness is avoided. It is left to the imagination of the viewer. Rembrandt avoids also the depiction of the surrounded space; it remains suggested, but in such a way that the focus of the viewer is not distracted by the background. The face itself is very softly illustrated; the painter doesn't lose himself in details.

The power of the image moves from the angle of lighting, it comes full of power from the side causing a high contrast and sculpts around the face. In the foreground we find Rembrandt's special style of working with light and shadows. **The abstraction of details, the simplification of less important parts in the image and the expression of light** give the face a great presence and provide the image with a suggestive effect for the viewer. The reproduction of natural light is the decisive element by which the other used techniques by the painter in this image keep their appropriate presence.

With these different examples I want to explain that focus and resolution are not every time and everywhere the appropriate criteria for the quality of an image. **The wealth of detail in an image has only limited meaning for the artistic expression.** On the other hand the rendition of light comes for every artistic style as a decisive importance. Particularly in the last couple of years when probably the most substantial progress has been made, but in case of producing the visual diversity of natural light in the way our eye experiences this, we are still a very long way off.



5. Sequence DIE ANDERE HEIMAT 2 [Home from Home: Chronicle of a Vision, 1'57] Edgar Reitz 2013
C: Gernot Roll Alexa 1:2.39 Hawk V-Lite Anamorphic Lenses

Digital images and the question of its authenticity

Digital images are not authentic and cannot be, due to the transformation process that takes place between the physical working of light that hits the sensor and the pattern of photo cells that reconstructs the colours of the image to the big screen. The algorithms that are used in this process are developed to the highest standard available in science today. But this decision is still based on, with the best knowledge and experience of the engineers, what element from the recording is merged with which pixel and what value is given to it in the constructed image. The quality of the image is therefore highly dependant on the available computing power, which is necessary to be able to include the largest possible parameter around the respective photo cell in the reconstruction of the image together with other pixels. Such an image cannot be, since it is easily influenced, an authentic image. It can have the quality, to get close „to reality“. Higher image detail at best deludes more authenticity – the basic characteristic of the method of image building is not becoming different because of a higher resolution, just more perfect. The wealth of detail boosts the tendency that digital images are believed to be more true to nature.

Does the dramaturgy of our images need more technical vision for Cinematography?

Artistic decisions in cinematography are always connected with the control of technical developments. Both have a close interrelation to each other. In the history of cinematography we have learned that not only visual ideas have triggered the search for suitable technologies, but the scientific research reversely has in the area of film technology as well; with its discoveries and developments it also allowed new styles, genres and ideas.

Modern camera technology today gives us great diversity in production labour, as long as the time required for creative work, like placing the lights is available; but with the digital camera's we can also decide more and more in postproduction. With camera and optics we look for the best technique to implement a certain idea or signature for a whole movie. But the correct brush is still determined by the right stroke with it, with which the colour is brought to the canvas. The painter finds the right brush among many others, but also the paint just comes out of the tube as a raw material, without skill there is no picture. With these materials the painter makes them his tools, hence the request from camera people for transparency in the controls of the camera, to make faster and more precise artistic decisions when creating images.





6. Sequence [L'ANNÉE DERNIÈRE À MARIENBAD 4 \[Last Year in Marienbad, 1'14\]](#) *Alain Resnais 1961*
C: *Sacha Vierny 35mm 1:2.35*

Cinematography is translated as: writing of movement – **the cinematographer is a movement writer**. But cinematography in the Greek origin of the word does not refer to the mechanism of the device but to the **holding of an inner motion and write down the emotion or thought**. To follow such a motion with the camera and make it visible means, to obtain the expression of the image in the same fashion on the set as well as in postproduction.



7. Sequence [BARFLY \[2'15\]](#) *Barbet Schroeder 1987* C: *Robby Müller 35mm 1:1.85*

With a view to the question of quality of artistic conversions in the digital era I certainly see basic social conditions as well, who next to the reflections on improvement of the manufacturing processes maintains to influence the cinematographer on their work:

The quality of today's high resolution images is, whenever you take the criteria of technical reproduction of our era, that they should always comply with the need of permanent revision of necessity to a partial simplification. To be able to stay compatible with constantly changing systems, inevitably this approach always leads to processed surfaces: consistently perfect, amazing in its uniformity and style setting. The clearly appalling looking structure of the flawless electronical image now unmistakably stands on the big screen sometimes. This is actually the new threat of digital cinema and its perception: **to create a visual style principle that only from technical necessities arises and nevertheless dominates the aesthetic values.**

The physical energy of designed light – how is the mood in Digital projection?

The quality of an image for cinematographers means most than other named factors the renewed encounter with the power of light, salvaged in digital projection from its initial impact on the photo cells in the camera. How much does the character of light changes and its impact in this new process of technical transformation?

Do the emerged pixels still embody the original energy of light? What does the materiality of light mean in the digital projected image and how does it possibly change the basic mechanisms of our sensory awareness, that we only know as a result, or synthesis of our vision? With a view, that may touch us, but maybe not?

How do we define this visual matter called light, after the physical reaction of light on film material and its direct visual image in cinema is replaced by a new technology? In physics, light is described on one end as electro magnetic energy, and on the other end as a flow of light quanta, or photons that are the ingredients of this magnetic energy. With the wavelength of radiation that takes place there is a specific stimulation of the eye that leads to the sensation of colours. But what has happened to this energy that has hit the sensor with photon flows and is transformed into an electric energy? Is it lost in the debayering process? Or does it enter the process as an energy? Does it return through calculated pixels back on the screen and into our eyes? The translation of natural light in the projectors could be a crucial topic that decides on the quality of the images.

The emotion of clinical clean images that we often connect to images produced through photo cells seems to come out of a static, non-active structure of light energy in the projected image.

Or reversed: the perceived lively movie image appears to get its power from the unpredictability of light energy in the silver image – it cannot be calculated. The energetic perception of the eye does not let itself calculate as well – we just don't know exactly what the eye brings, since it's mode of operation not exactly corresponds to our RGB model. We only know what originates in the synthesis of our perception from the signals of our sight.

Apparently it is not the computability of the impression that concerns and moves us, but its changes in the structure of time. In short: Light as an element of permanent and unpredictable renewal. But sensors and debayering processes have to be *qua naturam* computable structures – only by their computability they will accomplish their functionality. **But don't they eliminate the structure of unpredictability with this necessary characteristic, whilst they are only capable to work within the limits of causality?** The unpredictability appears at this moment the antithesis of science, but scientists themselves know, that probability in science as a basic element is inherent.

What I am interested in, is the unplanned change of physics that escapes the scientific calculations, but does determine our attraction. The key question is: how open are digital systems for this and how much prepared to incorporate random and uncalculated colours and movements. Is the digital *faster-higher-further* perhaps the wrong way, so that our findings for photography can lead to motionlessness, to a digital standstill?