

Cordula Hesselbarth: Laws of Nature Seen through Art

A conversation with [Peter Tepe](#) | Section: [Interviews](#)

Cordula Hesselbarth, on the one hand you are a scientist (you teach the subject *media-based scientific illustration* at the Fachhochschule Münster), then you yourself spent many years working as a scientific illustrator. But at the same time you also work as a visual artist. For w/k this constellation is extremely interesting. Could I suggest that for Part I of the interview we focus on your work as an artist? Cordula Hesselbarth the scientist and teacher of scientific illustration should then be the subject of Part II.

Agreed.

First of all I would ask you to give us a typical example of how you approach your artistic work.

I would like to talk about my work *Kontinuum* (Continuum) to describe what inspires me in artistic terms. It is a tableau 30 metres long, assembled from 34 individual canvases and developed over a two-year period from 2012 to 2013 for the Ausstellungshalle am Hawerkamp (Exhibition Space Hawerkamp) in Münster.



Cordula Hesselbarth: *Kontinuum* (Continuum; 2012/13) Exhibition view. Photo: Hermann Dornhege.

There is quite a lengthy back story to this work. I am a visual person which is why I often sketch things as a way of better understanding them. So over the years I have accrued a number of little “thought or idea pictures” – from outdoors in nature, from photos, while talking to scientists or also parallel to something I’m reading. They are rough sketches, simple drawings, but also physical simulations done in 3D software. I then took these motifs further by adding greater detail to the drawing, combining them or reconstructing them on the computer.

In my project *Kontinuum* I gathered a number of these “thought pictures” into a single work. I began by constructing an overall composition on the computer. This was a protracted process with numerous altered versions. Then I executed each of the picture sections step by step, employing classical oil techniques with glazes and just a few drawn accents. During the lengthy process of transforming the motifs I was only able to see segments of the entire piece at any one time as my studio is not large enough to encompass the entire ensemble. Only once the exhibition went up did I for the first time finally get to view the work assembled in its entirety.

At the core of *Kontinuum* is the idea that one thing flows into another, one thought into the next, one form into a second, quite like a film. The work consists almost entirely of grey tones with just a few dramaturgically set coloured accents. As you proceed along the work you will encounter movements,

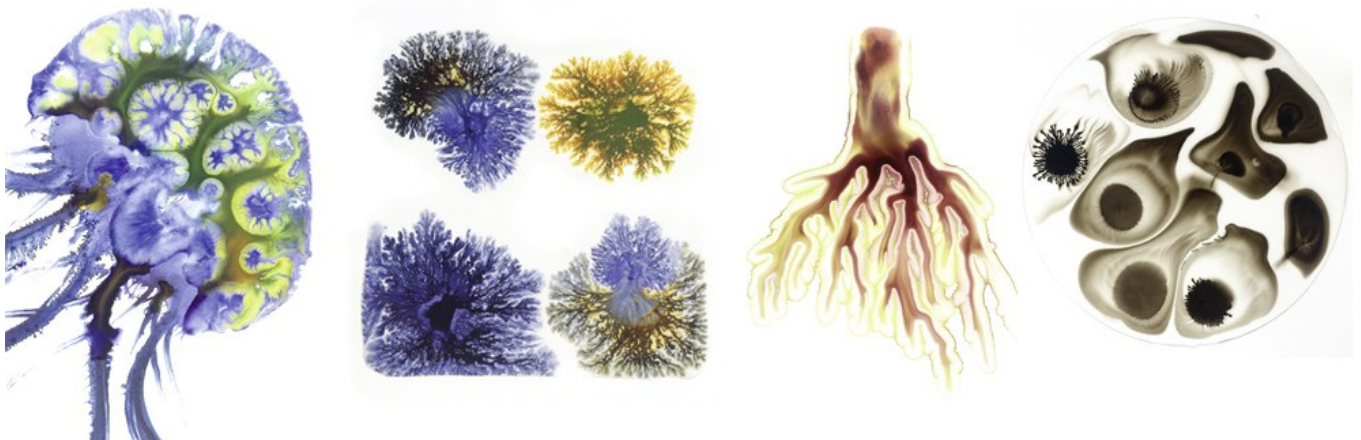
moments of calm and rhythms. Many of the motifs in the course of the long pictorial stretch act like metaphors for certain occurrences or connections in nature, such as the motifs of the spark of life or of the swarm, or the idea of the dual nature of waves and particles, of the helix, of order and chaos. This said, they are not about reproduction, illustration or explanation of such phenomena but are my free artistic interpretations of these ideas. Creating images is my way of appropriating reality.

Please describe your artistic method.

The inspirational source for my pictures comes predominantly from observing nature. I often discover en passant and unexpectedly natural phenomena that fascinate me. I observe, sketch, film and photograph a lot. The material I gather this way I then work on by deforming, alienating, distorting or reassembling it. In addition, I also generate forms digitally and simulate physical attributes in virtual space. I then render these pictorial worlds using classical techniques like painting, collage or drawing. Each time, the way I proceed is different.

Can you describe these procedures in more detail?

The first aspect of my approach is to take advantage of the laws of nature to generate forms and images. As one example of my method let me describe the capillary forces which cause colour pigments to give rise to visual formations before my eyes as if of their own accord. I make use of the tendency of fluid substances to branch out in ramifications. These so-called dendrites are found in various contexts in nature, for instance in trees, blood vessels, neural pathways or river deltas. The astonishing aspect here is not just the visual similarity of all these forms but that the way they all come about is truly subject to the same laws of physics.



Cordula Hesselbarth: *Fließbilder* (Flow patterns; 2016) Photos: Cordula Hesselbarth.

I am interested in harnessing the laws of nature as a driving force to generate images because in doing so I cease to be the creative agent behind the work. I intervene only slightly or step in just as a guiding influence to foster or catalyse certain processes. Nature itself is creating the pictures! I find that so much more exciting than my own creations. For example, the distortion of water surfaces registers linear formations as a reflection of the surroundings. I motorically simulate natural activity by means of drawing. My drawings are responses to dynamism in nature, whereby my traces resemble those found in nature or mimetically emulate them. In doing so, my drawing hand is constantly learning. I want to create images that reveal the natural laws of their own formation. A good example of this approach are the works *Reflexfiguren* (Reflex figures).



Cordula Hesselbarth: *Reflexfiguren* (Reflex figures; 2013). Photos: Hermann Dornhege.

What other artistic procedures do you work with?

Another method I use relates to re-enacting scientific procedures or forms of representation that I then play around with. I find stimulation for this in anatomy and the preparation methods used in it, in botany and its herbariums, but I am also greatly inspired by imaging techniques and the microscopic world. The various example of images shown here explore different methods of collecting, archiving, counting, classifying, dissecting and disassembling.



Cordula Hesselbarth: *Herbarien und Bildnotizen* (Herbariums and visual notes; 2017). Photos: Cordula Hesselbarth

Do you employ further artistic techniques?

Yes, I generate my own forms from nature, a kind of “virtual nature”. By collecting and modifying natural materials and appearances I use them like raw material. For instance, I form virtual sculptures from the gelatinous mass taken from jellyfish, meat, branches and other perishable materials. The result are entities made of biomass, in other words sculptures that in this form could never naturally occur. Only through computer-based simulation is it possible to create sculptures from “living” materials which in reality – unlike wood, stone or metal – would instantly disintegrate the moment you disconnect them from their supply of vital support or remove them from their natural environment. Since the early 2000s, I have built an entire modular system from biomass and transposed this into large-format oil paintings. I don’t just want to create images in crayon and paint but also by using natural phenomena that are transient, volatile and fragile such as flames, reflected light, billowing smoke or dripping water, in other words with substances that are not properly suitable for producing pictures.



Cordula Hesselbarth: *Biomasse-Ring* (Biomass ring; 2006). Photo: Hermann Dornhege.

Do the light works you have been making over last few years also fall into this category?

Since 2015 I have been developing a larger series of *Lichtformen* (Light forms) and *Lichtfiguren* (Light figures). I am fascinated by ephemeral, moving light phenomena resulting from caustic effects. These are about refractions which, unlike light focused clearly through a cut lens, show up blurred or distorted due to glass shards or moving surfaces of water. I treat the fleeting substance of light as a kind of “light brush” which I use to paint my own forms. So I sort of capture the light in order to draw with it. Using this technique I developed myself I am able to put fragile reflections of light to use in my artistic work. This has resulted in paintings and prints in which, like snapshots, I have captured the moments of emerging forms, but also videos that show these evolving forms in motion.



Cordula Hesselbarth: *Lichtfiguren* (Light figures; 2015 – 2017). Photos: Hermann Dornhege.

What is the role of the moving image in your artistic work?

For me the dynamic aspect is very important since movement and transience are characteristic particularly of the shimmering, iridescent light phenomena I use as the base material for these works. So I sometimes combine the – static – paintings with projections of videos or show them in conjunction with screens on which the moving forms can be seen.

What are you seeking to achieve by using moving image media in your art?

Movement is a very important aspect of my artistic work. For instance, this is how my drawings are “set in motion”. You can see an example of this in my wall installation *Lebende Zeichnungen* (Living drawings).



Cordula Hesselbarth: Lebende Zeichnungen (Living drawings; 2017). Photo: Cordula Hesselbarth.

Each of the motifs in the drawings has been selected from a movement, such as falling cubes, swirling clouds of dots or spreading ramifications. Here the pure depiction on paper was no longer enough to express what I was seeking to show. The sequence of animation on the screen supplements the moments before and after the state captured in the drawing and underscores that what we are looking at is a transitional moment within a process.

When you look back over your artistic development can you make out different phases?

By the 1980s, my pictures were already very preoccupied with geological motifs: ammonites, fossils, sediments, crystalline pockets or rock formations. In addition, at that time I was also interested in the dynamics of fluids, a theme I addressed in large-format *informel* gestural works. In this phase elements of abstract calligraphy entered into my work too, a discipline I pursued and developed in my painting while studying at the Hochschule für Angewandte Wissenschaften Hamburg (Hamburg University of Applied Sciences) under Martin Andersch and during my studies at the Kunstakademie Münster (Academy of Fine Arts Münster) under Gunther Keusen.

Later the development of forms in nature became important in my work. From the late 1990s on, I started making my virtual sculptures from biomass. Parallel to this was a phase of intense digitalisation in my work. I began producing pictures and sculptures in three-dimensional virtual space, morphed and

influenced them through digitally simulated physical forces, developed procedural structures with software and discovered aesthetic qualities particular to the digital realm. And today it is still a challenge for me how best to reconcile these different pictorial languages and to ally a specifically digital, highly synthetic aesthetic with the character of the hand-painted and traditionally drawn. So alongside the digital techniques I also taught myself painting techniques as used by the Old Masters in order to render contemporary motifs – ultimately, the objects viewed with a scientific gaze – in the manner of traditional techniques. I wanted to paint the moist, fleshy interior of an oyster or a microscopically small parasite in the style of Goya.

What are your major artistic objectives?

I don't paint to "express myself" but to isolate, capture, show, internalise and understand. I show nature as I experience it or feel it; however, this is not about my particular experience or feelings but about the things of this world. Each of my pictures bears testimony to something particular, is evidence or a document of a process. I go in search of occurrences that nature itself draws. I perform an artistic analysis of objects in an endeavour to reduce them to their inner principles.

For me the act of producing pictures is a like a process for extracting rules from the environment. Artistic images are, if you like, a way of boiling things down to their essence. I isolate something I have seen in nature, cleanse it and distil what I perceive to be its principal quality. Images are like concentrates of this kind of natural experience which reveal the laws concealed behind it.

Quite a number of people are interested in modern science and the advancement of knowledge achieved in this field, but only a few of them are also artists who try to put this knowledge to artistic use, as is the case with you. Can the artistic procedures you apply to scientific knowledge be characterised in a more general form?

All the previously described forms of pictorial invention derive from my wish to give shape to ideas and to lend, as it were, material expression to thinking. This is also where my strong connection with science comes into play, since science itself is a way of describing the world and of developing concepts for all the manifold phenomena of nature. These theories, the way in which we human beings perceive and describe the world, are of immense interest to me.

I see affinities between the perceptions of the world as practiced by science and art. Both describe the world in their own way: science with formulae, art with forms. My interest concerns the concepts that scientists have developed to define the world. I try to comprehend these and find my own artistic avenues of approach towards processes and phenomena in the world.

Can you offer a more precise description of your position vis-à-vis science? What is your artistic intention in how you relate to science in your art?

In my art I don't want to be driven by my personal aesthetic taste. To claim I do this or that merely because it strikes me as beautiful would be arbitrary. I want to take in the world with my eyes, I want to show simply everything, in all its monstrosity, banality or beauty. I'm not so interested in finding harmony or symmetry in my motifs, let alone forcing them to the fore. So I'm less likely to choose a rose as my pictorial subject than an earthworm. Everything that exists is valid and has its own function. Nature isn't bothered about my value categories of beautiful or ugly, worthy of depiction or trivial. It is a learning process that helps me to challenge my own measures of value.

Ideally, science adopts an objective position. Clearly, there is no such thing as complete objectivity when human beings are involved but one can try to get closer to it by sticking to pure observation. As an artist I strive to show the objects of the world without imposing anthropocentric connotations or rationalisations on them. By setting aside my own values I am trying to voice a scientifically objective position.

I show phenomena but don't explain them, since that would raise the "why" question, would inquire into the cause, purpose and meaning of events. The aesthetic gaze is the non-analytical gaze that perceives sensorily and sets aside human categories. This non-interpretative observation is similar to a scientific attitude. In art it enables me to see things simply as they are and thereby accomplish pure contemplation.

Scientific methods seek to formulate an objective description of the world. In this I see a similarity between scientific and artistic approaches. It is my aim to come as close as I can to a form of "objective art".

Translation: Matthew Partridge.

Picture above the text: Cordula Hesselbarth: *Kontinuum* (Continuum; 2012/13) Exhibition view. Photo: Hermann Dornhege.

Tags

1. Cordula Hesselbarth
2. natural sciences
3. painting
4. Peter Tepe
5. science-related art