

ESSAY

## ON THE EDGE OF THE IM/MATERIAL

‘Matter is creation, its evolution, its nature,  
it’s us. It’s the source of all energy and  
the source of all of our questions. I am  
fascinated by matter in all her shapes and  
all her mysteries. Perhaps I am even in love  
looking around me, to how she continuously  
transforms in front of my eyes.’<sup>1</sup>

ARIANE KOEK

A woman stands as if surrounded by a halo of metallic flowers. They are simultaneously visible and invisible, material and immaterial, in and out of sight when she moves. It's a dress caught in the process of becoming. It's on the very edge of the material world – a lace of light. A cloud of whispers. All dancing on the skin.

This look created for the *Aeriform* collection (Spring/Summer 2017) exemplifies the magic and technical brilliance of the work of Iris van Herpen. Very fine stainless-steel sheet was laser-cut and waterjet-cut to form parametric lace of great delicacy, which was then hand-moulded to form three-dimensional hovering spheres that reflect light in movement. Iris investigates, probes and pushes both her imagination and the latest technology to the limits, inspired by science and the natural world, to explore materiality and its connection with the human form. By using the latest technologies, and combining their use with craft skills and hand-finishing, the overall effect is to create work which seems otherworldly – as if coming from another time and place.

The ethereal *Aeriform* collection was inspired by a conversation Iris and her long-term collaborator, the Canadian architect Philip Beeseley, had with the physicist and theorist Subodh Patil at CERN (Centre for European Nuclear Research) about quantum foam. The theory posits that there are tiny fluctuations in space and time that lead to miniscule new dimensions that unfurl and then furl back in on themselves. Particles of matter and antimatter are constantly created and destroyed in these miniscule new dimensions to create subatomic objects called virtual particles. Inspired by this, the dresses in the *Aeriform* collection seem to be simultaneously present and absent, material and immaterial. They can never be fully seen. They possess a haunting liminal im/materiality, creating negative and positive spaces with the shadows and light they cast.

This increasing drive in Iris's work towards taking fashion to the very edge of materiality and the physically impossible has been apparent ever since her first encounters with CERN in 2014. She was invited as a guest artist on the Arts at CERN programme and she has been returning ever since. Part of Iris's fascination with CERN, the world's largest particle physics laboratory, outside Geneva, is that its technology and science give her another perspective on the fundamental forces and elements of nature which are beyond beyond the ability of the human eye – zooming down to the tiniest possible scale of matter. The work at CERN focuses on working with the tiniest possible scale of matter, particles known as quarks, which make up the material world we live in. The spaces between quarks, however, when looked at in the quantum scale as at CERN, are vast in comparison to the size of the actual quarks

which make up matter in our world. Matter is revealed to be not the solid fabric of the universe we think it is: it is full of holes. Particle physics reveals that only 5 per cent of matter is in fact substantial, and yet this comprises what we see and feel in our world.

It is this drive to go beyond accepted perception, to see deeper and beyond limits that Iris shares with the 10,000 scientists at CERN. They have a very special kinship because of their shared focus on the relentless exploration of matter – its limits and composition – and what makes Iris so unique is that she does this within the discipline of fashion, using it as the means for her explorations and experimentations. CERN does this with the help of the Large Hadron Collider (LHC) the largest machine and particle accelerator on the planet, spanning some 27 kilometre (17 miles) in radius, and running underground beneath both France and Switzerland. It is one of humankind's most ambitious attempts to reconstruct nature's power by using technology to investigate the elements and invisible forces that shape our material world. The LHC does this by recreating the moment immediately following the Big Bang, when the universe was born, 13.8 billion years ago. Invisible particles – the fundamental building blocks of matter, which are even smaller than atoms – are steered around it by magnets underground which are 100,000 times more powerful than the Sun. The particles are accelerated just under the speed of light in opposite directions, and smashed together precisely at the centre of each of the four detectors on the LHC ring. The data collected from these collisions gives scientists clues about the composition of matter and our existence.

Iris shares a special kinship with CERN's scientists in other ways, too. Both share a passion to unlock nature's secrets, if and when it allows them to do so. This is why, when people say that Iris's work is from the future and futuristic, she replies it isn't. There is so much in nature we still don't know, and which both Iris and physicists would say is just waiting for us to discover. This is why Iris doesn't consider her work futuristic, as her collections are often described. Her work is inspired by the secrets of the physical world, which both Iris and physicists say already exists even before they find it, and which nature selectively chooses to allow us to rediscover. However, to unlock these secrets demands commitment and determination.

There is in fact a common joke told by physicists: 'How do you tell the difference between a physicist and everyone else?' The answer: 'Everyone else will stop at the brick wall. A physicist will keep running until the wall caves in.' The same could be said for Iris and her approach to materials. You want to create a dress that looks like water, but are told it is technologically 99 per cent impossible? If you are Iris, you try and try again

until it happens, as with the 2013 'Water' dress, which was a study to capture the immateriality and fluidity of this inorganic compound. As she has said herself: 'I often get inspired by materials I cannot work with.'<sup>2</sup>

And it's not just unworkable materials which inspire Iris. The inspiration can be invisible forces, too. During her first CERN visit, Iris was fascinated by how electro magnetism is used as the invisible force in the LHC to accelerate and control, with extreme precision, the motion of the particles, and bring them to collide at high energies just under the speed of light. It is one of nature's four invisible fundamental forces shaping our world – even stronger than gravity. Inspired by the LHC's collaboration with this natural force, Iris decided to harness it to create the 2014 *Magnetic Motion* collection, in collaboration with Philip Beesley and with another frequent collaborator, the Dutch designer Jolan van Der Wiel. It is one of the few times that Iris has invited the unpredictable into her final creative process, daring to engage with a force outside her own control with unknown results (although the shoes were moulded by hand right at the very end). Iron filings were mixed into liquid rubber and subjected to magnetic fields to create sculptural structures that seem to defy the laws of gravity. Thus the minds of the physicists working at CERN who are unlocking the secrets of the fabric of the universe are fuel for Iris's creative process of exploration, experimentation and transformation.

Since Iris first came to CERN, her designs have increasingly played with daring levels of transparency and invisibility. Before CERN, her collections such as *Wilderness Embodied* (Autumn/Winter 2013) and *Biopiracy* (Autumn/Winter 2014), closely investigated 'structural materiality' – how matter is put together. Since her encounter with CERN, her creations have pushed materiality itself to the limits of visibility so that they seem to be suspended invisibly on and around the human body, or even bursting out of it. But her deep dives into scientific ways of knowing are not just confined to physics; they have taken many different sciences for inspiration. Take, for example, the *Sensory Seas* collection (2020), which has as one of its inspirations the intricate drawings of the human nervous system by the Spanish neuroscientist Santiago Ramón y Cajal. He was the first to observe neurons in the process of constantly forming new labyrinthine connections with one another in the human brain. He called the cortex 'a garden filled with innumerable trees' and compared the insatiable capacity of the brain as being to 'the hum of a restless beehive which we all have within us' – words which Iris finds profoundly inspiring. They break down the binaries between the inner and the outer, between nature and the human, and point to a more holistic vision of the world, in which all beings are interconnected and entangled in their vitality. This manifests

itself further in the *Sensory Seas* collection, which also draws inspiration for its materials and forms from the diverse class of marine life known as the hydrozoans. There are nearly 4,000 different species of these delicately laced, often transparent, sea-beings, which are related to coral and jellyfish. As Iris says 'When looking at them, I see living lace of liquescent labyrinths, and when I observe their mind-shifting anatomies, I think of Ramón y Cajal [...] the fragility and the constant change of appearances in both systems drew me. Our own sensory systems, and that of the metamorphic sea life, formed an unseen connection that I wanted to weave together.'<sup>3</sup>

The result is a look which has sensorial geometry, which is like an explosion around the human body, with three-dimensional layering within the silhouette. Dark purples, gentle ochres and shades of turquoise were painted in oil by Shelee Carruthers, then 3D-layered transparent laser-cut PETG leaves were heat-bonded to the numerous transparent digitally printed glass-organza layers. Each layer was drawn to hang upwards, as if in defiance of gravity. As the body moves, the dress moves like a living sea creature, transforming the human silhouette into a scintillating being alternating between land and sea, suspended in an unknowable in between, each step a constant metamorphosis and fluctuation in space and time.

This love of movement and transformation, which can be traced back to Iris's own training as a dancer, as well as her love of diving in the sea and from the sky, can also be seen in the 'Red Glitch' dress from the *Shift Souls* collection (2019), which is again a collaboration with Philip Beesley. It is one of the few looks to be deliberately named after technology – in this case the spurious and short-lived fault in an electronic signal – and it indicates the collection's focus on the mutability of identity and its connection with our physical and spiritual bodies in the digital age. The vermilion cloud printed silk is hand-bonded to mylar and laser cut into the finest lace of 0.55–1-millimetre harmonic waves. Each wave is connected to all the other waves, so that together they are balanced to create a latticework of quivering echoes – all cut from a single piece of material. Iris describes this as looking like 'a micro-dance of movement all around the skin' which expresses our invisible 'vibrational bodies', including the energy and vibrations both outside us and in the different organs and tissues within us.

Thus, the looks which Iris creates are deeply probing investigations into the boundaries of reality and perception, which use the latest technologies as the tool, rather than the driver, to materialize her creations in the real world.<sup>4</sup> The looks are the embodiment of deep philosophical, technological and poetic enquiries powered by the imagination and her

voracious reading and intellect. However, it is not easy. Struggle is an inherent part of the creative process. For Iris, working with materials feels like being locked in a duel. As she describes: 'Matter is both my tool and my muse, but sometimes also my enemy, as my mind always moves faster than today's reality. As fashion is a form of art that is so directly related to me and my body, it becomes my dialogue between my inside and my outside, where I try to find the meeting point in between, each time taking a small step beyond my usual understanding of physical reality.'<sup>5</sup> Both body and mind are implicated in the process, alongside the materials and technology Iris works with; they are all symbiotically connected and influence each other in a creative interchange. Sometimes, Iris makes dresses that only come 'alive' when they respond to the movement of the body; other times, she creates dresses that restrict the body and dictate the way it moves. She often talks about appreciating the process more than the dress itself: for her, what matters most is the discovery and exploration of the unknown.

This love of the creative process and becoming – of making matter come into existence – is very close to one of the leading philosophical movements today: vital materialism. It is a philosophy that derives from particle physics and was first put forward by the physicist-turned-philosopher Karen Barad. In her seminal book *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter*, Barad posits that matter is not a fixed essence, 'rather, matter is substance in its interactive becoming – not a thing, but a doing, a congealing of agency.'<sup>6</sup> Matter is constantly coming into being and interacting with everything around it. Iris echoes this idea when she talks about her own creative process: 'The ability to transform a material feels like magic, like an alchemist's dream. Even a very small transformation, like the pleating and stitching of a fabric into a three-dimensional texture that floats together with the body like a jellyfish moving underwater, can impact me. It's not so much the outcome, it's more the process of metamorphosis that strangely enough makes me feel more part and more aware of this planet.'<sup>7</sup>

Iris's extraordinary work – its otherworldliness, sensuality and technical skill – is fashion moving towards a vital materiality and a philosophy of being. But it is also even more complex than that. It has a liminal im/materiality, existing on the perceptual border between the natural world and the human, the opaque and the invisible, science and magic, which seems to come from a moment in time we haven't seen yet. It is timeless and placeless precisely because of her unique fusion of hand and technology and her crossing over of borders of knowledge, knowing and sensing. Her inspiration is the beauty of nature, in all its forms and endless process of becomings,

as described by philosophers Gilles Deleuze and Pierre-Félix Guattari: 'The pure plane of immanence [...] upon which unformed elements and materials dance.'<sup>8</sup> Ultimately, however, it is Iris's unique imagination – that magical place where the alchemy of the creative process happens – which propels her into the unknown, enabling material to im/materialize in ways it has never done before:

'Here, on the edge of what we know, in contact with the ocean of the unknown, shines the mystery and beauty of the world. And it's breathtaking.'<sup>9</sup>

1 Rebecca Mead, 'Iris van Herpen's Hi-Tech Couture', *New Yorker*, 25 September, 2017.

2 Unpublished correspondence with Ariane Koek, May 2023.

3 Unpublished correspondence with Ariane Koek, May 2023.

4 Iris has said that she turned to technology after she launched her own label in 2007, because she could see that 3D printing offered her ways of fulfilling her imagination that the hand alone could not. Her first collection to use 3D printing and new technology was *Crystallization* in 2010. Interview with Ariane Koek. *System Magazine*, 10 (Fall/Winter 2017), p. 298.

5 Unpublished interview with Iris van Herpen by Ariane Koek, Spring 2019.

6 Karen Barad, 'Posthumanist Performativity: Towards an Understanding of How Matter Comes to Matter', in Stacy Alaimo and Susan Hekamm (eds), *Material Feminisms*, Bloomington and Indianapolis, Indiana University Press, 2009, p. 146.

7 'Iris van Herpen: On Matter', in Ariane Koek, *Entangle: Physics and the Artistic Imagination*, Berlin, Hatje Cantz/Bildmuseet, 2019, p. 71.

8 Gilles Deleuze and Pierre-Félix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia*, New York/London, Bloomsbury Academic, 2013, p. 255.

9 Carlo Rovelli, *Seven Brief Lessons on Physics*, London, Penguin, 2015.