TRUE**DESIGN#1**

COMMITMENT TO DESIGN Konstantin Grcic redesigns the Ceramica

REARVIEW MIRROR Nostalgic designs that still shape our world

ZEITGEIST Pioneering 3D printing and architecture

INNOVATION & MATERIALS What materials are driving watch designs?

BY RADO
SWITZERLAND

“DESIGN

IS

OUR DNA”

FOREWORD

GOOD DESIGN **NEEDS TIME**

Matthias Breschan, CEO

Matthias Breschan, CEO.
Photo Anita Schlaefli

It is with great pleasure that I welcome you to the very first issue of True Design. At Rado, design is our DNA – we not only regularly win design awards for our watches, we are also heavily engaged in promoting industrial design, young designers, and the world of design in general. This inaugural issue is a celebration of design – both as a cornerstone of Rado's success, and as a force that silently influences everything which is created or built.

A word that captures Rado's connection to the design world is "commitment". Investing in the next generation of creative minds is our contribution to solving the challenges of the future, which is why we hold competitions for young designers around the world. Design also holds the power to shape society and reinvent cities – one of the drivers behind Rado's partnership with World Design Capital. We are also proud to announce the rebirth of a design icon: renowned industrial designer Konstantin Grcic explains his approach to the redesign of the Rado Ceramica in our cover story.

In this magazine you will have the chance to take a closer look at the current zeitgeist in the design world, from the rise of 3D printing technology to the era of materials-driven architecture. Influential trend forecaster Lidewij Edelkoort also shares her unique vision of a lighter way of living and her thesis that today's design scene is on a quest for lightness.

Of course, good design builds on the achievements of its predecessors. With this in mind, we examine how the design universe of the 1960s left an indelible mark on Rado in the brand's formative years. A look at the more recent past reveals Rado's collaboration with British designer Jasper Morrison on the iconic r5.5 watch – here the designer speaks about his utilitarian approach.

No discussion of design would be complete without a look to the future, or the futuristic frame of mind – that is, innovation. Good design is innovative – but always in mutual interplay with technology, never as an end in itself. We have rounded up stories that explore how innovation drives Rado, from its experimental use of materials to how the evolution of technology has a very real impact on watch design.

And now I invite you to what I hope will be a well-designed reading experience.

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TIME IS THE ESSENCE WE ARE MADE OF

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TRUE**DESIGN#1**

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COMMITMENT TO **DESIGN**

Dancers, by Aurélie Hoegy.
Photo Aurélie Hoegy

HIGH **FIVE**

What makes a Rado a Rado? Josh Sims lists five timeless traits that have been given a unique twist by the pioneering brand.

By Josh Sims

1 Innovation

Plasma high-tech ceramic – a material that shines likes metal while being non-metallic; high-tech diamond – a synthetic material as hard as natural diamond; Ceramos™ – a blend of ceramic and metal alloy. Rado pioneered them all, making new materials integral to its identity. But once a technology has been embraced, the company has also been consistently keen to push it as far as possible. Many in the watch industry baulked at the colour inconsistency of high-tech ceramic, for example. Yet Rado now offers this material not just in the more commonplace black or white, but also browns, greys and even vibrant blues and greens.

Photo Thomas Straub


Photo Thomas Straub

2 Comfort

Plenty of watch companies are careful to shape the case or lugs in order to improve the comfort in wearing their pieces. Few look to the very materials as a means to do this too. Rado's groundbreaking use of high-tech ceramic, however, is not just for its balance of toughness and light weight. It is also fast to warm up and match the skin's temperature, and it is hypoallergenic too. There's no need to join a gym to wear even Rado's heaviest models either. A barely-there weight is integral to Rado's approach.

3 Durability

Few watches can, after many years of wear, look as good as they did out of the box. But since 1962 scratch resistance has been a Rado signature. Indeed, much of its exploration of materials science – such as its introduction of high-tech, much-tougher-than-steel ceramic to watch production in 1986, or more recently, its use of hardened titanium – and production methods – the likes of its use of monobloc cases – has been in service of developing a product that can withstand the knocks and scrapes of life.

Oskar Zieta - Plopp Stool (2009). Photo Thomas Straub

Photo Thomas Straub

4 Lightness

In a design-savvy culture that increasingly equates a lack of heft with sophistication and modernity, Rado's watches are distinctly lightweight – literally rather than figuratively. Ceramic, for example, has been central to Rado's design philosophy in part because it's 25 per cent lighter than steel. More recently, it has used the featherweight likes of silicon nitride ceramic, hardened titanium and anodised aluminium. Minimising the excess has been as much a stylistic exercise as a literal one for Rado. It's still a central tenet for Rado: its latest collections include revamped True Thinline models, embodying the stripped back, literally and aesthetically.

5 Vision

Design of course incorporates the use of materials and an appreciation for functionality. But it is also about defining a look. With their minimalistic style – nodding not to any historic period, nor to the self-consciously futuristic, nor to safe classicism – Rado's watches can genuinely claim to be visually timeless. Yet nor does the company ignore trends. What, for example, do you do if the market wants the benefits of ceramic but the more traditional finish of steel? Simple – or not. You create a patented process involving a 20,000°C plasma oven that causes the surface of white ceramic to take on a unique metallic sheen. Perhaps this attitude is why the company has clocked up more than 30 design prizes over the years.

Breaded Escalope - Shadowplay Clock (2011). Photo Thomas Straub

NEW**COMERS**

Over the past year, the winners of the Rado Star Prize have made their mark on the global design scene.

By Victoria Gomelsky

A translucent chair handcrafted from reclaimed plastic bottles and seemingly illuminated from within. A pair of eyeglasses with parts that become invisible when they touch the skin. A compact printer that "eats" its way through the stack of paper on which it sits. A "sandscape" that captures the passage of time. And a set of chairs sculpted from cotton and latex to evoke dancers performing a complex choreographic movement.

In addition to their visionary use of materials and ambitious concepts, the intriguing works of design described above have something else in common: Over the past year, their makers, most of them students, have all won the Rado Star Prize. The competitions are linked to existing design events around the world – including Paris Design Week, Vienna Design Week, and NYCxDesign – and are aimed at elevating the work of young designers.

Introduced in 2008, when it was called the Rado Young Design Prize, the Rado Star Prize has been awarded to designers in Austria, France, Switzerland, the Netherlands, Korea, China, Japan, Malaysia, South Africa, and, as of this year, Italy, the United States, and Peru.

"It's our way of 'giving back,' so to speak," says Rado CEO Matthias Breschan. "We live and breathe fearless design, and we want to promote this mindset in the upcoming generation. This is why we hold Rado Star Prize design competitions around the world, to invest in the next generation of creative minds, who, like Rado, can go on to challenge the design world's status quo."

Take Kimberly Markel, the winner of the Rado Star Prize U.S., awarded for the first time in May. Having worked

Right: Kimberly Markel in her studio.

Opposite: Markel's Glow chairs are light, but the material is heavy enough to provide the stability needed.

Above: The award-winning Stack printer designed by Mugi Yamamoto (right).
© Mugi Yamamoto

in environmental policy in Washington, D.C., and now based in Beacon, N.Y., at one of the country's best art foundries, she was driven by a desire to create responsibly.

"I didn't just want to put objects into the world," Markel says. "So I started experimenting with materials that existed and I found plastics to be really beautiful. They had a lot of qualities that I liked: They were colorful, translucent, and strong."

Markel acquired a heap of plastic waste – mostly soda bottles and used eyeglass frames – and spent a year perfecting a method to bond the material with resin and shape it into furniture. Earlier this year, she debuted her Glow collection of translucent and luminous green-, blue- and yellow-tinted chairs, dovetailing perfectly with the theme of the U.S. competition, "a lighter way of living."

Mugi Yamamoto, the winner of the Rado Star Prize Switzerland for Young Talents, embraced a similar philosophy of lightness with his groundbreaking work, Stack, a minimalistic inkjet printer that does away with a traditional paper tray, instead drawing from the stack of paper on which it sits.

"I bought many printers, opened them up and reconstructed them, so they would pull the paper from underneath and spit it out on top," says the designer, who works from Zug, Switzerland. "Small printers have too weak engines and do not have enough force to pull in the paper, while strong

HyperEthereal glasses by Matteo Agati (middle).

Below: Jules Levasseur.

printers weigh too much because of heavy engines. The challenge was to find a printer with a good relation between weight and force and then modify it for my concept."

Yamamoto's invention drew praise from the Rado executive team. "Taking an everyday object and reimagining its form entirely is something that I personally find very exciting, and very evocative of Rado's history of rethinking the basic shape of a timepiece," says Breschan.

Matteo Agati, the Milan-based winner of the Rado Star Prize Italy 2016, knows all about transforming the mundane into the extraordinary. The frames of his prize-winning HyperEthereal glasses employ a polycarbonate base and thermochromic pigments that change color according to the temperature and "disappear" when they touch the skin.

"My starting point was the interaction between wearable accessories and the human body," says Agati. "When you wear the HyperEthereal eyeglasses, they gradually become 'invisible' (hyper transparent). In this way, it seems that the body is absorbing the object, moving the attention to its function."

The Rado Star Prize competition of the past year also celebrated two highly conceptual works that explore the philosophical dimensions of movement and time in distinctive ways. From Paris-based Aurélie Hoegy, one of the two winners of the Rado Star Prize France – awarded to her and Jules Levasseur in September 2015 – comes the "Dancers" collection of chairs made of latex and cotton sculpted to resemble the sinuous limbs of dancers performing an array of contortions. Hoegy says she wanted to "explore a new perspective of functionality between movement and stability."

Dancers, by Aurélie Hoegy (middle).
Photo Bruno Pellerin

Below: Louisa Köber.

"Depending on the complexity, three to four weeks are required to make one piece," she says. "Capturing movement and expressing it through a figure requires constant observation. There is no manual for this kind of work. My feelings guide the general composition."

For Louisa Köber, winner of the Rado Star Prize Austria 2015, a desire to show the tangible effects of time passing led her to design "Sandscape", an installation in which a series of hourglass-shaped containers with openings at the bottom drip sand onto a surface, forming a miniature scene in real time.

"I wanted to show that time cannot be turned back or even stopped," says the Vienna-based Köber.

"One inspiration for me started with Rado itself," she added. "I was fascinated by how raw material can become something so refined and precise."

Köber's preoccupation with refinement and precision reflects a defining characteristic of the works that are awarded the Rado Star Prize. A notable past winner, for example, was a 3D printed fashion collection by the Dutch fashion designer Iris van Herpen, who received the Rado Young Designer Award at Dutch Design Week in 2010.

"At first glance, her winning collection, *Crystallization*, looks more like architecture or sculpture than clothing," Breschan says.

The boundary-pushing nature of the projects that win the prize applies to the competition itself. In 2014, for instance, Rado brought the Star Prize to South Africa for the first time. As official World Design Partner for that year's World Design Capital® event in Cape Town – which was themed around sustainability and communi-

Left: Louisa Köber's Sandscape.

Below: Monica Monsanto and her Mbari Dolls.

ty improvement – the watchmaker encouraged prize applicants to create works of "social design".

Monica Monsanto, a student at the University of Johannesburg who learned of the competition through a Facebook post, was inspired to create a product targeted at children from low-income households. "Through research, I found out a lot of these children don't have any toys," Monsanto says. "And to go a step further, I decided to provide them with motor skills to make the toys themselves."

Monsanto's winning project, the Mbari Dolls, comes with a two-part mold that can be compressed with papier-mâché or mud. Once dry, the material can be removed and customized with sticks or flowers. "Each mold would be a different character – I designed a family of them," she says, adding that mbari means "family" in Swahili. "Along with each mold would come a narrative card with a story that each kid would be able to relate to."

Next up on the Rado Star Prize's 2016 grand tour: Taiwan. In October, a jury of local and international design professionals will select the winner of the country's first-ever Rado Star Prize, which coincides with the World Design Capital® 2016 program in Taipei. If past winners are any indication, expect to see original, meaningful, and revolutionary new designs come to the fore. ©

COLLABO**RATORS**

A crucial part of Rado's commitment to design is to team up with some of the world's most important design events that offer platforms for young talent.

By Victoria Gomelsky

Above: Odile Hainaut with Claire Pijoulat.
Photo IkonPhoto + NudesignStudio

Odile Hainaut, co-founder (with Claire Pijoulat) of WantedDesign in New York City
"What is unique at WantedDesign is the way we reinvented a traditional trade show, and combined the cultural with the commercial to create a platform to not only launch new products, but also talk about the stories behind the products, their cultural background, and what's coming next."

"Rado's vision embraces all those facets of our event, in talking about their *savoir faire* and craftsmanship, but also in bringing to the fore the voices of young designers and their visions for the products of tomorrow."

Lilli Hollein, director of Vienna Design Week
"Vienna Design Week is a curated festival. We intensively work with the city, opening venues, workshops, and other public places, and we move to a different district every year in order to make our audience aware of places and quarters that would maybe not be associated with design in the first place. Also Vienna Design Week looks at design from a broad perspective, with themes like social design, experimental design, graphic design, urban mobility, and others."

Right: Lilli Hollein.
Photo Katharina Gossow

"The collaboration with Rado has been in place almost since we founded the festival 10 years ago and has been a fruitful one. The Rado Star Prize is an important opportunity for young Austrian designers to introduce their work to the public, and Rado as a brand is truly design driven. With special installations during the festival, the Rado boutique has always contributed in an important way to our program. And with

the participation and presence of designers like Jasper Morrison and Konstantin Grcic, Rado adds even more design credibility to the festival."

Michel Hueter, curator of Design Preis Schweiz
"Design Preis Schweiz is the largest competition-driven national platform to promote Swiss design, both within the domestic market and abroad. We encompass all design disciplines as well as all market actors, from young talents to established corporations and research institutions."

"Rado's history of entering the watch market with unprecedented products is encouraging to young designers. It is felt by them that Rado understands their challenges and all the hurdles there are if you want to enrich society with visionary ideas."

Raisy Bantoo, partnership and special events manager of Paris Design Week
"Paris Design Week engulfs the French capital in an ecstatic combination of exhibitions, design-inspired installations, debates, talks, cocktails, and lazy walks. The event works in partnership with local boutiques, galleries, showrooms, museums, institutions, hotels, and restaurants to enable all professional participants to share their passion for design and creation with the general public."

"Rado, working with Paris Design Week, provides these rising stars with a platform to showcase their work and become known and recognized not only by the leading experts in the field of design, but also the general public."

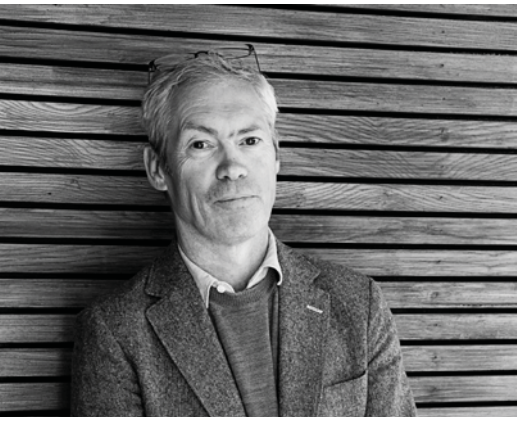
Above: Michel Hueter.

Left: Raisy Bantoo.
Photo Ciprian Corneiciuc

SUPER**NORMAL**

Jasper Morrison, whose designs include the sleek Rado r5.5, is always trying to improve on what already exists.

By Josh Sims



Jasper Morrison.
Photo Elena Mahugo

For Jasper Morrison, the design of the Rado r5.5 back in 2009 was a completely new exercise. It simply wasn't on the scale he was used to: "I learnt about micro detail and how, on smaller objects fractions of millimetres can make a difference," he says, referring to the unique rounded square body of the high-tech ceramic watch.

The r5.5 comes as a chronograph with two subdials placed at 6 o'clock and, unusually, at 09:30, as well as the basic model which features only the minimum, the fundamental: three hands, date at 3 o'clock – a clear but understated expression under the flat sapphire crystal. But then letting the details talk – the hands on one iteration of the watch are yellow, for example, while the case fuses seamlessly into the bracelet – while retaining an overall quality of understatement is the essential quality of Morrison's work. He calls this philosophy "Super Normal".

"Super Normal began with an observation that certain, often anonymously designed objects perform better than others," Morrison explains. "It seemed they did so not by their looks but by other less obvious qualities, like their effect on the atmosphere, the pleasure in using them, and their long-term appeal. It's been a great help to my work learning from those objects how to design things that perform better than what's already there, which is, after all, the job of the designer."

Adopting this as a guiding philosophy has been a gradual process. He conceded that some of his earlier chairs, for example, neglected to be what a chair should always be: comfortable. And it has fine-tuned his appreciation of other designers' work too. In particular he cites the Vitsoe shelving by Dieter Rams, another great functionalist. "From time to time a colleague does something I wish I'd done," he adds. But then, thanks in part to his influence, there are also a lot more products out there to admire.

Indeed, Morrison – based between London and Paris – might be said to be a master of understatement. Whether it be sofa or cellphone, door handle or kitchen appliance, cutlery or bus shelter, rarely, if ever, do his designs shout their credentials. This is why clients have included the diverse likes of Vitra, Rowenta, Tate Modern, Canon and, of course, Rado.

"You could probably blame Philippe Starck for that," says Jasper Morrison of the fact that he is one of a handful of product designers whose names

have transcended their designs. "Before him, design was a much sleepier profession, but his designs caught the attention of the press and design became a subject of interest for the public. [It's meant] I don't have to look for work – and it's easier to put a little less 'design' into my designs."

"I think design has gotten a lot better recently," says the Brit, a man who claims to spend a lot of his time just looking at whatever is in front of him. "We are more professional now because of computers and 3D modelling possibilities" – Morrison himself made the decision some time ago to dispense with his sketchpad in favour of software – "but there's still a lot of bad design, just as there are bad books and bad movies."

Might there also be bad terminology? It might be tempting to call Morrison a minimalist, in the sense that his designs lean towards the plain, direct and spare, rather than the hard-edged or austere. Yet while his designs are utilitarian – he doesn't see much point in designing anything unless it offers an improvement to what is already available, and seeing how he can better what is out there is typically his starting point – it is not a label he feels much affection for. To think in '-isms', he argues, is to miss the central point of design practice.

"If modernism is a set of guidelines for designing machine-made things, then there is certainly enough room within them to work in an infinite number of ways," he says. "[But] the goal is so clear – to make better products – that there's no point thinking about much else." ©

Above: Rotary Tray, 2014, produced by Vitra. Photo Jasper Morrison Studio

Below: Rado r5.5 XXL automatic chronograph.

DESIGN **CITIZENS**

In 2016 Taipei is the fifth World Design Capital®. How will the biannual designation change the Asian city? And what has Rado got to do with it? Anders Modig talks to two Taipei designers and a senator of the International Council of Societies of Industrial Design.

By Anders Modig

Above: Aaron Nieh.
Photo Siasia Lee

Opposite: Leslie Chan.

More than half of the world's population live in cities, and according to the International Council of Societies of Industrial Design (Icsid), which every two years designates the World Design Capital, design is an "increasingly fundamental tool for making cities more competitive, attractive, liveable and efficient." No small claim. In 2016 the turn has come to Taipei to reinvent the city and improve the lives of its citizens through design.

"To be the WDC will awaken the awareness of design in Taipei and create a domino effect which, subsequently, will change the whole city," says graphic designer Leslie Chan, who is also one of WDC Taipei 2016's ambassadors.

The above may sound like clichés, but the track records from the four previous WDCs show that the design push is not just talking the talk, but also walking the walk – long after the year full of design highlights has moved on. Take Torino: The city established a new model of urban public/private networking that has since affected public administration, companies, designers, opinion leaders, schools and citizens. Seoul citizens are still enjoying the famous Dongdaemun Design Plaza, designed by Zaha Hadid; Helsinki created the post of Chief Design Officer, who is constantly working for the city's development; Cape Town showed the importance of democratizing design by introducing it in poorer areas and how design can really be an investment – for every rand spent on WDC 2014, Cape Town generated another 2.46 rand. It also played a part – alongside the Table Mountain, of course – in being named #1 of 52 places to visit on the New York Times 2014 list during its WDC year, a victory that still shows in the tourist statistics.

"Taipei will leverage the WDC designation and engage its citizens to innovate and apply design thinking in their everyday lives," says Dr Brandon Gien, previous president, now senator of Icsid. (Icsid's new name, World Design Organization, will become official on 1 January 2017.)

"Today industrial design has a more holistic approach with human-centred, multidisciplinary and participatory tools and methodologies. And to be the WDC provides a platform to share best practices in areas such as urban revitalization, public transportation, sustainable infra-

structure, mobility, safety, climate change and renewable energy, transparent and inclusive governance," he continues.

And where does Rado come into the picture? As a World Design Partner®, it is supporting several projects where design is used to improve society.
"The fit could not be better. Rado is one of the few companies around the world that truly understands the value of good design, and I genuinely believe that design can (and will) help create a more beautiful, more sustainable and more balanced world," says Dr Gien.

To commemorate 2016's collaboration, Rado also invited two of Taipei's most acclaimed graphic designers, Leslie Chan and Aaron Nieh, to create two special editions of the ceramic Rado True, which will be sold exclusively in Taiwan and Hong Kong. The design brief from the Swiss watch company? Lightness and minimalism.
On Chan's watch everything from the case to the dial with an origami pattern stamped in slight relief and the three-link bracelet is white and shiny.
"White is my favourite colour among all the colours. I also have a special connection with white due to my colour blindness. To me, white is the mother of all colours, it can translate as fashion, simple or timeless," says Chan.

And the symbolic origami? "Plain paper is the origin of ideas. Origami allows it to shape-shift into any living object. And the vertical pairs of triangles symbolize an hourglass, which means that time is always moving forward."

Nieh went in a matt and grey direction. The case is matt, the hands and the dial are equally matt – and the strap is a rather rough, casual yet energetic NATO textile strap with grey leather details. "Grey is a neutral colour that is often considered subtle. It's not a colour like white that draws attention, nor is it a colour like black that goes with anything. I like the balance that 'grey' creates, existing in the grey area between black and white," Nieh explains. "I want the watch to be easy-going and low-key. An essential accessory that fits just right on the wearer, no more, no less," says Nieh, who already sees positive effects in Taipei from being the WDC. "In order for a city to improve, you need stimuli. By 'implanting' designs into our community and our environment, we are starting to see these effects blossom around our city and affecting our citizens. The WDC is creating an environment where locals and designs may coexist, moving the city forward as a whole."

A TRUE **STORY**

Why does it take three years to make a high-tech ceramic watch? Anders Modig seeks the answer at Rado's design department, which is equally ruled by artistic ideas, materials and technical progression.

By Anders Modig

The Rado True: instantly recognizable due to flanks that hug the round case – but don't let your eyes lead you astray – it is all made in one piece; at Rado, designs have always evolved hand in hand with the latest available material possibilities and technical equipment. This is actually the reason why the brand's pioneering of ceramic materials in the 1980s favoured square or angular shapes for cases and bracelets. They were not only a reflection of the style mores of the times, but also due to the inherent limitations of the material. Machining the hard, scratch-free ceramic required a straight-on grinder. Round high-tech ceramic shapes were theoretically possible, but would have been a nightmare to machine with the technology available at that time.

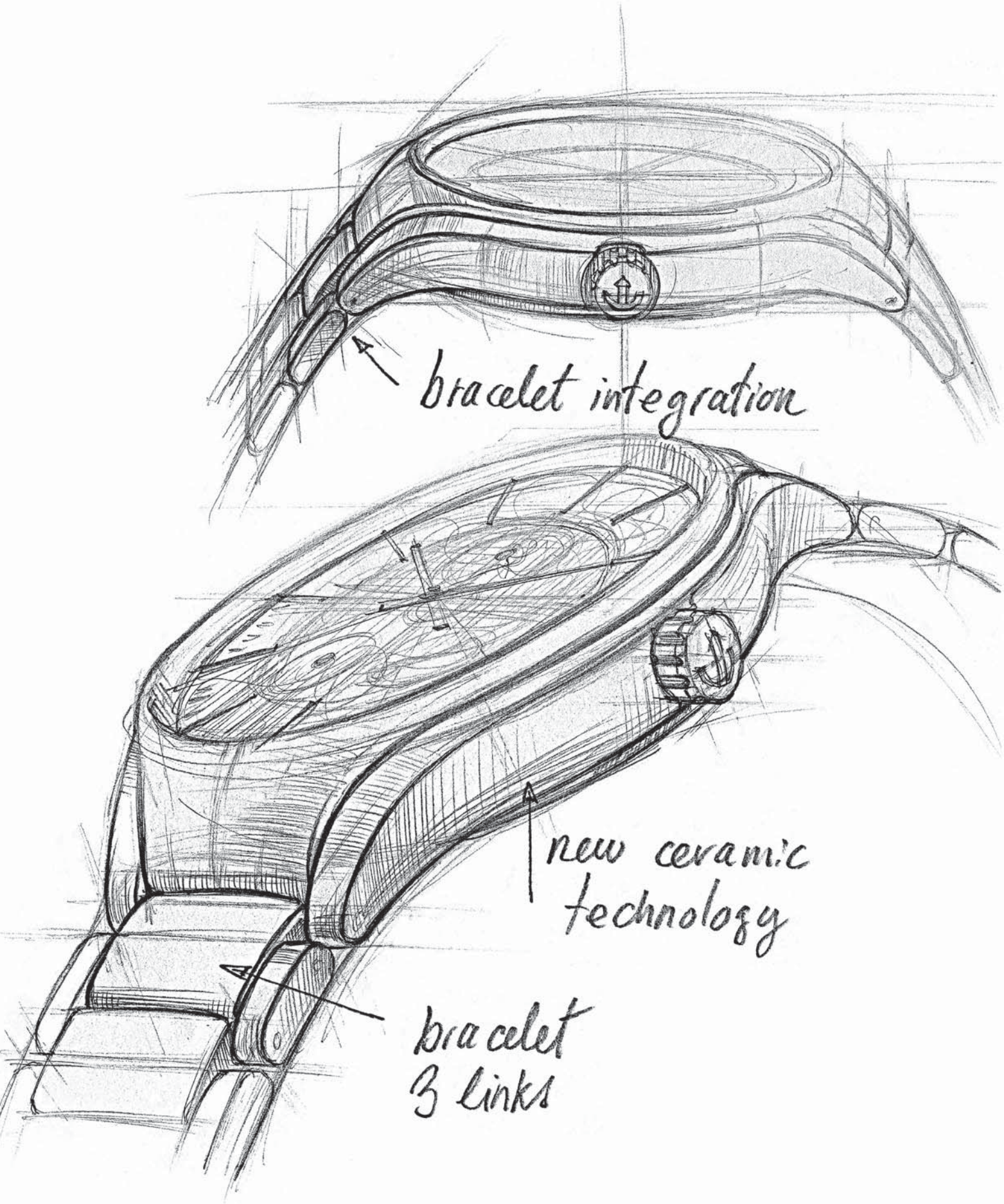
"Now the machining is so much more versatile thanks to five-axis CNC machines," explains Hakim El Kadiri, VP of product management and responsible for the design department. "But not only that – today the ceramic is made with injection-moulding rather than the old pressing technology, which gives us far more freedom when it comes to the design."

Evolution

The history behind the case of the Rado True shows the extent to which advances in technology have freed up possibilities for ceramic watch designs. In fact, the True case as we know it today is a design evolution in the making that started in 2000 with the Rado Xeramo.

Below: Xeramo, True and new True watch heads.

Opposite: Sketches of the new True.


bracelet integration
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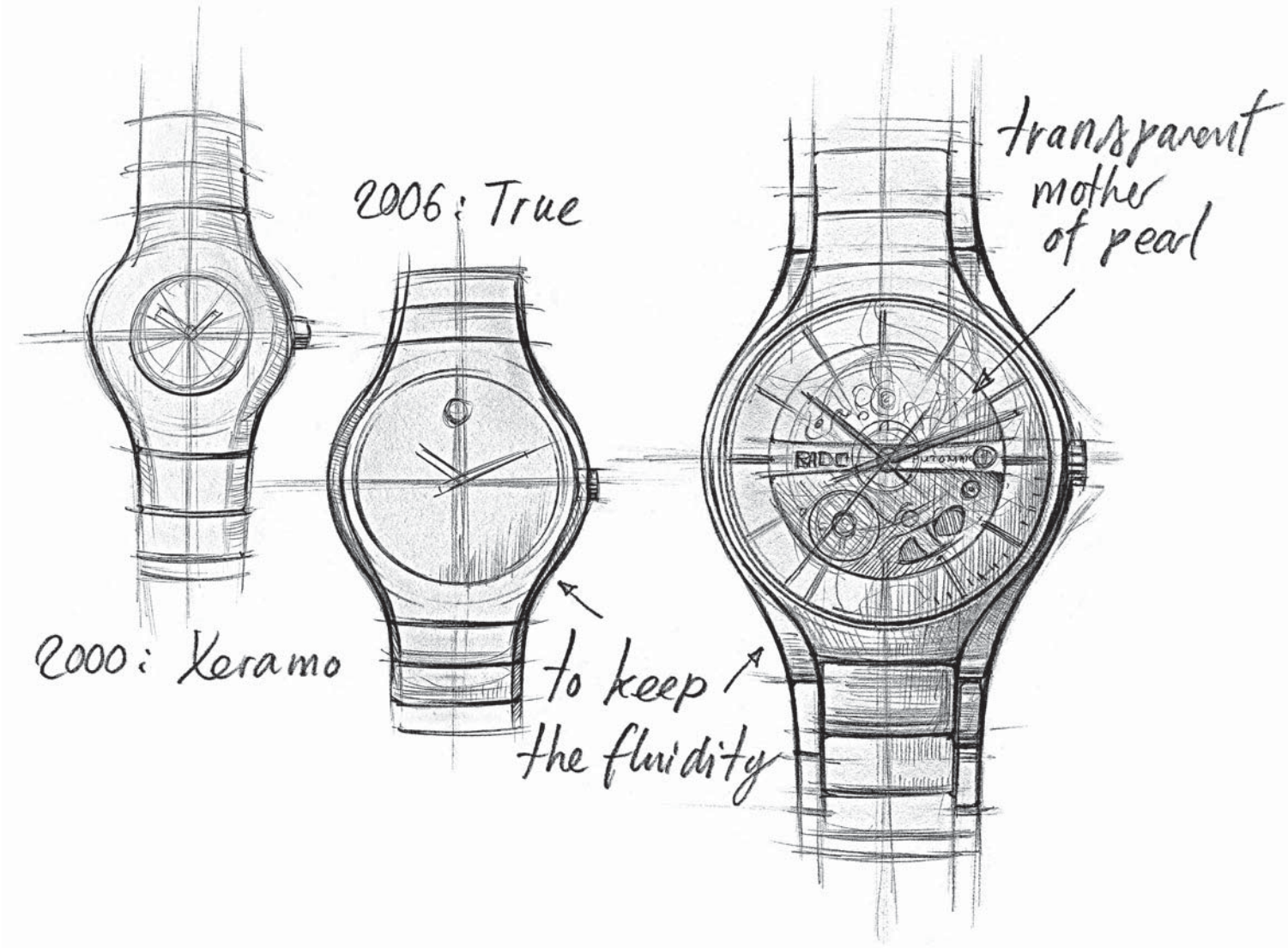


The evolution of the Rado True, in sketches.

Back then, the Xeramo, like all high-tech ceramic watches, had an insert of stainless steel that was covered in ceramic. This is one of the reasons why in earlier days the case was designed with such a big bezel – it had to hide the steel core.

By 2006 the Xeramo had developed into the first Rado True. The 38-millimetre case was still made with pressed high-tech ceramic, and it was still hiding a steel core. As the machines improved, however, Rado's designers were able to realise softer, thinner shapes, which reveal more of the dial. And around this time, not only shiny, but also matt-finished high-tech ceramics saw the light of day.

"But for me the big step in designing high-tech ceramic watches was really the injection moulding, which allows us to make the cases in one piece, also called monobloc cases. We started using this technique in 2011, the same year that we presented the True Thinline, the first Rado watch with a flexible ceramic bracelet fixed directly into the ceramic case."

But as with everything, freedom comes at a price. Now the design process is more complicated. Why? The moulds are a feat of engineering: all screw holes, openings and indentations must already be planned in – the aim is to be as close to the final product as possible – and allow for shrinkage of the final piece by 23% (high-tech ceramic components undergo a futuristic baking process called sintering in which they achieve full density, significantly reducing their size in the process). The moulds simply don't allow for a test run; at this stage you must work with utmost precision and be com-

pletely sure about your design. This fact has led the design team to work along five steps:
- Sketching by hand
- First computer-generated sketch
- 3D printings in hard wax
- One-off prototype in steel or machined ceramics
- Mould design

"So yes, high-tech ceramic watches are more complicated to design and produce than steel watches," says El Kadiri. "This process takes two to three years from idea to finished watch."

In the latest versions of the True, the opening of the dial has become much bigger for better visibility. It is now available in all seven of Rado's high-tech ceramic colours, and one special edition even features a NATO textile strap. In the on-going fluctuation of case sizes, it has grown to a contemporary 40 millimetres for gents and 30 millimetres for ladies.

But some things never change: Just like in the past, the material itself still rules the design. For example, the maximum thinness for ceramics is currently 0.8 millimetres – a hard physical reality that governs which watch shapes, curves and transitions will ultimately be possible to bring to life.

"When you design a watch – just like any other product – you have to care about dimension, movement, integration, ergonomics. But the fact that a watch is a wearable item makes it easy to test the prototypes in a fast way – you instantly feel what happens if you make the wrong choice in term of design," says El Kadiri. "My favourite thing about this particular watch design? It's a True story." ©

Rado True Open Heart.

REARVIEW **MIRROR**

DESIGN GOES **POP**

As MoMA in New York opens a major exhibition dedicated to the design and art of the 1960s, we look at the enduring allure of a decade that shaped Rado's identity.

By Johanna Agerman Ross

On the fourth floor of New York's Museum of Modern Art (MoMA), the new exhibition *From the Collection: 1960-1969* sums up the 1960s in a suite of galleries that intermingle art with architecture and design. It opens with a display of bubblewrap, the invention of Marc A. Chavannes and Alfred W. Fielding that launched in 1960, and ends with 14 black-and-white photographs of the moon and Earth shot from space during the Apollo 11 mission in 1969. The two exhibits neatly bookend a decade that is commonly known as both The Plastics Age and The Space Age.

It is against this backdrop that Rado shaped its identity as a watch brand: an innovator that drew on the latest technology in response to the arrival of a younger and more design-conscious consumer. In 1962, Rado released the DiaStar 1 watch, a design marked by its eye-catching oversized bezel in mirror-polished tungsten carbide. That same year the Beatles released their first single 'Love Me Do', and The Sunday Times Style printed its first ever colour supplement. These two events are telling of a decade dominated by baby boomers craving cheap and disposable fashions as well as products that didn't recall their parents' ideals or tastes. It was a decade when lifestyle, individualism and self-expression came to the fore. From a consumer's point of view, one of the key developments for this was the popularisation of plastics.

In 1959, the theorist Roland Barthes predicted the significance that plastics would come to have: "More than a substance, plastic is the very idea of its infinite transformation … It is ubiquity made visible." Plastics came to embody the 1960s, being used in furniture, product design, home appliances and fashion. Technical developments within the plastics industry produced new synthetic materials that were known for their colourful, glossy and durable properties, ideal for use in injection-moulding processes. While injection moulding itself was already nearly 100 years old, it fully came into its own as a flexible production technique in the 1960s. "When I was young, all we ever heard about was functionalism, functionalism, functionalism," said the late Italian designer Ettore Sottsass. "It's not enough. Design should also be sensual and exciting." This sentiment of sensuality and excitement became the mantra for 1960s design culture.

Many of the most significant designs on display in MoMA's exhibition are, unlike those of previous eras, cheap and readily available goods produced in mass as part of a broad popular culture. Consider, for example, Dieter Rams's PS2 Stereo turntable for Braun; Marco Zanuso's and Richard Sapper's TS502 fold-out radio for Brionvega; Joe Colombo's Universale monobloc stackable plastic chair for Kartell; and Ettore Sottsass's and Perry King's Valentine typewriter for Olivetti. Due to the slickness of their glossy plastic shells, all of these products possess sculptural qualities. They are minimalist artworks for mass consumption that express both the technical and material innovations of the time. "Each object is a message that requires responses. The fact that tens of thousands are produced is very stimulating because it puts you in contact with the world at large," said the Italian designer Anna Castelli Ferrieri of the popularity of mass-produced consumer goods. Her own Componibili storage unit from 1969 is a classic, a design that is manufactured by Kartell to this day.

These designs go hand in hand with the pop art movement and its proponents such as artists Richard Hamilton, Peter Blake and Andy Warhol. In a letter to the architects Peter and Alison Smithson, Hamilton defined pop art as: "Popular (designed for a mass audience), Transient (short-terms solutions), Expendable (easily forgotten), Low Cost, Mass Produced, Young (aimed at youth), Witty, Sexy, Gimmicky, Glamorous, Big Business."

It's clear to see how this list influenced design at the time. Almost all of these adjectives can be applied to the products mentioned above. Key to this material and formal innovation was the willingness of manufacturers to experiment. It is this combination of excellent design with risk-taking pro-

Dieter Rams's PS2 Stereo Turntable for Braun.
Photo Courtesy of MoMA

Joe Colombo's Universale mono bloc stackable chair for Kartell. Photo Courtesy of MoMA

ducers that resulted in such a rich and varied output, challenging previous aesthetic norms. Here the designers took on important roles too: Rams was chief design officer at German consumer products brand Braun; Sottsass was creative director at Italian office equipment manufacturer Olivetti; and Zanuso and Sapper became style consultants for Italian electronics brand Brionvega. "Some of those company owners wanted to make good-looking things because there is pleasure associated with good forms," said Sapper, praising the innovation that was allowed to take place at the time. "In many ways these people were idealists. They didn't make more money because they made a beautiful design."

Rado was no different and its DiaStar 1 was soon followed by further eye-catching designs inspired by the need to appeal to a new consumer base. In 1966, Rado launched the DiaStar Manhattan, its first rectangular watch, followed by the futuristic-looking Rado Planning in 1968, which incorporated a separate perpetual calendar. Most of Rado's 1960s watches used materials that were completely novel in the history of watchmaking: tungsten carbide and sapphire crystal chief amongst them. Tungsten carbide was originally developed to meet the needs of the toolmaking industries, but Rado pioneered its use in watches, seduced by its durability and resistance to scratching. Sapphire crystal, notably for its hardness, is now a standard in all Rado watches.

Such material experimentation was reflected in many designs of the 1960s, a decade driven by The Space Age's encouragement of a new outlook on our worldly goods. Fashion designers such as André Courrège, Paco Rabanne and Pierre Cardin all experimented with novel materials for clothing such as metal, PVC and plexiglass. Meanwhile, architects experimented with the very form of living, with the Italian architecture practice Superstudio rejecting buildings altogether in favour of conceptual works that found expression in visualisations that used grid systems as a way to express space. "If design is merely an inducement to consume, then we must reject design; if architecture is merely the codifying of bourgeois model of ownership and society, then we must reject architecture," wrote Adolfo Natalini, the founder of Superstudio. Yet this rejection of consumption, unsurprisingly, also gave rise to new objects and new furniture archetypes such as the Sacco beanbag by Piero Gatti, Cesare Paolini and Franco Teodoro, as well as the Blow-Up plastic chair by Jonathan De Pas, Donato D'Urbino and Paolo Lomazzi, both produced by the Italian manufacturer Zanotta. Even though these designers challenged the very function of a chair – questioning its value as a status symbol or even a permanent object – both have ironically made it into the canon of design history. The Sacco, in particular, has found numerous spin-offs ever since.

Ettore Sottsass's and Perry King's Valentine typewriter for Olivetti. Photo Courtesy of MoMA

Towards the end of the 1960s, designers involved with Italy's Radical Design movement began questioning the need for or intention behind furniture and products, just as Rado simultaneously questioned the significance of a watch. If watches had previously been consumed as heirlooms or precise timekeeping instruments, Rado's 1960s watches communicated an altogether more vague ambition: the expression of lifestyle. Even if the durable and exclusive materials used bespoke quality, innovation and modern craftsmanship, it was not their main purpose. Instead, they expressed an interest in belonging to contemporary culture and a desire to capture an audience interested in doing the same. As such, they might well live up to Richard Sapper's definition of a classic: "It's when the form of an object establishes contact with you, and you have to interact with it."

It is this sense of establishing a connection that is so significant when looking back at the design history of the 1960s. The design of this period is closely connected with the culture and politics of the time, reflecting on material innovation, exploration of space and developments in technology. As such, the curiosity and forward-thinking approach of its designers gave rise to a new language for design and products that remain classics to this day.

From the Collection: 1960-1969, at MoMA New York, March 26, 2016 to March 12, 2017.

Above: Marco Zanuso's and Richard Sapper's TS502 fold-out radio for Brionvega. Photo Courtesy of MoMA

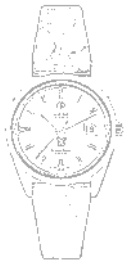
Opposite: Snoopy lamp (1967) by Achille Castiglioni. ©2016 Flos S.p.A. Photo courtesy of MoMA

HERITAGE

MILESTONES

**Rado has been making waves in the world of watch design since 1957.
These are our milestones.**

By Anders Modig



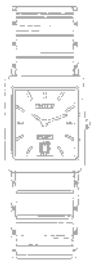
1957 Rado Golden Horse
The first watch collection under the Rado brand name. With the new name the global market could be approached with a functional, water-resistant stainless steel model; a well-designed watch with an accessible price tag.

1962 Rado DiaStar 1
During the height of the Cold War came the DiaStar 1, marketed as the world's first scratch-resistant watch, a revolution in watchmaking history. A tungsten carbide (hardmetal) case and sapphire crystal production methods were pioneered to achieve an instantly recognizable watch with a wide bezel that could withstand the most extreme situations and still come out looking new.

1966 Rado Manhattan
A striking example of 60s design in an oversized rectangular case with water-resistant properties that were exceptional for their time.

1976 Rado Dia 67 Glissière
The scratch-resistant watch with a case entirely covered by an edge-to-edge metallised sapphire crystal marks Rado's first but definite step towards eliminating non-essential functions, overly complex forms and ornaments; a forerunner of Rado's minimalistic watches. Note the bracelet integration into the case.

1981 Rado Anatom
Rado's first ergonomically curved watch with a domed sapphire crystal. Tying in with the ergonomic design trend of the times, the hardmetal of the Anatom embraces the wrist with anatomical perfection. The starkly contrasting gold and black bracelet was made possible with a new chemical vapour deposition technique.



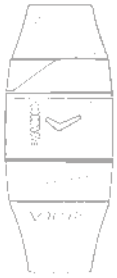
1986 Rado Integral
The first Rado watch to use high-tech ceramic on the bracelet and an invisibly affixed metallised sapphire crystal. The flamboyant bracelet made the watch a 1980s style statement that communicates so much more than just the time.

1990 Rado Ceramica
The first Rado watch to use black high-tech ceramic for the case and the bracelet, which together form a single unit. This minimalist design icon, which evokes modernity, was redesigned in 2016 by Konstantin Grcic.

1991 Rado Coupole
Another Rado first: white high-tech ceramic, which to this day is a central material in the Rado collections.

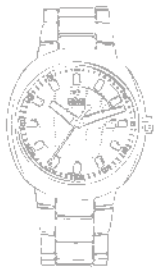
1993 Rado Sintra
This is the first Rado watch to use a titanium carbide-based composite, which combines lightness, hardness and stiffness at the same time. This innovation expanded the colour palette of Rado watches but had no other perceptible impact on the minimalistic design.

1998 Rado Ceramica
The first Rado timepiece in plasma high-tech ceramic. White ceramic is transformed through a plasma carburising process. The ceramic then takes on a unique warm metallic shine without the use of metal.

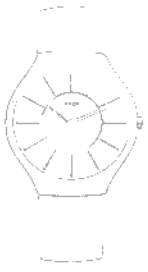


2002 Rado V10K
The case of what was touted as the world's hardest watch is covered with a high-gloss layer of synthetic nanocrystalline diamond coating to achieve a hardness of 10,000 Vickers. This atypical design with the case horizontally subdivided into three parts shows no visible crown and sports a black rubber strap.

2009 Rado r5.5
Designed by Jasper Morrison, the case of the r5.5 features Rado's first ever use of bracelet attachments with concave surfaces. The bracelet is flexible only up to a point, becoming rigid when fastened around the wrist, thus underlining its urban, industrial feel. The name is taken from the 5.5 mm corner radius of the case.

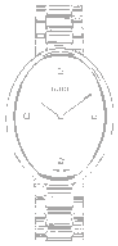


2011 Rado D-Star
The D-Star is an updated design of the legendary DiaStar 1 with a wider opening and monobloc case, created with younger urbanites in mind. The D-Star is the first watch in Ceramos™, a titanium carbide-based composite and injectable ceramic, which paved the way for unprecedented designs and taut lines.



2011 Rado True Thinline
Rado's thinnest ceramic watch has a thickness of less than 5 millimetres for the quartz models. The first Rado watch with a ceramic monobloc case, it corresponds with the archetypical shape of a wristwatch: a round dial based on the circular movement of the hands and a straight bracelet.

2012 Rado HyperChrome
The complex monobloc case of the HyperChrome represents a breakthrough in technology as well as a step forward in design. Lightweight, extremely comfortable and eye-catching, it also introduces more timekeeping instruments onto the dial.



2013 Rado Essenza Ceramic Touch
Rado's first high-tech ceramic watch to use touch technology. Crownless, the watch is set using touch alone.

2014 Rado Hyperchrome Ceramic Touch Dual Timer
Rado's first high-tech ceramic touch watch with two time zones was also the first Rado timepiece made using cool grey high-tech ceramic.

2015 Rado Hyperchrome Brown Ceramic
Rado brings a new colour to the world of high-tech ceramic: chocolate brown, which provides an exclusive design touch, especially when combined with rose gold indexes and hands.

2016 Rado HyperChrome 1616
The HyperChrome 1616 combines a design of the past – the 1970s TV-shaped Cape Horn – with modern materials and a contemporary size of 44 millimetres. The case is made of a new, exclusive type of hardened titanium.

TIME FOR **AWARDS**

A watch is not the most obvious recipient of a product design prize. Though many watches are beautiful objects, few of them meet the awards' often stringent rules on innovation. Yet in the past 15 years, Rado has won over 30 design prizes in eight different countries.

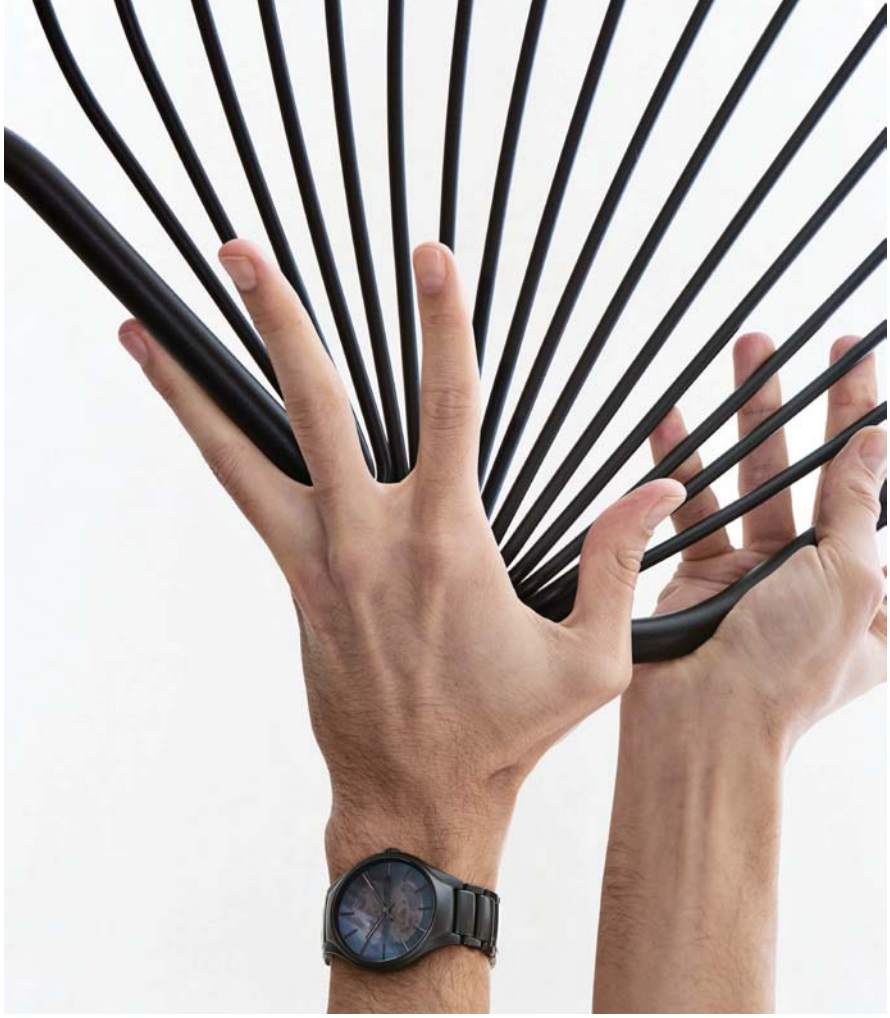
By Joe Lloyd

Rado's four most recent awards – the Good Design Awards of both Australia and the US, and Germany's iF Design and Red Dot prizes – reflect this international reach. All four were founded in the 1950s, the same decade that saw the Swiss watchmakers Schlup & Co. first start producing watches under the Rado name.

This was the era of mid-century modern and minimalistic Scandinavian furniture, a time when product design was beginning to blossom in popular consciousness. With their simple, clear forms and functional features – waterproofing, a 120 m pressure rating, backs that could be slid open – Rado's earliest timepieces had a clear affinity

Right: Rado DiaMaster Grande Seconde.

Opposite: Rado True Open Heart with Drapee (2014) by Constance Guisset.
Photo Thomas Straub



RADO'S AWARDS

HyperChrome Ultra Light
2016 Good Design Award, Australia

True Open Heart
2016 Red Dot Award, Germany

DiaMaster Grande Seconde
2015 Good Design Award, United States

HyperChrome CeramicTouch
2015 Good Design Selection, Australia
2015 iF Design Award, Germany
2014 Good Design Award, United States

HyperChrome UTC
2013 Good Design Award, United States

HyperChrome Auto Chrono
2012 Good Design Award, United States

True Thinline
2012 Red Dot Award Honourable Mention, Germany
2011 Good Design Award, United States

Ceramica Automatic Digital
2011 Red Dot Award, Germany

R5.5 Automatic
2010 Golden Pin Award, Taiwan

R5.5 Chronograph
2010 iF Design Award, Germany
2010 Red Dot Award, Germany
2009 Good Design Award, United States

True Chronograph
2009 Red Dot Award, Germany

True Chronograph Matt
2008 iF Design Award, China

True
2007 Good Design Award, United States
2007 Red Dot Award, Germany

Ceramica Chronograph
2007 iF Design Award, China
2007 Le Bilan du Design, Switzerland

Original Chronograph
2006 iF Design Award, China
2006 Red Dot Award, Germany

VI0K
2005 Design Plus Material Vision, Germany
2005 Good Design Award, Japan
2005 iF Design Award, China
2003 Red Dot Award, Germany
2002 Good Design Award, United States

eSenza
2002 iF Design Award, China
2002 Idea Award, United States
2001 Good Design Award, Japan

Sintra
2002 The Rosinex Fair Award, Russia
1993 G-Mark Award, M.I.T.I., Japan

Ceramica
1990 Red Dot Award, Germany
1990 G-Mark Award, M.I.T.I., Japan

Rado HyperChrome Ultra Light.

with this movement. It's a kinship that continues today, with Rado's devotion to using ever more innovative materials and simple, yet powerful designs.

The HyperChrome Ultra Light, which in 2016 won the Australian Good Design Award, is a case in point. Minimalist and monochrome, its composition from silicon nitride ceramic, anodized aluminium and hardened titanium makes it both scratch resistant and lightweight.

The connections between classic design and the watch are made most explicit by the American Good Design Award, which in 2015 celebrated the DiaMaster Grande Seconde. The oldest design prize in the world, it was founded by such emblematic postwar figures as Eero Saarinen, George Benson and the Eameses. Originally run by the Museum of Modern Art (MoMA) alongside Chicago's Merchandise Mart, it epitomises the link between high culture and commercially available objects.

Although the iF Design and Red Dot prizes both date back to 1954, the pair take inspiration from an earlier champion of functionalism – the Bauhaus. The former prize, awarded in 2015 to the HyperChrome Ceramic Touch, bases its criteria on the revolutionary design school's idea of "good form", which includes both ethical and aesthetic objects.

The Red Dot's connection with the Bauhaus is symbolised by its museum, which is the world's largest for design. The museum is based within Shaft 12 of the UNESCO World Heritage listed Zollverein colliery, a building often celebrated as one of the school's greatest architecture achievements. With branches in Singapore and Taipei, it also embraces internationalism. Rado won a 2016 Red Dot Award for its limited edition True Open Heart, whose mother-of-pearl layer allows a glimpse into the complicated mechanics below.

All four prizes offer more than just a seal of approval for particular product. They are signs that the company that produces them is not simply resting on its laurels, but rather continuously pushing the envelope. Rado continues to stand at the forefront of design and innovation after six decades.

BEHIND THE AWARDS

How do you actually choose a winning design? Johanna Agerman Ross caught up with Dr Brandon Gien, CEO, Good Design Australia.

Who was in the jury that selected the Rado watch as a winner?
Our jury consists of leading design experts from a broad range of design disciplines including industrial design, engineering design, architecture, software-electronics design etc. The jury is split up according to their area of expertise and makes the initial evaluation and recommendation for a product to receive a Good Design Australia Award. This decision is then voted on by the entire jury before being confirmed. Jury members include: Mr. Donghoon Chang, Former Head of Design at Samsung (South Korea), Mr. Paul Priestman, Founder of PriestmanGoode (UK), Dr. Mugendi M'Rithaa, President of ICSID, World Design Organization (WDO), Prof. Harald Leschke, former Head of Design, Mercedes-Benz (Germany).

What category was it judged in?
Product Design, Housewares, Fashion and Objects Category.

Is it common that watches win this category?
No. It is a very competitive category and the jury really looks for standout examples of design and innovation. For a watch to win in this category, it must go beyond just being a beautiful watch from an aesthetic point of view. The jury looks at design criteria including form, function, materials, manufacturing processes, market segmentation, quality and value, design for sustainability factors, maintenance factors et cetera. Rado received a Good Design Award in previous years and this is a demonstration that they continue to design and develop world-class products that consistently meet and exceed these high standards of design.

What makes the HyperChrome Ultra Light such a worthy winner?
The jury commented on the 'featherweight' lightness of the watch that blended perfectly with the simplicity and minimalistic form design. The jury commended the Rado design team on the number of material innovations that resulted in a beautifully elegant and highly durable timepiece. This is a very competitive market and it is challenging for designers to come up with something new and innovative. The jury felt the Rado HyperChrome Ultra Light offered a sense of restrained elegance and sophistication with a unique aesthetic that will last a lifetime.

Above: Dr Brandon Gien.
Photo Anders Modig

Right: Rado HyperChrome Ceramic Touch.

MANIFESTOS

In the history of design and architecture, there have been several manifestos written by the most progressive creators, and some of them are still impacting the philosophy and aesthetics of what is being built and produced to this day. Architecture critic Rowan Moore shares his four favourites with True Design.

By Rowan Moore

In one there is a drawing of standing men, naked except for boxing gloves, somehow eating oysters out of their shells. In another, up-to-the-minute cars share pages with ancient Greek temples to prove the equal beauty of both. In a third, the word Campari is sliced up and re-assembled, showing how a strong, well-design logo can remain easily recognisable.

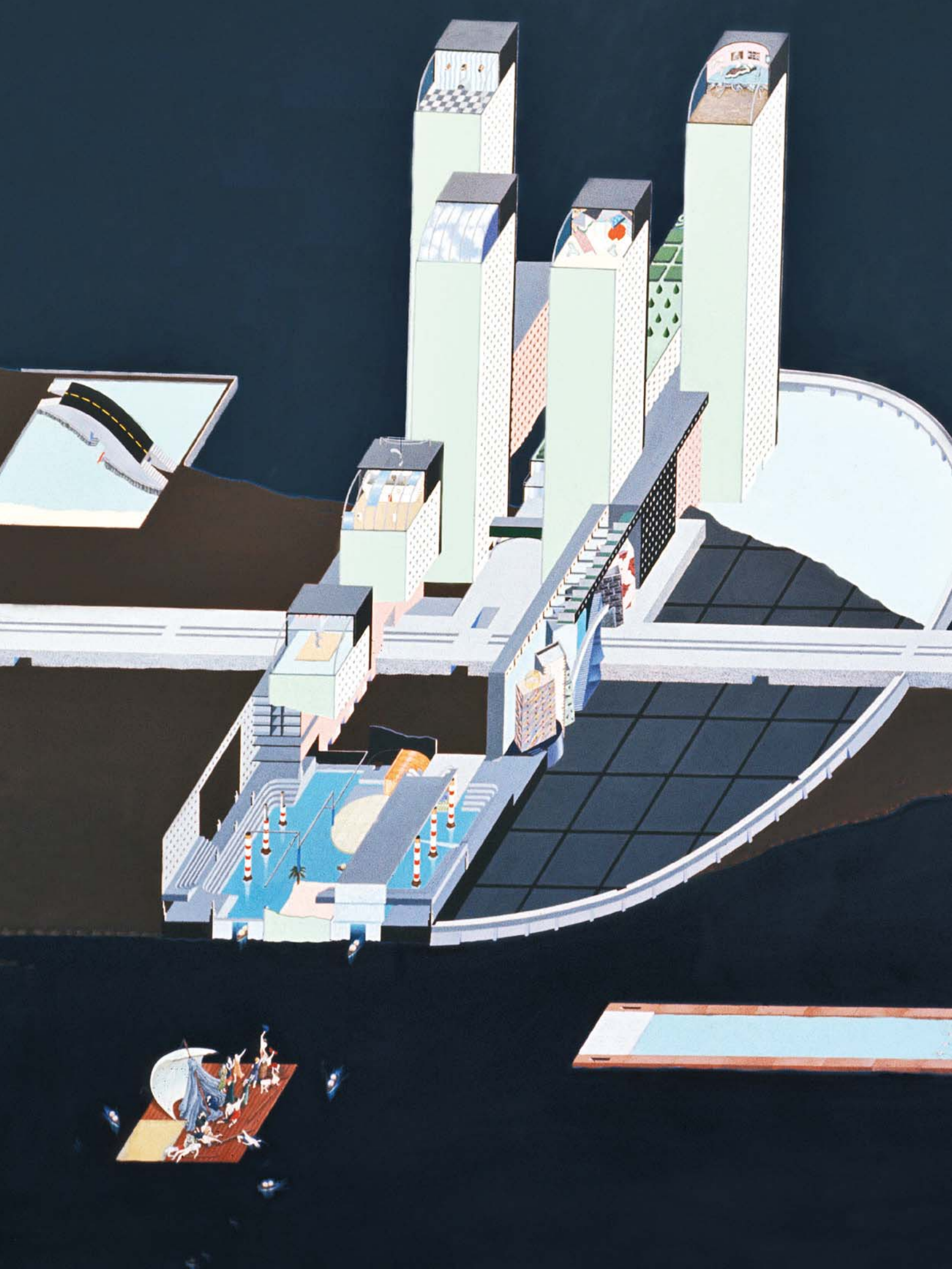
These visual moments all come from manifestos of architecture and design, documents which combine self-promotion with ardent belief and clear-sighted wisdom with near-madness. They have the power to change the physical world that surrounds us, continuing to do so decades after their publication. These manifestos are written by people more visual than verbal, so they have a knack for capturing their ideas with compelling images.

The manifesto that stands like a monument amid all others is Le Corbusier's *Vers Une Architecture*, published in 1923. According to Le Corbusier, the modern equivalents to great buildings of the past were now aeroplanes, cars and ships, bridges and grain silos – the products of engineers – and that the challenge to architects was to catch up. He famously said that "a house is a machine for living in", which did not mean that life should be coldly mechanical, but that it should rise to the great beauty he saw in the creations of the industrial age.

He illustrated his points with compelling and startling choices of images – those temples and cars, and his own rough sketches made on Mediterranean travels. "Engineers," he said, "are healthy and virile, active and useful, moral and joyful." He can come close to ranting, but the book helped launch a style of white walls, clean un-decorated lines and materials such as concrete, steel and glass which is still shaping office, museums, airports and luxury villas almost a century later.

Vers Une Architecture has haunted the art of building ever since. When Rem Koolhaas came to write *Delirious New York* in the 1970s, he was driven by Oedipal fascination with and reaction against Le Corbusier. Corbusier had found the ambition and scale of Manhattan's skyscrapers amazing, but he hated what he saw as its chaos and confusion. Koolhaas celebrated precisely the latter qualities, its "culture of congestion", its ability to pile up the multiple and conflicting activities of a vibrant city in a limited amount of space.

Welfare Palace Hotel,
by Madelon Vriesendorp.
Image courtesy of OMA



Above: *City of the Captive Globe*, by Madelon Vriesendorp. Image courtesy of OMA

Opposite (top): Lina Bo Bardi's SESC Fábrica da Pompéia (1977) in São Paulo, Brazil. Photo Rômulo Fialdini

Opposite (bottom): Lina Bo Bardi. Photo courtesy of Instituto Bardi

Koolhaas exalted, for example, the Downtown Athletic Club of 1931, where spas, swimming pools, hairdressers, and even a golf practice range were stacked up in a 534-foot tower. On the ninth floor a boxing gym and its locker room were connected to an oyster bar, which inspired the memorable image of those naked men by Koolhaas's partner, Madelon Vriesendorp. The book was, as Koolhaas put it, "a retroactive manifesto", which looked at the recent past in order to make proposals for the future. Its love of overlapping and contradictory activities helped shape the buildings with which Koolhaas is now refining modern cities, such as the huge CCTV headquarters in Beijing. An army of followers and ex-employees is following suit: the Dane Bjarke Ingels, for example, is building a power-plant-cum-ski-slope in Copenhagen that owes much to *Delirious New York*.

For the Milanese designer and graphic artist Bruno Munari, the best way to write a manifesto was to do so inadvertently. His *Design as Art*, published in1966, is a collection of articles that never calls itself a manifesto but which still manages to be a coherent statement of a subtly radical philosophy. Superficially, it resembles the theories of the earlier twentieth century, such as the Futurists' belief that art lay in new industries and media or the Bauhaus insistence that form follow function, but it also has hints of surrealism and an Italian emphasis on sensual pleasure. Its interest in the multiple ways in which we see the world prefigures the digital revolution that has since swept the world.

The book contains musings on the way a spoon wears with use, or on the off-centre patterns of movement up the leaning tower of Pisa. There are pages of simple drawings of chairs,

arrows, faces and patterns, to demonstrate multiple forms of design and its effects on perception. To quote one of his memorable aphorisms: "A thing is not beautiful because it is beautiful, as the he-frog said to the she-frog, it is beautiful because one likes it."

Which brings us to Lina Bo Bardi, also Italian-born, but Brazilian by choice. She was even less aware than Munari that she was creating a manifesto when she wrote articles and essays through her life, including some that were published after her death in 1992. But they combined recollection and reflection, and the experience of designing remarkable buildings like the Museum of Art in Sâo Paulo, to achieve insights that are enlightening the best architecture today.

Bo Bardi's genius was to understand the interaction of ambitious architecture with the lives for which it would be the setting, and over the last decade she has become increasingly popular with architects seeking alternatives to egotistic icons. A house "should be for the life of Man", was one her sayings, "it should serve, it should console: and not show, as in a theatrical exhibition, the useless vanities of the human spirit." This is as good a motto as any to take into the future.

REDESIGNING **CERAMICA**

Konstantin Grcic, one of the world's most renowned industrial designers, reveals his design process.

Interview by Anya Lawrence
Photography by Markus Jans

As his recent *Abbildungen* exhibition at the Kunsthalle Bielefeld demonstrated, German industrial designer Konstantin Grcic is no stranger to material and formal exploration. The exhibition provided an overview of Grcic's 25 years in practice, designing for brands such as Flos, Magis, Vitra and Artek, all the while challenging perceptions of everyday objects such as chairs, tables and lights by using innovative production techniques or subverting and reinventing existing ones. It's no surprise, then, that when Grcic was asked to redesign the classic Rado Ceramica watch he became fascinated by the most fundamental aspect of the device: its material. Here, Grcic speaks of his journey of discovery and how designing a watch is, in fact, quite a lot like designing a chair – just on a different scale.

In your work you tend to give new form to objects, not just redesigning old ones. How did you find the process of redesigning one of Rado's most well-known models?
A redesign is a challenging brief, because the object being redesigned is usually already a good product. At the very least it is a commonly known product. As a designer you take on a clear responsibility not to spoil the legacy of the original, but to make it even better, take it further. The design process forces me to decide how close I should stay to the original, or rather, how far I should depart from it. The original Ceramica still looks pretty amazing today. It is absolutely iconic and pure, which made it extremely difficult to redesign. My new design had to justify changing the old one. I chose to approach the project from a very subjective point of view. I asked myself what would change the original Ceramica into a watch that I would wear today.

And how did you answer that question?
The original Ceramica was like a piece of jewellery – very beautiful, but not my kind of watch. The watch I wanted to make was more of an instrument for keeping time. Precision and legibility were the paramount issues. We paid a lot of attention to the watch face, studying different typefaces and graphic elements. I wanted the new Ceramica to be a real watch. It's for people who care about time, and a watch they would wear every day as a constant, reliable companion.

Konstantin Grcic and his Medici chair (2012) for Mattiazi.

Apart from the watch face, you also redesigned the bracelet and bezel. What was your thinking behind this?

The original Ceramica is a bracelet watch, which means that the bracelet and watch case are one geometry. We decided to enlarge the actual watch so that it became visually distinguished from the bracelet. That was a radical step away from the Ceramica's original DNA. The change in geometry is ever so subtle, just enough to make it a bit more watch, less bracelet. For the rest we stayed very closely to the minimalist design of the original. I always liked its very simple geometry. The challenge for me was trying to make it even simpler, more refined.

Your work to date is often marked by material exploration and using innovative manufacturing techniques, so what drew you to working with Rado?

The watch industry is a very specialised industry and what's nice about working with these industries is that they know everything about what they do. They're extremely focused and professional, which I find a very comforting quality in a collaboration. In this particular case with Rado, there is the high-tech ceramic technology. They've developed that technology for watchmaking and therefore have incredible know-how. Ceramic is one of the most high-tech materials I know and Rado has a long history working with it – it's their signature material. The way that they process the ceramic is a kind of high-pressure injection moulding, which creates an extremely dense, hard result. This type of ceramic cannot be compared with that used in porcelain table-ware – it's a whole different thing. Ceramic watches are extremely tough – they're harder than metal and scratch-resistant. The material is lighter than stainless steel, and it has a much more pleasant temperature when you wear it. The ceramic powder can be blended with colour pigments to create different tonalities. It can be polished to have a complete mirror finish or treated with a satin matt finish, which is my personal preference.

So what sets the process of designing a watch apart from your other work?

The incredible thing about designing watches is the scale. A watch is just so much smaller than what I am used to. On the computer we zoom into the object up to 10 times the original scale in order to evaluate differences. You're never looking at a model on a one-to-one scale like we would with a chair for example. We're talking about radii the

Rado Ceramica and a tray from the Passami il Sale collection (2007) for Serafino Zani, both designed by Konstantin Grcic.

size of 0.2 mm or 0.25 mm. It's very difficult to comprehend that difference, but it matters a lot. Between my two fingers I can gauge 2 mm, 3 mm, 4 mm – I know exactly what they are. In contrast, 0.05 mm is very difficult to grasp. It was like learning a completely new language. But then there are a lot of similarities too. A watch is a very quotidian product. It belongs to the culture of objects most of us live with. In terms of design it is interesting because a watch is a product which is produced in large numbers, but it has to feel absolutely unique and personal to anyone owning it.

Did you enjoy the constraints in the end?

Yes, because it challenged me to do something against my own automatism. I hadn't worked on watches before. The Ceramica is my first one. I would have normally chosen to do something more straightforward: I think I would have designed a round watch as opposed to a rectangular one. The movement of a clock is circular, thus it would make so much sense to start from there. It's like when architects are asked to design chairs: they do the archetype of a chair, simply because they do what is obvious. But because Rado had given me the Ceramica watch to redesign, I had to tackle the project from there. In retrospect I can say that starting with the rectangular format made things more difficult at the beginning, but in the end it created a much stronger identification with the whole project – I have now been totally won over by the rectangular shape!

Above: Rado Ceramica and VAL tray (2015) for Laufen.

Opposite: Rado Ceramica and the Diana table (2003/2016) for ClassiCon.


RADO
SWISS MADE

3D **PRINTING**

Some inventions feel too futuristic to be real. The 3D printer is one of them, its potential nodding as it does towards Star Trek's replicator, in which a touch of a button saw just about anything made to order, instantly. But certainly 3D printing looks to radically change the way many things are made, and who makes them, at least once the technology comes to fruition. That has been a slow process.

By Josh Sims

Still little understood by the general public, the technology is actually already three decades old, the first 3D printed object having been produced in 1983 by the technology's inventor Chuck Hull. This year is the 30th anniversary of his founding of 3D Systems, the first commercial rapid prototyping company to use the science he dubbed "stereolithography".

The idea is simple enough: also called additive manufacturing, 3D printing actually works much as a 2D printer does, but whereas the latter puts down one layer of ink, the 3D printer creates an object by building successive layers of material from the bottom up, based on the data given to it. What is remarkable is both the diversity of what can now be made – shoes, chairs, engine parts, medical implants, architectural models, artworks, food or clothing akin to that of Rado Young Designer award-winner Iris van Herpen; and its intricacy, this being of a complexity that other manufacturing methods, the likes of CNC milling, cannot achieve. Structures can be metres high, or as small as a few microns. Perhaps just as important is the fact that it allows each to be made bespoke and on demand, yet also en masse if desired.

Small wonder 3D printing is set to revolutionise life for creatives, both professional – allowing for faster development of more complex designs – and amateur, in keeping with the growing "maker movement" that has spawned pioneering companies the likes of Makerbot, Thingiverse, TechShop and Fab Labs and led to an increased democratisation of innovation.

Indeed, among the profound impacts of 3D printing for design and manufacturing are that it could make the processes less the remit only of deep-pocketed corporations – providing all sorts of creative employment for coming generations of youngsters; it could make them more local again too, akin to the personal and small-scale crafts largely killed off by the industrial revolution.

Certainly it is leading to some striking designs: for example, the Solid C2 chair, by French designer Patrick Jouin, is a complex scaffolding of bright red plastic ribbons that indicated just the kind of adventurousness that 3D printing will make possible. The chair was printed in one piece – and impressed the Stedelijk Museum in Amsterdam so much that it added one to its permanent collection.

SOLID C2 chair in black by Patrick Jouin.
Photo Thomas Duval

Waratah table lampe by SandFlora.
Each of its more than 1000 petals is unique.
Photo Courtesy of Good Design Australia

"3D printing is the most versatile technology we've come up with. It's quite remarkable," suggests Dr. Adrian Bowyer, the engineer who pioneered the RepRap – in 2008 launching the first 3D printer that was capable of printing, in large part, a copy of itself (the latest version, launched last year, can reproduce 73% of itself). "The difficulty in design has always been going from something on a computer to a solid you can hold in your hand. 3D printing has solved that. We've long had machines that can make things that we don't know how to tell them to make. But because 3D printers work in 2D they can make anything – and we know how to tell them to do this."

Bowyer stresses how it goes one better too: the more complex the object being made is, the cheaper it is for a 3D printer. "Lots of holes full of air cost nothing to print," as he puts it. "But what will be interesting to see is what happens when the technology goes mass-market. We'll see people downloading and printing objects, maybe some customisation. Anything more complex will require getting over difficulties printers currently have working with different materials. But that's being tackled … "

John Robertson also sounds a note of caution, saying that the narrative of 3D printing has, to date, been one of some hype. "3D printing remains a very complex area and a lot of coverage surrounding it has been misleading," he suggests – and he speaks as a specialist consultant in 3D printing to the creative arts, and as founder of Vertices Edge, a jewellery company making pieces that, he says, "would simply not have been possible without 3D printing".

There is, he argues, some way to go before the benefits of affordable and high quality 3D printing will be felt on an everyday level. High quality machines remain prohibitively expensive and, for all the talk of "desktop manufacturing", many of the materials used are hardly the kind one might want to keep at home. While

advances in 3D scanning technology have been as much a game-changer – being the unsung hero in the story of 3D printing – software quality will always be an issue. 3D printers, after all, can only make what they are programmed to make. And speed too remains a problem to be tackled. While developers such as Joseph DeSimone are using chemical processes involving heat and light to devise radically new types of 3D printing that are proving at least 10 times faster – and could be 1000 times faster in years to come – most available systems are ponderous to say the least. "There are mushrooms that grow faster than some 3D printers work," he has quipped.

But perhaps the biggest barrier to the much heralded 3D printing revolution – or the biggest brake on the production of yet more unnecessary stuff – is the one that offers greatest relief to professional designers around the world. While printers will certainly prove liberating to even the hobbyist, their utility to improve lives through design will only be as good as the designer behind them. For all that 3D printing will change what can be made and how, it will first no doubt also give us plenty more dreadful plastic tat – a new kind of techno kitsch – ready for landfill.

"It's important to remember that a 3D printer is just a tool in a box," says Robertson. "Without good CAD and design skills – an understanding of tolerances, for example, of engineering principles – a 3D printer just isn't that useful. And yet there's no question that 3D printers will be a game-changer for designers. They already are – because what the tech does provide is the opportunity to explore to your heart's content, to make mistakes in aesthetics, safety, production qualities, without waiting for some big machine somewhere to crank into action to demonstrate those to you. And that's the real excitement in 3D printing. It gives designers new levels of experimentation. It gives them new possibilities."

Detail of Waratah table lampe by SandFlora.
Photo Courtesy of Good Design Australia

ZEITGEIST

Image from Rado *Designing lightness* exhibition.

Foreground: Angelin (2010) by Constance Guisset.

Background: Yours and ours (2015) by Sam Baron and Formafantasma.
Signatures of each team member's breath, captured in glass.

LIGHTEN **UP**

Faster, stronger – and lighter? A look at the pursuit of weight reduction, from furniture design to nanotechnology.

By Josh Sims

Above: Constance Guisset. Photo Felipe Ribon

Opposite: Giulio Cappellini.

Might a new era of the literally lightweight also see a change to the way things look – to an era of the aesthetically lightweight? Product designer Constance Guisset argues that this is the case: lightness is perhaps a reimagining of minimalism. A lack of weight suggests a contemporary clarity and gracefulness. "My feeling is that fragility might be considered a good thing because it can suggest preciousness, and we should sometimes accept a kind of fragility in a world that always seems to need to flex its muscles," she argues. "And certainly that sense of lightness doesn't serve in every context. Sometimes even if I know that an object has sufficient strength, I still decide to enlarge sections so that it looks like it does too."

"But beyond that, lightness suggests an elegance," she adds, "a quality I think objects need for us to live with them in the long-term, and which allows those objects to respect the user and their space they're less intrusive. Sometimes I dream of a material that would in a way self-destruct when the object is no longer in use. Perhaps this move to lightness is a step towards that."

The lightest possible material at the moment is a material that, on its own, could transform everything from computing to car design, scientists claim. It could make for cheaper energy and improve DNA sequencing and water desalination. It could be used in contact lenses, bulletproofing and in the building of nano-bots. It conducts electricity and heat better than any known material. It is called graphene and it is super-light – small wonder when it comprises just a single layer of carbon atoms and is one million times thinner than paper. It's so thin, so barely there, in fact, that science considers it to be two dimensional. And yet it is also incredibly strong. Indeed, its unusual honeycomb structure makes it the strongest material in the world.

"It's so strong it would take an elephant, balanced on a pencil, to break through a sheet of graphene the thickness of Saran Wrap," as Columbia University mechanical engineering professor James Hone has put it. Welcome to a new world in which lack of substance, lack of heft, means neither a lack of strength, rigidity nor utility.

But what was a specialist philosophy of design is now being applied much more broadly, in large part because today reduction of weight has far more important ramifications in a society in which sustainability is of ever increasing importance. The lighter some-

thing is, the less energy is required to make and move it hence improving overall performance which is why automotive design and aeronautics place so much emphasis on cutting weight wherever possible.

And it is not just a concern for the fly boys. According to a 2014 study from the University of East Sarajevo, materials based on iron are stagnating in production and consumption, while magnesium, titanium, alloys, polymers and ceramic composites are increasing albeit with industry still learning to compensate for these materials' own disadvantages, such as lack of thermal resistance, recycling problems, low maximum operating temperatures or, in some instances, cost.

But the lighter weight might also be said to chime with 21st century lifestyles: the peoples of first world countries are more mobile than ever, travelling further and more frequently so lighter weight clothing, footwear, bags and equipment all command a heavyweight price tag. Today's generation also moves home more frequently, and lives in smaller homes when settled. No wonder we see a new wave of a design philosophy introduced the first time in the 1950s: furniture is getting lighter, so pieces can be more mobile,

not only from place to place, but to also have multiple functions within a home.

"We're more nomadic now. We prefer what you might call hybrid furniture that we can use around the house," argues Giulio Cappellini of the Cappellini furniture makers. "For me lightness is very important in considering whether to put a new design into production and we're more attentive to the new materials that might allow greater lightness to be achieved. The idea that heaviness only is associated with quality is passing – more people understand, for example, that it's actually much harder to make a piece of furniture out of aluminium than solid wood."

"From a business perspective these modern lightweight pieces can have a much wider range of uses," adds Cappellini. "We're working on an aluminium chair now that I can see not just in a domestic setting but in retail, restaurants, showrooms, offices. Lightness can meet the demands of all environments."

Certainly this new lightness will necessarily require a change of attitude, especially perhaps when it comes to luxury goods: heavier weight goods are still generally associated with greater build quality, be that the solid clunk of a car door when it closes, or the reassuring weight of crystal glass.

"Luxury has long been associated with weight because luxury was historically based in crafts, or hand-making using heavy, noble materials," suggests Matthew Cockerill, creative director of design agency Seymour Powell. "But you can see how that's changing now. The key to good design now is taking weight away where possible and adding it where it's needed – and sometimes you do need it, to give longevity, or to make something balance right in the hand, for example. The way weight is read by consumers is certainly shifting too."

Arguably it's undergoing a generational shift: younger people are more likely to equate a lighter weight product with functionality, mobility and above all with modernity, and all the more so as materials science underscores that lighter weight need not mean less durability. Heavier weight products are, in turn, being associated with pollution, with sluggishness and waste. As English idiom has it, "lightweight" as a term of abuse – suggesting weakness and superficiality – is even shifting to the positive connotations of "making light work" of something or of being "light on one's feet". ©

Above: Constance Guisset's Cape (2014) for Moustache.
Photo Thomas Straub

Opposite: Constance Guisset's Angelin (2010).
Photo Thomas Straub

FASHIONABLE **EMOTION**

A look at the storytelling collections of Vega Zaishi Wang, part of the surge of independent fashion designers in China.

By Anders Modig

"I don't care about trends or what is fashionable; I only care about how to explain myself," says fashion designer Vega Zaishi Wang. "Each collection has a different story based on my feelings and my diary." Founder of the brand carrying her name, she is part of a budding scene in China. "We started in 2008, but the idea of an independent fashion brand is still something new for our country."

Always fiercely determined, Vega Zaishi Wang left China at the tender age of 16. "I needed to get out and see the world, and ended up at Saint Martin's School of Art. During the summer holidays I worked for Vivienne Westwood and Alexander McQueen – I was like a sponge during my seven years in London. I wanted to learn as much as possible from all these creative amazing people that are there."

Vega Zaishi Wang's love of checks, symmetry, exclusive materials and proud workmanship is very present in *Visible Faith*, her 2016 fall/winter collection. Though made for women (like all her collections), it is actually inspired by the Congolese dandy culture called La Sape, which can be described as sartorially exquisite, but down-on-their-luck men. "The Sapeurs put what little money they have into looking stylish; they pray to God to give them beautiful clothes to show that they are not poor in spirit. They have dignity – and dignity is very important to show with clothes."

Vega's view that design arises at the intersection of technology and art is plain to see in her 2012 *Alpha Lyrae* special collection. Through combining electroluminescent paper and fabrics, she created a futuristic look with light-emitting clothes. "This high-tech material improves all the time – now you can fold it, you can have it in any colour, it is very flexible, and you can print on the actual fabric. I still love experimenting with this material, and there will be another collection coming soon." In the 2016 S/S *"I am rooted but I flow"* collection, she was greatly inspired by Virginia Woolf, who penned that line in her novel *The Waves*. "Woolf was a genius, but she had a very heavy mind. Two years ago I was also going through depression caused by too much work, and I read her books to understand more what I was experiencing. And I think in this collection you can feel a sense of lightness that would come after you find a solution to your depression."

"Made in China" is often associated careless production. But from the very beginning Vega Zaishi Wang decided that quality is key, "otherwise all other aspects are useless". So she sources materials from around the world: the softest wool from Italy, feather-light silk from China, metallic polyesters from Japan. And in her Beijing studio, 20 tailors and seamstresses execute the garments from beginning to end; there is no line production. "Many say that fashion is very floating, superficial, shallow. But I am really trying to do something more than just transforming fabric into a garment – I attempt to give meaning to my clothes. I want them to make people feel that you shouldn't be afraid to think, to try, to learn about the world and form your own opinions."

Vega Zaishi Wang.

From "*I am rooted, but I flow*",
Spring/Summer 2016.

COLUMN

NOMADIC **LIGHTNESS**

By Lidewij Edelkoort

"In the current chaotic time frame where everything is changing, humans feel a need for lightness as well as light in the sense of illumination, enlightenment and serenity. The remarkable lightness encapsulated in Rado's timepieces is derived from the use of ceramic materials, which, interestingly, are archaic and futuristic at the same time. Ceramic materials are as old as the world, and now they are being transformed, reworked and re-assessed. This approach is a growing trend in design, where we see the slow craft movement embellishing and embedding high-tech into slow crafts in hitherto unseen combinations. And you see it on a wide spectrum – from the revival of knowledge of endangered handcrafts to laboratories growing leather, where the latter will bring about a huge democratization of the material. I wonder when we will see the first watchstrap made of lab-grown leather?

Lightness is not only present in small objects, clothes and accessories. The quest for lightness is also present in the design of more efficient and sustainable airplanes, cars and houses. In humanity's striving for a better planet we simply need lightness, which is why we are now, and even more so in the future, experiencing several dimensions of fluid lightness. Often combined with well-made beautiful crafts with a romantic attention to detail, all those things that we lost in the race for cheaper production are (also) appealing again. The return of quality means doing away with the throwaway mentality, which paves the way for moderation and constraint as we consume less.

Despite the ongoing globalisation of trends and behaviour, there is also a growing number of differences, regional flavours, regional making and production, which enhances the fact that every place has its unique qualities. This is being offered more and more – local and regional flavour is intact and very present. A global brand must also be locally rooted. You cannot instantly start a global brand: a brand must belong somewhere. Look at the distinctive gentleman's tailoring from England, or at the handful of classic French fashion houses that simply *are* Paris. And look at the precision and heritage of the Swiss watch industry.

Luxury groups recognize that the whole world is going through a reflection on change – nobody thinks things will remain the same. In that context the key to survival for the global brands is to be part global and part local. Even if they remain organized for world distribution, brands must also offer local design, which will add local flavour to their global collections, and it will also be beneficial for the local economy. I am convinced that we will see even more collaborations and complementary, intelligent co-brandings between different industries in the future. Co-branding gives you the opportunity to be innovative, creative and credible with the best possible partner; you walk together for some time and co-own the project.

This is also related with the growing movement of independent people that are not just travelling, but leading a nomadic, transitionary existence. You may spend a year in Tokyo, followed by a project in Toronto – and then there is a job opportunity in Rio, or China. This kind of fluid instability becomes a nomadic way of life, which calls for lightness in design in order to be movable and portable. Now we are just seeing the start – a young generation will completely change the way we do and make things, they will overhaul everything and invent a new and more equal economy, but that will take twenty years, I guess." ©

– As told to Anders Modig

Lidewij Edelkoort, founder of Trend Union, is a trend forecaster based in Paris and New York. Former Chairwoman of Design Academy Eindhoven, she is currently dean of a new Master's program in Hybrid Design Studies at Parsons School of Design.

Lidewij Edelkoort, founder of Trend Union.
Photo Ruud Van Der Peijl

INNOVATION & **MATERIAL**

Rado HyperChrome,
monobloc high-tech ceramic watch head.

MISSION **POSSIBLE**

Rado's touch technology, featured on models like the Esenza Touch and HyperChrome Ceramic Touch Dual Timer, brings Rado's credo – If we can imagine it, we can make it – to life.

By Victoria Gomelsky

Imagine a car without a steering wheel. Or a bicycle without pedals. Or a boat without a propeller. In 2014, Rado introduced an unusual-looking timepiece that, at first glance, seemed equally unlikely.

The HyperChrome Ceramic Touch Dual Timer is one of the brand's most popular and groundbreaking styles, but it lacks a critical part: a crown. Used to change and set the time, the element is a key feature according to the conventions of traditional watch design.

The visionaries at Rado, however, imagined a sleeker, simpler method to manipulate the hour and minute hands and, relying on the brand's trademark innovation, set about creating it. The timepiece's monobloc case, made from a single piece of high-tech ceramic, features six sensors that allow the wearer to both set and flip between two different time zones.

A watchcase made from metal would act as a shield between the outside world and the circuits inside. However, as high-tech ceramic is an insulator, this watch gives the wearer the power to manipulate the electrical circuit at its heart. The electrodes can "feel"

the presence of a fingertip on the case through the ceramic – a feature that seems intuitive in a world where human-computer interaction such as touch screen technology has become ubiquitous.

The model is a direct descendant of the 2013 Esenza Touch, Rado's first timepiece to feature its patented touch technology, which the watchmaker provocatively describes as "sensual setting".

With their space-age styling and radical functionality, the HyperChrome and Esenza Touch watches embody Rado's boundary-pushing approach. But of the two, the former is best suited to travelers: the Dual Timer has been described as a "watch for the jetset" owing to its time zone flip functionality and ability to pass through metal detectors unnoticed. Sleek to the point of being stealthy, it offers a simple solution to a familiar question: When you arrive in a new city, when is it safe to call home without fear of waking someone?

Rado pioneered a technology that does the math for you: To swap the time zone from the small dial to the main dial and vice versa, activate the watch and touch the case simultaneously at 9 o'clock and 3 o'clock for 2 seconds. The action triggers the hands on both dials to switch places. Home time and local time, clear as can be.

In an era of swiping, what could be simpler? ©

Rado HyperChrome Ceramic Touch.

MARKS OF **DISTINCTION**

Lightweight, minimalist and design-focused, Rado is a Swiss watch brand like no other.

By Victoria Gomelsky

Spend any amount of time in the Swiss watch industry and you'll come to understand the conventional wisdom about fine timepieces: the more luxurious a watch, the heavier it tends to be. Ornate models outnumber those that are unadorned. And design typically takes a backseat to mechanics.

Unless, that is, you're talking about Rado. An upstart among watchmakers since 1962, when it incorporated newfangled materials such as hardmetal and sapphire crystal into its DiaStar 1, which was marketed as the world's first scratchproof watch, the brand prides itself on creating timepieces that are lightweight, minimalist, and design-centric to the extreme.

Rado's approach can be distilled to three unique selling points:

Lightness
Rado's signature material is high-tech ceramic, which is hypoallergenic, durable, comfortable, and resistant to wear. It's also incredibly light, violating one of the watch industry's most sacred cows: that the heft of a timepiece is directly proportional to its real and perceived value. That's because gold, platinum, and steel – the three metals favored by watchmakers – all carry considerable weight.

Rado's desire to create products defined by their lightness corresponds to a larger cultural shift that, according to trend forecasters, is placing more emphasis on streamlined lifestyles – or, as Rado has dubbed it, "a lighter way of living".

"There's a whole new design language – whether it's in architecture, in food, or in fashion – and it's more about being lighter and consuming less," says Philip Fimmano, the New York-based director of Trend Union, a trend consultancy founded by the world-famous futurist Lidewij Edelkoort.

Fimmano cites the financial crisis of 2008 as the global event that kickstarted the current preoccupation with lightness. "After the crisis, especially at the beginning, people were almost revolted by shopping," Fimmano says. "They were trying to be discreet."

Minimalism
The impulse to live more discreetly goes hand in hand with another burgeoning cultural phenomenon: greater appreciation for objects that are understated as opposed to ostentatious. Fimmano traces this, too, back to the financial crisis.

Rado True Thinline with Crease (2011)
by Simon Naouri for Triode.
Photo Thomas Straub

Above: Rado True Thinline with Monstera Magnifica (2014) by Tim van de Weerd. Photo Thomas Straub

Opposite: Rado True Open Heart with silk dress by Yiqing Yin (Autumn/Winter 2011-12). Photo Thomas Straub

"Eight or nine years later, there's a new, more mature philosophy that has emerged, which is very much about trying to do less but better, and to live in a more minimalistic way," Fimmano says. "So objects and forms in design are reduced to almost streamlined forms."

The less-is-more ethos resonates with Rado's historic embrace of minimalism as a design philosophy. A survey of the brand's timepieces over the past half-century reveals that clean, elegant, unfussy style is central to the watchmaker's identity – from the 1976 Dia 67 Glissière, which employed a metallized sapphire crystal glass that covered the entire case with an edge-to-edge construction, to the 1990 Ceramica, whose case and strap blend seamlessly to form a continuous, glossy black bracelet, to the 2013 Esenza Ceramic Touch, a crownless timepiece that was Rado's first to use touch technology.

Now, more than ever, the brand's identity is in step with the zeitgeist – namely, a coming period of "narrative minimalism," suggests Fimmano.

"We feel we're shifting from a narrative period to one that's more abstract," he says, citing transparency, rounded shapes, and a more organic design language as important aspects of an abstract approach to design.

Design-centric

When a radical economy of material is the goal, it stands to reason that elevating the importance of design – above more traditional watchmaking concerns such as the speed and efficiency of internal mechanical features – is paramount.

But for Rado, a design-centric worldview is inseparable from its identity. Not only has the brand won more than 30 international design prizes, it continues to make its commitment to the design community clear by partnering with design events around the world – from Paris to Peru – and endearing itself to global design tastemakers.

"Rado is known for its focus on beautiful craftsmanship, material exploration, and as a pioneer in using high-tech ceramic, but design is really part of the DNA of the brand," says Odile Hainaut, co-founder of WantedDesign, an annual platform dedicated to promoting design in New York City every May. "And I believe this is perceived and recognized in the design world."

BIGGER **SCALE**

What is happening on the architectural forefront? It turns out that progressive architects have several similarities to the watch industry – especially when it comes to pushing the boundaries for lightness and the materials and machines that make it possible.

By Rowan Moore

In a park in Melbourne, Australia, for a few months at the turn of 2015 to 2016, the London-based Amanda Levete Architects (AL_A) erected MPavilion, a small artificial forest in which leaf-like elements hovered on slender carbon-fibre stalks. They were made of fibreglass and resin and strikingly veined and strengthened with dark lines of carbon fibre, which were bunched in the places where the stresses in the structure were greatest.

The materials were modern but not absolutely new. What was new was the thinness and transparency of the leaves and the precision with which the elements could be calculated. Composite materials like this are also benefiting from other refinements: they are more eco-friendly than they were, and better able to withstand the aging effects of UV light. Robotic fabrication is likely to bring down their costs and increase their range of forms and uses. They have the potential to generate new kinds of light, durable and adaptable buildings. "The technology is there," says Maximiliano Arrocet of AL_A. "It just needs the market to push for more development."

The ancient Romans used arches, vaults and early versions of concrete to achieve huge internal spaces in buildings like the Pantheon. Gothic cathedrals strove to achieve ever greater heights, and ever larger expanses of glass, with ever more delicate structures. The industrial age unleashed materials and techniques – steel, concrete, elevators, mass production, the ability to make glass in large sheets – that generated modern architecture. At least since the 1960s, avant-garde designers have yearned to play with inflatables, electronic screens, geodesic domes and the extraordinary inventions that came with space travel. Architects are always looking to other sectors – aeronautics, Formula One, the military, medicine – for inventions that can be applied to buildings.

Now there are more possibilities than ever before. Some have been discovered in ancient materials such as ceramics and some are in wholly new ones, such as the potential wonder-substance graphene. There are prospects of using bio materials that fuse the organic and inorganic, such as ceramic and timber. At the same time digital processes of design and fabrication have made it possible to wield almost any construction material in new ways. 3D printing has yet to be applied extensively to building, but raises the prospect of buildings that are both highly inventive and repeatable without limit.

It is not simply a case of technology driving the form of buildings, but also of architects' design ideas guiding the adaptation of technology, as the story of aluminium foam demonstrates. This is a material that originated in the 1920s but developed in recent times with increasing sophistication for, among other things, the protection of military vehicles, thanks to its combination of strength and lightness. It eventually caught the eye of architects – Frank Gehry for example considered it for the extraordinarily ambitious but never-built Peter Lewis house in Cleveland, Ohio.

Alongside advances in materials are developments in the ways they are imagined and formed. Computer Numeric Control (CNC) machines, which can be programmed to cut or shape complex forms to the precise instructions of the designer and have been in use in the car industry for some time, are now becoming commonplace in construction. Their possibilities are still being pushed: in order to achieve the complex cladding of their New Hall for Basel Fair, – where Rado exhibits every year during the Baselworld watch and jewellery fair – the architects Herzog & de Meuron persuaded its manufacturers to modify their machine, so that it could punch, engrave and weld in one manufacturing step.

The result is a sort of snakeskin in aluminium, always twisting and adapting to changing shapes, which at the same time appears seamless, its joints and fixings hidden from view. It is made up of 15,000 panels, each one of which is different in shape: each one had to be automatically analysed before fabrication to make sure it could be made out of standard-sized sheets, and the knock-on effects on other panels of any adjustments had to be taken into account. Without modern software and computing power this would have been an impossibly complex and laborious task.

MPavilion petals.
© John Gollings

The Basel Fair is clad with individual aluminium panels designed by Herzog & de Meuron. Photo Anders Modig

Cork Kit.
© Pedro Sadio and Maria Rita

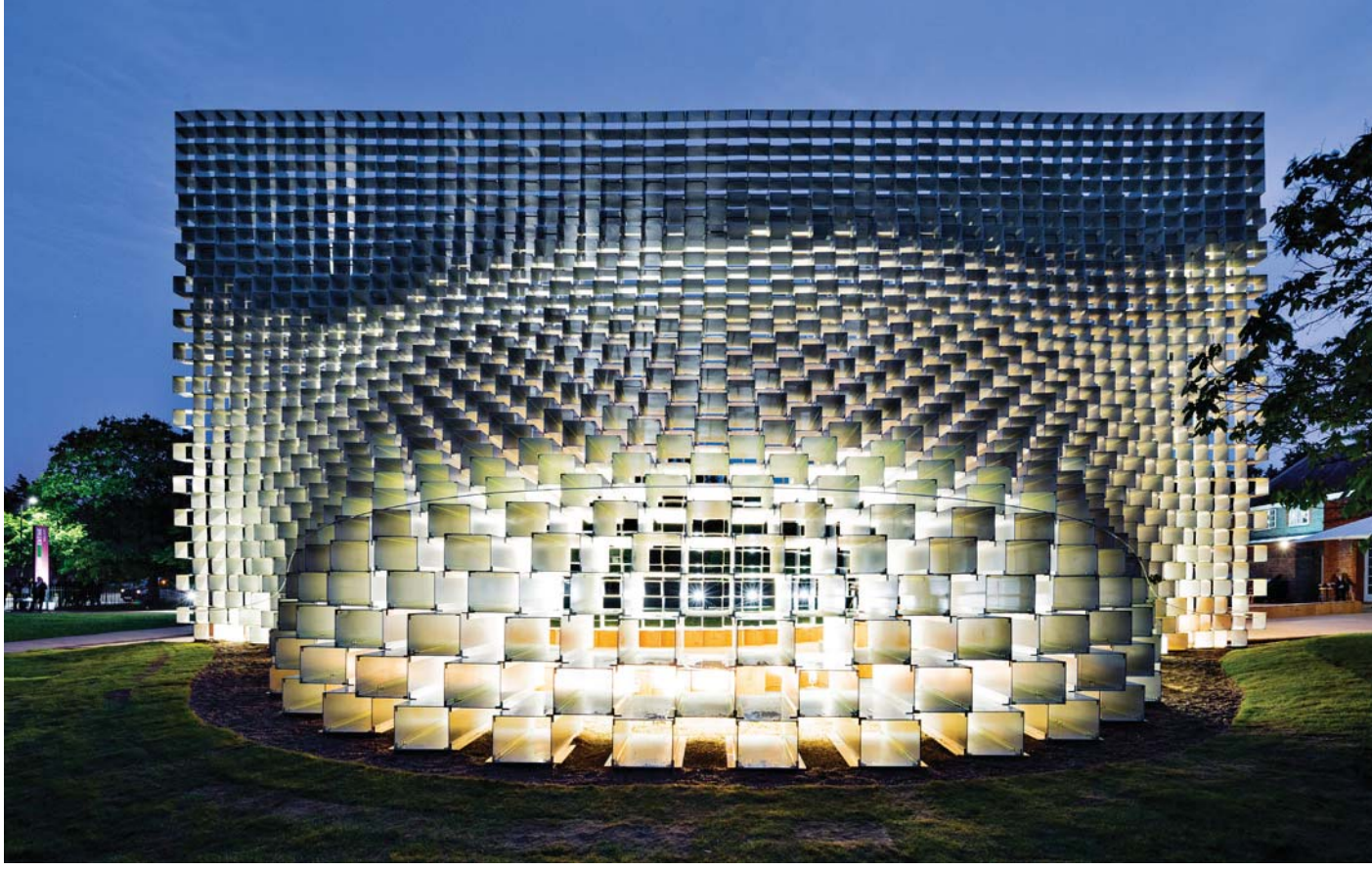
Where new construction technologies differ from those of the first industrial age is in the infinite possibilities they create. In the nineteenth and for most of the twentieth centuries, the use of steel or concrete frames tended to make the appearance of different buildings converge. Now it is easier than ever before to conceive almost any shape and any combination of materials and to get it built.

This includes the freedom to combine advanced and traditional methods, and the artificial and the natural – just because something is made in a futuristic way, it does not have to look futuristic. AL_A are developing a way of using recomposed cork – shaped as desired by CNC machinery – to mould concrete when it is being poured. It will then remain after construction is finished. "It gives thermal insulation," says Max Arrocet, "and softens the acoustics, and at the same time is quite beautiful."

Herzog & de Meuron used CNC technology in their Volkshaus restaurant in Basel to make every chair different. "With these machines," says Steffen Riegas, the practice's Head of Digital Technologies, "it doesn't matter whether you make 500 the same or 500 individual shapes." The effect is subtle: the chairs are otherwise conventional, and most people don't notice the differences at first, but it gives each piece a character, such that "the restaurant always feels a bit populated, even when it's empty."

For Hanif Kara, of the London-based engineers AKTII, the most exciting possibilities come from "bringing the inventions together" – combining innovative materials with robotic manufacture and digitised design. Kara, who is working on Google's spectacular new headquarters in Mountain View, California, is a fan of composites of the sort used by AL_A in Melbourne. He believes they can be used for several of the fundamental elements of a building, including the structure that holds it up and the cladding that protects it from weather.

The advantages of such materials are strength and lightness, which means they are efficient, which in turn has environmental benefits. They have



longevity, such that there is less wastage over time. Their lightness and robustness also enable elements of building – wall panels, bits of structure – to be taken down and rearranged with relative ease. This ability, together with the long life of composites will, Kara thinks, lead to a generation of buildings that can be radically altered in response to changing needs, but whose basic components can last for a hundred years.

Kara has given a glimpse of this future with the temporary pavilion erected outside the Serpentine Pavilion in London in the summer of 2016, designed with the architects BIG. An apparently simple system of stacked-up fibreglass boxes nonetheless delivers a striking curving shape, and exploits the ability of computers to analyse the complex forces taking place in the structure. It wouldn't have been possible even five years ago, says Kara: "What once would have taken years can now be done in seventeen seconds."

Kara's enthusiasm for composites is matched by one for ceramics, which have been used in buildings for thousands of years. Now, however, it has been developed for use in space travel because of its heat resistance, and some of the world's leading schools of engineering and architecture are "trying to see how far you can push" the material. In principle it can used for the structure of buildings – whereas it has traditionally be used for cladding alone – and it can be combined with wood "to alter its DNA" and make it less brittle. As Harvard students of the architect Leire Asensio-Villoria are discovering, new technologies can work it into unprecedented forms.

These are not wild speculations, says Kara, but "based on scientific order. The digital is now normal, and scientists are confident they can make things happen." The possibilities of new technologies are, he says, "not just about sexy shapes" but about "reducing the environmental impact of building on the world". Which, in the end, would be the best possible use of the dazzling and unprecedented ingenuity now going into the ways that buildings are made. ©

The Serpentine Pavilion 2016,
a collaboration between BIG and AKT II.
Photo Iwan Baan, Courtesy of BIG

THE **ALCHEMISTS**

Best known for their transformative use of ceramic, the dreamers at Rado have mastered the art of material science. Victoria Gomelsky talks to a ceramics processing expert about the progressive materials used in Rado watches.

By Victoria Gomelsky

Rodney Trice, Professor of ceramic processing at Purdue University in West Lafayette, Indiana.

Metallurgy and material science – or the study of how metals, compounds, and alloys behave under a variety of extreme conditions, and how they can be applied in the real world – are uncharted territory for most Swiss watchmakers.

But Rado isn't like most watchmakers. The brand has embraced far-out metals and compounds since 1962, when it debuted its iconic DiaStar 1, marketed as "the world's first scratch-resistant watch" thanks to its use of hardmetal and sapphire crystal. More than half a century later, the materials have grown a little more high-tech, but Rado's achievements remain consistently pioneering.

Here we take a closer look at the space-age building blocks of Rado's timepieces:

High-Tech Ceramic

The term "high-tech ceramic" is a fancy way of describing a compound that joins a metal with either oxygen or nitrogen. The final result is a non-metallic material. In Rado's case, the preferred compound is zirconium oxide, a man-made, ultra-pure and ultra-fine grained powder that allows for full density after heat-induced shrinkage – unlike traditional ceramic that stays porous and fragile.

Like all ceramics, zirconium oxide begins as an ultra-fine powder with an extremely high melting point, usually above 2,000°C. "Because of that, it cannot typically be cast," says Rodney Trice, a professor of ceramic processing at Purdue University in West Lafayette, Indiana.

"Most people shy away from using ceramics because they're harder to process than most metals," Trice says. "You can't melt a ceramic and pour it into a mold because most ceramics melt at higher temperatures than metals – so what are you going to pour it into?"

Instead, Trice explains, ceramics like zirconium oxide are sintered in high-temperature furnaces. The process removes the material's porosity while simultaneously strengthening it to a final hardness of 1250 Vickers (compare that to stainless steel, which has a hardness of 180 Vickers).

The benefits of using ceramic are well known to the medical community. Zirconium oxide was used to produce the femoral cap in early hip implants, Trice says, because the chemically inert material is biocompatible, which is another way of saying that it's hypoallergenic and is complementary to the human body.

At 6.0 grams per cubic centimeter, the material is also lightweight (especially in comparison to steel, which has a density of 8.0 grams per cubic centimeter). And with a smooth surface that adapts to the temperature of the wearer's skin, it's exceptionally comfortable.

Finally, thanks to Rado's innovative use of dopants – trace elements added to a substance at minute concentrations to alter its electrical or optical properties – zirconium oxide can be crafted in a range of colors, including black and white (seen in the True Open Heart model), chocolate brown (see the HyperChrome and Centrix models), and difficult-to-produce grey (HyperChrome Dual Timer). Once the process is complete, high-tech ceramic can be polished or matte – either way, it remains scratch resistant.

Plasma High-Tech Ceramic

Imagine an oven. Now imagine an oven that can withstand temperatures up to 20,000°C.

Exactly such an oven is at the heart of Rado's futuristic plasma process: Watch components that have been fashioned using the brand's high-tech ceramic expertise are placed inside a specially designed plasma furnace, where gases activated by a plasma discharge at 20,000°C change the molecular composition of the ceramic's surface. The ceramic itself reaches a temperature of 900°C; its colour changes and a unique, warm grey metallic shine emerges.

"It's more than a coating," says Trice. "You can scratch a coating. In this plasma process, the carbon atoms are actually diffusing into the surface of

Rado True Open Heart.
Kacper Hamilton – Mass of Time (2015).
Photo Thomas Straub

Rado True (plasma high-tech ceramic) with Tafla Mirror by Oskar Zieta. Photo Thomas Straub

the material. It's actually going into the zirconia and replacing the oxygen atoms, interacting with that material."

The process affects the optical properties of the ceramic but not its benefits, meaning the plasma high-tech ceramic retains all the hardness, scratch resistance, lightness, and hypoallergenic benefits of standard high-tech ceramic. In models like the True Thinline and HyperChrome Diamonds, the grey metallic sheen of the plasma is a dead ringer for metal, yet metal plays no part in the process.

Silicon Nitride Ceramic

Silicon nitride is a very hard ceramic material that combines a metal – in this case, silicon – with a nitrogen atom. "The material is cool because it has an interlocking structure, which gives it a high toughness," says Trice, who wrote his PhD thesis on silicon nitride ceramics.

Its unique microstructure also makes silicon nitride extremely resistant to impacts and shocks, which helps explain why the automobile industry uses it to make certain engine parts, and why the medical industry favors it to make spinal fusion devices. However, the main bragging rights of silicon nitride come from its exceptional lightness – at 3.4 grams per cubic centimeter, it is even lighter than titanium.

Beyond its appealing physical properties, however, silicon nitride has an undeniable aesthetic charm: The material's all-natural dark grey color is evident in the new HyperChrome Ultra Light timepiece, introduced earlier this year. The model employs three materials distinguished by their lightness – a silicon nitride ceramic case, an anodized aluminum movement, and sandblasted inserts made of hardened titanium – but it is the silicon nitride that lends the HyperChrome Ultra Light its sleek, futuristic sophistication.

Hardened Titanium

Named for the Titans of Greek mythology, titanium is both lighter and stronger than steel – which helps explain why it has found favor among workers in aerospace and high-tech medicine.

"It's a space age metal," Trice says. "There's something sexy about it. It's what NASA uses on rockets because it's lightweight and strong."

Although it is also hypoallergenic and resistant to corrosion, titanium is soft and scratches easily. But not anymore: Earlier this year, Rado unveiled a slew of timepieces in its HyperChrome collection crafted from hardened titanium.

The hardening happens when the metal is subjected to gases that penetrate its surface to a depth of 50 microns. This exclusive treatment alters the molecular structure of the titanium, thereby boosting its scratch resistance.

To see the metal in action, check out the new HyperChrome 1616, which has a hardened grade 5 titanium case and crown protector, and the HyperChrome Ultra Light, whose side inserts, crown, and bracelet buckle are fashioned from hardened grade 5 titanium.

Hardmetal

Rado earned its reputation for material innovation in 1962 with the unveiling of the DiaStar 1 (The Original), a watch featuring hardmetal and sapphire crystal. A composite material made up of a ceramic (tungsten carbide) and a binder metal (once cobalt and now a stainless alloy), hardmetal has the same exceptional hardness as ceramic, as well as the toughness of metal.

But unlike Rado's high-tech ceramic, hardmetal is heavy. Tungsten carbide, which is familiar to many men because of its use in masculine wedding rings, has a density of 19.3 grams per centimeter cubed, while hardmetal, at 15 grams per cubic centimeter, is only slightly less dense.

Rado HyperChrome 1616 in hardened titanium.

Rado V10K, featuring high-tech diamond.

The composite was initially developed to make tools such as chisels, dies and drills. Then Rado saw an opportunity to turn Swiss watchmaking convention on its head by using hardmetal to create a watch with unparalleled scratch resistance. It was the dawn of a new era in watchmaking, but it would be another quarter-century before Rado would use its expertise with hardmetal as a springboard to perfect a watch, the 1986 Rado Integral, made of high-tech ceramic.

High-Tech Diamond

Thanks to their simple, uniform, and tightly bonded carbon structure, diamonds are the hardest natural substance on earth, with a rank of 10 on the Mohs scale of mineral hardness (in comparison, talc rates a 1).

That's one reason why diamond rings are so popular – given their durability, they're great for daily wear. But the gemstone's applications extend far beyond jewelry: Micron-sized abrasive powders made from crushed industrial diamonds – which boast both superior hardness and heat conductivity – are used to coat blades or drill bits involved in polishing, cutting, drilling, or grinding. Synthetic diamonds are ideal to meet this industrial demand.

Diamonds are also used as low-friction microbearings; in heat sinks, where their impressive thermal properties are used to conduct heat away from heat sensitive-parts of high-performance microelectronics; and to enhance the performance of high-quality speakers (when formed into thin domes, diamonds can withstand rapid vibrations without sacrificing sound quality).

But in the world of watchmaking, diamonds have almost always been decorative. In 2002, Rado was responsible for another breakthrough invention with the introduction of the V10K, a sleek black timepiece bearing a surface of high-tech diamond coating on a hard metal substrate. Its hardness quotient? An exceptional 10,000 Vickers.

Sapphire Crystal

Before Rado incorporated sapphire crystal into its DiaStar 1 in 1962, watchmakers used glass and plastic to protect the dials of their timepieces. That was, as you can imagine, a dicey proposition – glass is very brittle and both materials are easy to scratch. The benefit of sapphire crystal, known as single crystal aluminum oxide in the scientific community (owing to the fact that it's a simple compound of aluminum and oxygen), is that it is both scratch resistant and optically transparent. Like glass, but much harder.

The word sapphire may conjure images of gem-set jewelry, but the kind of sapphire used by watchmakers is actually synthesized in a lab, owing to a 1902 invention by the French chemist Auguste Verneuil. Heat-treated to remove internal weaknesses and formed into sheets, synthetic sapphire is twice as hard as standard glass; on the Mohs scale, sapphire ranks at no. 9, just below diamond.

Look to Rado's new Centrix Open Heart, with its sapphire crystal dial and transparent sapphire caseback, for a cutting-edge example of how far the brand's expertise with sapphire crystal has come since Rado introduced the material to the industry more than half a century ago.

Rado True Open Heart (high-tech ceramic) with MATr (2015) by Donn Koh Studio, assisted by Lee Si Min & Jolene Ng. Photo Thomas Straub

EMBLEMATIC **LOCATIONS**

Rado boutiques are situated in some of the most prestigious and emblematic buildings worldwide, many of them architectural landmarks in their own right.

By Anders Modig

Rado's boutique design concept is a combination of sleek black crystalline elements punctuated with warm textured surfaces and a palette of elegant taupe and bronze. The aim is to be luxurious and welcoming – and apart from providing a sophisticated environment where discerning consumers can browse through the latest Rado collections, the boutiques are often in sites that are part of the itinerary of any traveller with an interest in architecture. Consider, for instance, the world's second tallest building, the 508-metre tall Taipei 101 in Taiwan designed by C.Y. Lee & Partners, or the Singaporean Marina Bay Sands, whose three towers designed by Moshe Safdie are connected by a rooftop space containing a skypark and infinity pool.
Another spectacular location is Russell Street in Hong Kong's Causeway Bay, which has developed from being a simple hawkers' vegetable market to housing some of the most exclusive shopping in the world.

Rado's largest – and most recent – flagship store can be found at the Oriental Plaza in Beijing, where 192 square metres in the heart of the Wangfujing pedestrian district embody the brand's international design concept, but with a 10 p.m. closing time that yields to the demanding pace of Beijing.

Above: Rado boutique, Marina Bay Sands, Singapore.
Right: Rado boutique, Russell Street, Hong Kong.

Opposite (top): Rado flagship boutique, Oriental Plaza, Beijing, China.
Opposite (bottom): Marina Bay Sands, Singapore.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