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:   : THE NEW TRANSPARENCY

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Already accelerating before the global coronavirus pandemic hit, transparency has become an increasingly urgent issue thanks to Covid-19. As Tyler Chaffo, Manager of Global Sustainability at Avery Dennison, states: 'The coronavirus pandemic has served to show that transparency is a social issue as well as an environmental one, and in fact the combination of those two has shown that they are greater than the parts.'

This change is happening rapidly across industries, from beauty and retail to materials and food and drink. With the introduction of digital identities, tracing, sustainable materials and more, The New Transparency offers consumers the highest standards of visibility, safety, education and authenticity possible, while giving businesses complete control over their supply chains. In this report, we explore the key elements supercharging transparency:

: Packaging – from using sustainable materials to digital data-enabled packaging, how an item is delivered to a customer will be a concern as much as the eco-credentials of the product itself

: Labelling – a demand for education means labels will transform into the medium that not only delivers ingredient data but also information about sustainability and traceability, while digital labelling will provide traceable identities for every product, enabling transparency from raw materials to end product and beyond

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Change is already afoot; the only question is whether you want to keep up with it.

Part 1: Foresight Overview

The New Transparency is not just a trend of consumer expectation – it is also a powerful tool for businesses to streamline their supply chains and bring greater efficiency to their internal processes. Internally and externally, the benefits reaped from innovations that combine materials and technology are a key investment for businesses in the B2B and B2C spaces alike. The New Transparency report – commissioned by Avery Dennison in partnership with The Future Laboratory – delves into this exciting frontier, where cutting-edge solutions are enabling businesses to offer consumers a higher level of trust than ever before.

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Our Experts

Carole Collet:
Professor in Design for Sustainable Futures at Central Saint Martins

Deanne Utroske:
Editor of Cosmetics Design

Renae Kezar:
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Tyler Chaffo:
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'*The coronavirus pandemic has served to show that transparency is a social issue as well as an environmental one, and in fact the combination of these two has shown that they are greater than the parts*'

Tyler Chaffo, manager of global sustainability, Avery Dennison

Part 2: The New Transparency

Transparency has become a buzzword in recent years – but it is not simply a trend. The New Transparency, instead, is a response to consumer expectations for sustainability and safety, and a vital tool for businesses to bring greater efficiency to their internal processes.

From sustainable materials to supply chains, from digital identities to blockchain, new innovations are racing to match the increasing consumer demands for brands to go above and beyond in providing more transparency than ever before – all the while educating their customers in the process. Taking responsibility for their own footprint at every level, brands will need to bring traceability into their core within the next decade.

At present, everyone from huge multinationals like Target and Ikea to small independents is pursuing greater transparency. While sometimes seen as a luxury thanks to associated costs, transparency is an investment in the longevity of a company and its viability. As Renae Kezar, Global Senior Director and Head of Sustainability at Avery Dennison, explains: 'We can no longer hide from environmental issues. As a result, transparency – and the sustainable behaviours it facilitates – is increasingly being seen by businesses as part of their value creation and a competitive strength.'

The push for greater transparency is being driven not only by a commitment to ethical ways of doing business, however, but also by consumers who are more engaged with issues of safety and sustainability. Spurred on initially by the impact of climate change on our planet becoming increasingly visible, engagement in sustainability has also deepened during the Covid-19 crisis. Research from McKinsey & Co revealed in July 2020 that, for two-thirds of European consumers, limiting the impacts of climate change has become more important to them.

'Consumers are more demanding than ever before,' says Carole Collet, Professor in Design for Sustainable Futures at Central Saint Martins. 'Some are literate enough in matters of sustainability, for example, that they can walk into a shop and demand to see recycled polyester options over cotton.'

Transparency goes beyond sustainability, too. It relates to consumers' personal health – a concern that has been galvanised by the rapid spread of the coronavirus, with the pandemic itself showing how quickly change can be implemented if the need exists. The pandemic has shone a spotlight on inequality, and consumers are now seeking transparency for their own health, as well as the health and equality of workers across the supply chain. As Tyler Chaffo, Manager of Global Sustainability at Avery Dennison, states: 'The coronavirus pandemic has served to show that transparency is a social issue as well as an environmental one, and in fact the combination of these two has shown that they are greater than the parts.

'*Engagement in sustainability has also deepened during the Covid-19 crisis. Limiting the impacts of climate change has become more important for two-thirds of European consumers.*

Source: McKinsey & Co

Trust in both a brand's ethics and its safety measurements is not a new phenomenon, but has been building year on year. Edelman's Brand Trust 2020 special report found that 70% of people feel trust in a brand is more important than in the past, while 81% view personal vulnerability around health, financial stability and privacy as a driver of this growing importance. These beliefs are – remarkably – shared among age groups, gender and income brackets, marking a rare pan-demographic consensus in consumer expectations.

In practice, transparency is an investment that requires constant monitoring, says Carole Collet, but this dedicated effort will future-proof companies which either begin with this value at their core or work on bringing it into the heart of their efforts.

Within the next decade – as Deanna Utroske, Editor of Cosmetics Design points out – consumers will demand that brands consider the environmental impact of a product from the sourcing of raw materials to its life after customer consumption – and not just the impact when the product is in company custody alone.

Part 3: Transparency Microtrends

Four microtrends are driving the emergence of The New Transparency, providing a wealth of opportunity and potential for companies that wish to invest in transparency and traceability.

From biotechnology to the power of data, the transformative shifts explored below will define The New Transparency over the next half decade and beyond. Key elements across the four microtrends include:

Packaging – from using sustainable materials to digital data-enabling packaging, how an item is delivered to a customer will be a concern as much as the eco-credentials of the product itself

Labelling – a demand for education means labels will transform into the medium that not only delivers ingredient data but also information about sustainability and traceability, while digital labelling will provide traceable identities for every product, enabling transparency from raw materials to end product and beyond

Blockchain and analytical technologies – blockchain technology cuts across industries in its ability to help visualise and trace the supply chain – knowledge that can be passed on from manufacturer to brand to consumer as a product progresses through its lifespan

Secondary waste – where waste during production can't be avoided, brands and companies are rapidly innovating on how to re-use by-products, creating new goods from waste

'Beauty is one industry where customers' safety concerns intersect with their environmental ones. 'Consumers' concerns over safety and health are driving growth, It goes hand in hand with sustainability and is what's spurring on the popularity of new movements in the industry like clean beauty or the CBD market'

Deanna Utroske, editor of website Cosmetics Design

In the beauty sector, consumers seek safety but are often met with nebulous terms and loose definitions. Now, transparency is setting new standards for sustainability and safety.

Beauty is one industry where customers' safety concerns intersect with their environmental ones. 'Consumers' concerns over safety and health are driving growth,' says Deanna Utroske, Editor of website Cosmetics Design. 'It goes hand in hand with sustainability and is what's spurring on the popularity of new movements in the industry like clean beauty or the CBD market.'

Utroske recognises how smaller, independent brands have led the way with this focus on provenance and transparency, which prompts compelling moments of storytelling, too. 'If brands can tell consumers about the natural environment ingredients and materials hailed from, that's not only ticking the safety box, it can also underpin a trustworthy marketing strategy.'

The trend is growing. Within the £14bn prestige beauty market in the US, sales of skincare labels that positioned themselves as natural grew by 14% year on year in 2019, while clean brands jumped 39%, according to market research firm NPD. Today, the clean skincare category accounts for 13% of high-end skincare sales – more than double the size from four years ago.

Meanwhile, a 2019 survey by Cosmetify revealed that in the UK, the majority of women (62%) have changed their beauty habits significantly over the past 5–10 years, becoming more aware of the impact of some ingredients on the environment (17%) and more opting for organic (68%), natural (61%) or vegan (49%) products, despite almost two fifths (39%) saying they were not vegan themselves. The findings point towards the US preference for 'cleaner' beauty influencing European markets.

When it comes to personal care, transparency around supply chains and ingredients is more important than ever. Utroske says that larger brands like Unilever and Johnson & Johnson are taking heed. Observing the push from consumers for greater education and transparency around their skincare, these companies have pledged to publish the list of ingredients in their fragrances – information she says was previously protected as proprietary.

End consumers, however, are also driving greater focus on local ingredients and carbon-offsetting initiatives. Indie brand One Ocean Beauty teamed up with one of Europe's leading biotechnology laboratories to develop sustainably produced clean beauty products using marine-life biotechnology. The brand replicated marine-derived ingredients in the laboratory without the need to further harvest them, allowing them to continue thriving in their natural habitat.

Interest in bio-powered beauty has led to a rise in demand for education and information about micro-biome skincare. Here, brands have played a part in using transparency to empower consumers to understand the chemistry of products on offer and their own personal biology too. While a maximalist attitude dominated skincare for some years, dermatologist-led evidence suggests overloading the skin does more harm than good. In response, Japanese brand Mirai Clinical championed a stripped-back approach by creating products that rely heavily on the skin's own natural ability to rejuvenate.

Meanwhile, other brands are adopting a circular system, considering how waste produced in their supply chains can be re-used. 'Linear models of take, make and waste are becoming increasingly obsolete, with a shift towards a more circular economy well under way,' says Avery Dennison's Renae Kezar. 'We must re-think how to eliminate waste, reuse materials, and ultimately build business models that work to regenerate the environment, fostering re-growth and building back the natural resources that have been used to create a system more in balance than what we have today, from our water sources, air quality and forests.'

Australian skincare brand Frank was an early adopter of circular principles, incorporating coffee grounds into facial scrubs – but the trend is evolving, demonstrating how shortening the supply chain can create desirable goods. Japanese bioethanol producer Fermenstation, which normally produces bioethanol for other beauty brands, has launched its own beauty line, including a soap made with the rice mash produced during the fermentation of its bioethanol.

While brands are increasing the transparency of what is used in products, they are also looking at packaging as a means of reducing their carbon footprint. The global cosmetics industry produces an estimated 120bn units of packaging each year, according to recycling firm TerraCycle, and only a very small amount is accepted by public kerbside recycling programmes.

In a bid to reduce its reliance on plastic, retail brand Lush launched a biodegradable, carbon positive cork pot, which supports the planting of new cork trees. Similarly, Haeckels launched 'biocontributing' packaging made of mycelium, sawdust and flax for its candles and oil sets, which can be composted at home.

Despite the undoubted influence of clean beauty, the term remains nebulous, used interchangeably with 'natural', 'organic' or even 'vegan' beauty. This points to continuing issues of regulation and standardisation. While parabens, for example, are approved in the US, they are banned in Europe, which supports Carole Collet's observation that a gold standard should be introduced to alleviate terminology confusion, increasing consumer trust in the process. She suggests that, if legislation is not passed quickly enough, an industry-developed standard should be developed and adopted across brands.

To this effect, technology could clarify the claims that brands make around clean beauty while providing a hyper-personalised service. EpigenCare, for example, is a New York-based company that uses blockchain to encrypt epigenetic data to generate consumer-specific cosmetics profiles. Meanwhile, online retailer Cult Beauty recently worked with tech-platform Provenance to provide greater clarity over claims made by brands on its site. Using a combination of blockchain and open data, key product information is available while customers shop, allowing them to click through to exactly what a label such as 'vegan' means, alongside a document of proof that includes lab test results or official letters and documentation. Blockchain and digital identities, while not yet widely adopted in the beauty industry, may change the face of it.
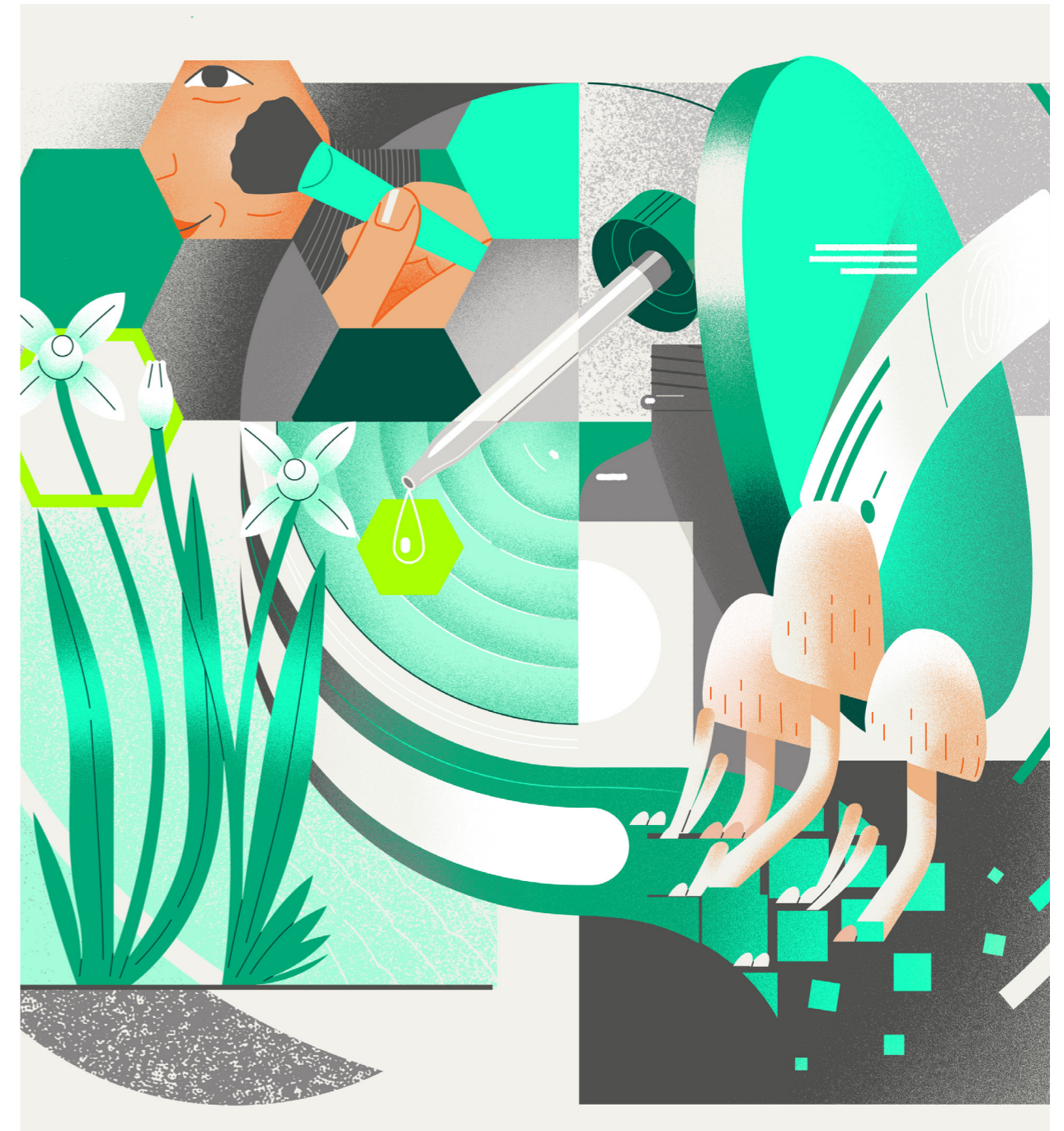

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Dominated by complex supply chains, provenance has been obscured in the food and drink sector for years – but transparency is offering customers control over what they consume.

If supply chains are complex in the beauty industry, the problem is even more entrenched when it comes to food and drink. Largely hidden global supply chains make transparency around exactly how produce arrives in a supermarket and its provenance seemingly impossible for the average consumer.

In the UK alone, much of the produce that is available all year round is shipped in one of the 10,000 containers that carries 50,000 tonnes of food through British ports from the EU daily, according to Wired. Meanwhile, in the US, 40% of all food goes to waste, according to NRDC.

In an attempt to unpick the opaque issue of food supply (and its monopolisation), there has been a strong movement towards favouring local produce as well as finding solutions for food-sharing and re-using by-products. As with beauty, the push towards transparency intersects with personal safety and environmental health.

Some food waste solutions aim for transparency to empower consumers to reduce waste locally. Apps like Olio have pioneered peer-to-peer sharing of surplus food in consumers' neighbourhoods. Working directly with supermarkets and restaurants, Gander

is a Northern Irish initiative that delivers real-time updates to consumers about locally discounted foods. It joined forces with Henderson Group – the parent company of supermarket chain Spar – to allow consumers to map stores, filter by food type and watch items for reductions in price.

Similarly, Swedish food waste app Karma teamed up with Electrolux to pilot a public refrigerator at Stockholm's central underground station, where the public can conveniently collect reduced-price food items on their way home. The pilot scheme succeeded, with supermarkets reporting an average 30% rise in sales of surplus food that would otherwise be wasted.

On a larger scale, labelling and education are also important to tackle wastage. 'Consumers are demanding,' says Carole Collet, Professor in Design for Sustainable Futures at Central Saint Martins, 'but they also require more and more education in how their own behaviour can help to combat environmental damage.'

According to waste-prevention app Too Good to Go, 53% of Europeans are reportedly unable to tell the difference between best-before and use-by dates. But retailers and brands are uniquely placed to

'Architects talk about embodied energy when designing buildings. We should be taking a similar approach – labelling the embodied carbon footprint and labour in food, fashion and so on'

Carole Collet, Professor in Design for Sustainable Futures at Central Saint Martins

help minimise food waste, and intelligent packaging solutions and smart food storage have emerged in response.

Innovations such as labels, second skins and pH-sensitive dyes like FreshTag that preserve and monitor food freshness while reducing traditional packaging have become more popular. StixFresh fruit stickers, for example, are like the labels found on bananas and oranges, except they're all natural and made with a wax that creates a protective layer around the fruit, extending freshness by up to 14 days.

Similarly, Avery Dennison's newly engineered compostable label materials helps brands and consumers to reduce landfill waste and cut the amount of plastic that ends up in the environment. The company's CleanFlake label technology enables recycling of PET bottles or mono-material packaging to enable recycling of packaging, in turn increasing recycling rates.

British sustainable packaging company Frugalpac recently launched a new wine bottle made from 94% recycled paperboard with a carbon footprint 84% less than that of glass. The bottle incorporates a food-grade liner insert that can hold wines and spirits, so it can be refrigerated, dismantled and recycled easily. Similarly, in July 2020, Johnnie Walker announced it would be trialling whisky in new wood-pulp bottles, replacing its recognisable glass ones. Meanwhile, increasingly sophisticated smart fridges can help reduce food waste by allowing consumers to see what is going off and connecting to online grocery shops; the global market for smart refrigerators is set to reach £4.6bn by 2026, according to Acumen Research and Consulting.

The information included on food labels could also make better choices more transparent for consumers. 'Architects talk about embodied energy when designing buildings,' says Carole Collet. 'We should be taking a similar approach – labelling the embodied carbon footprint and labour in food, fashion and so on.'

Studies show that presenting information differently helps consumers make better decisions. Recently, the Royal Society for Public Health found that labelling food with the amount of exercise required to burn it off was more impactful than listing calories, while Logitech recently introduced labels that reveal the amount of carbon that went into making its products, and aims for all goods to carry these labels by 2025. Similarly, as part of its commitment to reduce carbon emissions by 2039, Unilever has introduced similar carbon labels for 70,000 products.

Where food waste is unavoidable, a new movement pioneered by the likes of Doug McMaster of Silo – Britain's first zero-waste restaurant – focuses on re-using by-products in a bid to create greater circularity in food. Dutch company Fooditive, for

example, transforms third-grade apples and pears into a chemical-free sweetener, while US-based ReGrained uses grain spent from the beer-brewing process to create snack bars that maintain the grain's fibre, protein, magnesium, iron and zinc – meaning the bars contain 3.4 times more dietary fibre than wheat flour.

Similarly, vertical farming pioneer Edenworks grows Atlantic salmon, striped bass and shrimp, then uses the waste from those fish to create organic fertiliser that feeds the plants the company also grows, creating a self-sustaining eco-system invested in the microbiome.

Beyond packaging and waste, food innovators are using technology to highlight the viability of their supply chains, in turn making them more transparent. Blockchain – a data system for storing information securely – has huge potential for businesses looking to boost their transparency efforts, an approach that ultimately means that end consumers can enjoy a closer link with the people producing ingredients.

Furthermore, when Radio-Frequency Identity (RFID) solutions serve as the backbone data of a blockchain, this can lead to flows with increased transparency, more security and automated administrative operations through the use of smart contracts, eliminating much supply chain complexity. As Tyler Chaffo, Manager of Global Sustainability at Avery Dennison, says: 'The adoption of RFID is set to explode over the next five years. When combined with blockchain technology, transparency and traceability can be made entirely secure.'

European coffee company Moyee, for example, plans to use blockchain and a mobile app to let consumers securely tip farmers or provide funds towards tools, seeds and training. And Avery Dennison, in partnership with Beefchain and the Wyoming Business Council, has worked on an initiative that allows free-range Wyoming ranchers to guarantee their beef's provenance, all the way from farm to fork. Through the use of RFID tags, each beef case carries a unique digital identifier that can trace the individual case from farm to table. These identifiers are hashed into Beefchain's Ethereum-based blockchain network to provide the details of the entire global transaction, so consumers can be sure of the product's provenance.

Meanwhile, Scotch whisky distillery Ardnamurchan prints unique QR codes integrated with blockchain technology on its bottles. This digital certificate of authenticity is designed to assure buyers – especially collectors of rare and limited-edition whiskies for whom counterfeiting is a key concern – that their product is genuine. This points to a coming future when tamper-proof labels with digital authentication attached will become a new standard in offering consumers full traceability, while offering brands protection against counterfeiting.

As e-commerce booms, consumers are caught between convenience and sustainability – but new innovations in packaging, logistics and digital identities are allowing transparency over products' carbon footprint and the human cost of making them.

Where supply chains and practices are under increasing scrutiny across many sectors, retailers are left with a choice of how to communicate their efforts in transparency and sustainability to ever-more exacting consumers.

Here, transparency is as much about social values as environmental ones. Consumers want to be assured that not only are materials sourced ethically, but also that the human labour this entails is equally fair and representative. Lisa Jackson, vice-president of environment, policy and social initiatives at Apple, spoke on this issue: 'Systemic racism and climate change are not separate issues, and they will not abide separate solutions. We have a generational opportunity to help build a greener and more just economy.'

Indeed, the law is also mandating such an approach to transparency. In Germany, for example, the government is proposing a supply chain law that would mean companies with more than 500 employees would be responsible for any activities abroad that undermined human rights, and for taking necessary counter-measures.

'The demand to see action is there from consumers,' says Carole Collet, 'but at the same time, overwhelming them with information isn't helpful either. And committing to an aim publicly or making a statement leaves you open to scrutiny – if you don't live up to a promise, even one slip-up can cost your reputation.' Indeed, a 2019 survey led by Hotwire found that 47% of internet users worldwide had ditched products and services from a brand that violated their personal values.

Luxury platform Farfetch recently launched a tool that encourages shoppers to weigh up the decision about whether to buy new versus pre-owned or materials like linen and cotton over synthetics, with clear information on the carbon emissions and offsetting that each choice would generate. Meanwhile, Avery Dennison's product life cycle assessment (LCA) tool helps customers to understand the environmental impact of their labelling and packaging decisions – and helps businesses to communicate these to their customers with meaningful translations; for example, the energy needed to create a label.

Recently, Google joined forces with WWF to create a tracker for raw materials. The partnership will analyse more than 20 commonly used raw materials, including synthetics and natural products, via a dashboard being built specifically to help fashion brands. By giving brands access to details such as the amount of air pollution in a region or the amount of waste created in production, they can make more sustainable sourcing decisions.

Similarly, using Avery Dennison's digital identities, each of the products in sustainable fashion label Another Tomorrow's line has a scannable QR code that shoppers can use to find information on where the piece was made and where its materials came from, down to the exact roll of fabric used. Such traceability empowers the consumer to have visibility across the supply chain – from the raw materials used down to how they can be recycled once they leave your possession. And this digitisation of labels will be crucial in tackling upcoming legislation; the American Apparel & Footwear Association recently called for the removal of the care label to make it digital, signalling how excessive labelling is no longer needed when information is available online.

While consumer habits are changing – the US sustainability market is projected to reach £112.4bn in sales by 2021, according to Nielsen, while Co-op data reveals the UK's spending on sustainable products has increased nearly tenfold in two decades (£29.7bn in 2018, up from £3.1bn in 1999) – convenience culture tempers this progress. The logistics of fulfilment and delivery from a boom in e-commerce will therefore be a key area in which consumers can test a brand's commitment to whole-system transparency. Customers already expect to be able to see a parcel's journey, but now they want to understand the impact of that journey, too.

Lumi ID is a QR-enabled service that fulfils this demand. It enables brands to be transparent about the sustainability of their delivery services, making it easy for brands to answer customers' questions via AR technology, while delivering accurate, up-to-date information about packaging specifications, certifications and localised recycling options. Covering compostability, re-usability, recycled content and renewable materials, the Lumi service gives every stakeholder in the lifecycle of the packaging a comprehensive understanding of its properties.

Direct-to-consumer brands are also reconsidering how delivery and returns can incorporate ethical practices. Lingerie brand Harper Wilde, for example,

uses the returns process as a channel to allow its customers to send old or unwanted bras back to the company to recycle or repurpose, regardless of which brand they are.

As with other sectors, packaging is also under scrutiny. By collating data from FedEx, UPS and USPS, re-usable packaging company LimeLoop estimates that 165bn packages are shipped each year in the US alone. If all these were made of cardboard, it would roughly equate to a billion trees worth of cardboard being used, highlighting a clear need to address the waste and raw material used. In light of the coronavirus pandemic and its associated e-commerce boom, dealing with this problem is more urgent than ever.
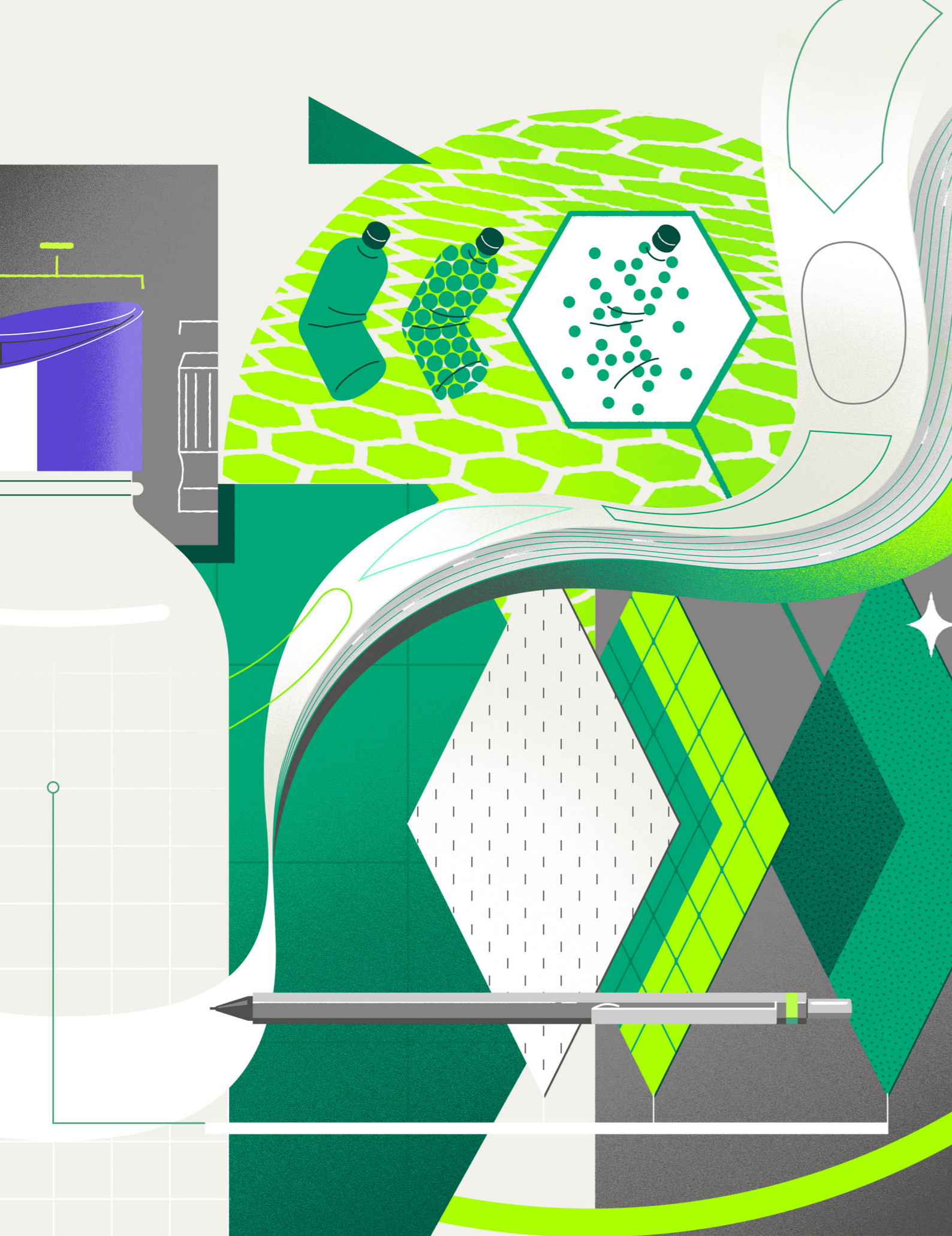
Promisingly, an era of greater collaboration is emerging in order to tackle the issue. 'Organisations and businesses are beginning to link together when it comes to creating new standards and frameworks around packaging design,' says Renae Kezar. 'It's forcing companies to utilise their research and development capabilities and innovate for the advancement of the industry, not only their individual product lines.'

One example of innovation on this is Returnity, which creates custom-made, re-usable shipping packaging for brands. Made from a durable fabric, it can be zipped open and closed and used for multiple deliveries. Clothing, for example, can be delivered in a branded re-usable bag. Once the products have been delivered, customers post the bag back to the brand to be re-used for more deliveries. In the UK, Loop – a zero waste shopping platform – has launched a pilot with major supermarket group Tesco, where customers can now order a range of products in re-usable packaging. In light of the higher health and safety standards required as a result of the coronavirus pandemic, Loop is ensuring its returned packaging is then cleaned to stringent standards.

With a technology-driven approach to returns logistics, LivingPackets is another smart packaging solution that can be re-used up to 1,000 times. Its smart box monitors the location, temperature, shocks and opening of parcels, and allows the contents to be viewed via a remote camera. The box structure eradicates the need for internal secondary packaging, while its digital address display means there is no need to reprint labels or stickers, thus streamlining the returns process.

For the retail industry, then, transparency comes into focus as an environmental issue as well as a social one. Cross-brand collaboration will be key in minimising the environmental impact of e-commerce and its accompanying logistics, while new legislation will increasingly mean brands are responsible for the human labour of their supply chains abroad.

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When materials science meets digital innovation, complexity is eliminated from traceability, as leading-edge technology allows The New Transparency to flourish.

In all of these processes, the intersection between materials science and digital innovation is both crucial and key to unlocking our most transparent future. Ensuring we do not exhaust the earth's materials is extremely urgent: the global population is set to reach 9.6bn by 2050, according to the UN, which means we will require almost three planets worth of natural resources to sustain current lifestyles.

As Carole Collet points out, tomorrow's market leaders will be those who are brave enough to invest in the research today to drastically re-assess what we use to create products, and to monitor these initiatives long-term. From expanding a product's lifespan to using smart materials to collect data that helps regulate supply chains, materials will be key in unlocking transparency for consumers and brands alike.

In product design, the journey towards this future begins by understanding the holistic social, environmental, and financial impact of labels and packaging materials, taking their entire lifecycle into account. Brands must adopt technologies that reflect a whole systems approach from materials design to end-use and work in harmony with the existing recycling stream. To encourage circularity and recycling, they should consider easy to recycle, degradable, compostable or mono-material packaging solutions for all components of a product.

This kind of mindset can then encourage new innovations, with smart materials – representing the intersection between cutting-edge robotics and sustainability – a case in point. Self-healing polymers, for example, are being developed in areas like wearable tech to respond to biometric data, but they can also expand the lifespan of a consumer product, which means less waste less often. Slughaus's Wolverine outdoor utility bag is an example of this – using FuseFabric, the material can be repaired simply by rubbing the affected area with your hands.

Researchers are also looking to other organic structures that can be mimicked in a lab. By reinforcing fast-growing wood like pine or balsa, designers could replace slower-growing but denser wood like teak in furniture and buildings. Similar research aims to enhance concrete to become more water-resistant, meaning less could be used during construction. In this way, product designers can analyse how they can re-engineer fast-growing natural resources to replace unsustainable synthetics, future-proofing brand supply chains.

Further innovations include digital identities, as RFID and QR codes mean materials can work with software to create powerful traceability. Ralph Lauren, for example, is digitising its entire product line, beginning with the iconic Polo brand, in partnership with Avery Dennison. The new 'born-digital' products mean the integrity of the brand's garments can be easily traced throughout their lifecycle.

The traceability facilitated by RFID technology can also enhance resilience during times of crisis, as demonstrated during the coronavirus pandemic. 'We saw a number of brands extolling the virtues of RFID technology as they adapted to a new normal,' says Avery Dennison's Tyler Chaffo. 'Without this technology, they would not have been able to efficiently move products to where they needed to go in order to meet the changing demands of consumers.'

Biomaterials are often seen as the preserve of innovation and internal business adoption, but indications are that consumers will want to understand these new options, just as they are beginning to educate themselves on the impact of fabrics like cotton or linen. In response, the Aalto University in Finland has created a cookbook about biomaterials that helps people to experiment at home.

The Chemarts Cookbook takes readers through four sections, enabling readers to gain a better understanding of where materials come from as well as learn about their own material usage. Encompassing different themes, including hard, soft, flexible, transparent and printed materials, as well as paper-making and fibre-making, the 'recipes' are intended to be both informative and enjoyable to make.

As consumers' interest in understanding and managing their own health grows, they will also seek smart materials that provide feedback on how their own microbiome behaves. The analytical need can thus be extended beyond healthcare to apply to all product development, which means products can integrate as not only traceable, but educational as well. When implemented transparently and with clear benefits to the end user, analytical materials offer brands the opportunity to gather insights into customer behaviour as well as supply and demand, and feedback on a product's performance.

Greater clarity and adoption of circular principles and innovative materials, in powerful combination with new digital labelling, identities and tracing, opens up futures that are integral to The New Transparency. Combining the leading edge of these two areas, transparency that offers consumers the pillars of visibility, safety, education and authenticity becomes possible.

Part Four: Key Take-Outs

Driven by its four microtrends, The New Transparency will shortly emerge as the gold standard for brands looking to meet growing consumer expectations around sustainability. But it goes further than satisfying consumers. The New Transparency also represents an investment in the longevity and viability of a business.

'First and foremost, consumers are demanding this information – they want to be able to trace the provenance and journey, in detail, of the products they buy,' says Tyler Chaffo, Manager of Global Sustainability at Avery Dennison. 'But embedding transparency also serves to unlock more effective decision-making for businesses, increasing their resilience.'

To harness this future successfully, businesses must remember that:

: Transparency is a consumer demand that reaches far beyond what a brand does with a product's ingredients and materials when it's in their custody. Brands must think about the entire product lifecycle and offer consumers visibility on what happens before and after a product leaves their care

: Traceability is not just a marketing tactic – it can also create marketing opportunities through the storytelling of a product's origins, allowing consumers to not only feel the safety of knowing where an item has come from, but also an affinity with it

: Cross-industrial partnerships and standardisation will be key in creating clear new benchmarks for sustainable practices and transparency

: For greater adoption of new technologies and innovations, brands will need to be reassured that systems they invest in will have long-term compatibility, rather than needing to be updated constantly

: When it comes to individual industries, meanwhile, a number of key recommendations can ensure that consumers are empowered by brands to make decisions today for a better tomorrow:

Beauty

: As beauty products are used so intimately in consumers' lives, people are increasingly looking for reassurance on safety standards. Consider how blockchain and RFID technology can offer transparency around the ingredients contained in the products

: The market is saturated with confusing terminology. Brands offering transparency around sourcing and packaging, boosting a product's health and sustainability credentials, will win customer loyalty

Food & Beverage

: Businesses must be proactive, initiating approaches that take traceability into account, and integrate automation and technology to achieve it

: Businesses must educate consumers about how they can make their diets more sustainable to benefit their own health and that of the world

: Businesses must also address wasteful practices in their supply chain and explore the potential of by-product products in labels and packaging

: Technology is connecting retail brands and food outlets with local shoppers. Consider alert systems that can notify shoppers when discounted food is available

Retail

: Consumers will seek ways of being able to tell instantly where a product has come from and what its sustainability credentials are. Consider digital identities and QR scanning to offer customers quick and clear traceability

: E-commerce has experienced a boom during the coronavirus pandemic. Think about how packaging and logistics can be a new touchpoint for transparency and sustainable practices

: As governments introduce regulations, new industry standards on labour must not only be adhered to but constantly monitored, as transparency extends to human costs as well as environmental ones

Materials

: In product design, choosing labels and packaging materials starts with understanding social, environmental, and financial impact. Brands must adopt technologies that reflect a whole systems approach from materials design to end-use and work in harmony with existing recycling streams

: Easy to recycle, degradable, compostable or mono-material packaging solutions should be considered for all components of a product to encourage circularity and recycling

: The advent of self-repairing and more durable polymers will dramatically extend the lifespan of products that are used in extreme environments or are exposed to multiple stresses, such as sports equipment

: Consumers are becoming increasingly aware of a material's journey. Combined with digital technology, traceability can offer not only valuable information, but a compelling origin story for a product

: Smart materials that combine data analytics with technological innovations like blockchain are opening up new possibilities for an entirely transparent supply chain

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