

Going Beyond

De La Rue Currency

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DeLaRue



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Introduction

This edition of Going Beyond is dedicated to Her Majesty Queen Elizabeth II, who was a much loved and respected figure across the globe and an exemplar of duty and service. We have been fondly remembering the many times she visited our sites here in the United Kingdom and overseas. In this edition we pay tribute to Her Majesty by sharing images of her through the eyes of De La Rue – we are incredibly proud to have played a role in celebrating her life through stamps and banknotes over many decades.

We also challenge some myths about polymer in this edition – ‘natural’ isn’t necessarily good and ‘plastic’ isn’t bad when it comes to the environment. We also look back to see the impact that polymer banknotes have had on the number of counterfeits in circulation. The facts speak for themselves when it comes to polymer security benefits!

Finally, we’re always keen to bring an alternative viewpoint and support central banks in their thinking about central bank digital currencies. In this edition we invite an expert in cybersecurity and cryptography to share his perspective – we hope you find it interesting.

If you would like more information about anything in this newsletter, please contact us at currency@delarue.com.



A stylized, handwritten signature in dark ink, appearing to read 'R. Euling'.

Ruth Euling, Executive Director and Managing Director, Currency

How we saw The Queen

De La Rue wishes to pay tribute to Her Majesty Queen Elizabeth II by sharing depictions of her image from our archive at different points in her reign.



These images were selected for the reverse of the 2002 **£5 Golden Jubilee commemorative note**, issued by the Royal Bank of Scotland.

The portrait on the left was created from several source images. The original image with the Queen facing to the right was captured in 1952 by then court photographer, Dorothy Wilding. This image was engraved by Stephen Mathews, De La Rue, for the £5 commemorative note.

An earlier engraving of the second portrait was used in the 1960s on notes from the Bahamas and Jamaica.



In celebration of **Jersey's 800 years of continuous loyalty to the Crown**, the Jersey Heritage Trust commissioned a holographic portrait of the Queen in 2004. This was a collaboration between the artist Chris Levine and the holographer Rob Munday.

The image was engraved by Stephen Mathews and appears on the front of the **2012 Jersey £100** as both the feature image and within the holographic stripe.



This portrait by Pietro Annigoni was a private commission by the Worshipful Company of Fishmongers and was unveiled in 1956. It is now displayed in Fishmongers' Hall, London.

The portrait saw **two engravings created, the first by Bradbury Wilkinson** was used on banknotes from the Isle of Man, Malta, Rhodesia, Trinidad & Tobago and the Seychelles.

The **second engraving from De La Rue** featured on notes from Fiji, East Caribbean States, Jersey and Mauritius between 1963 - 1979.



De La Rue's engraving of the portrait captured by Anthony Buckley (circa 1962) featured on the Solomon Islands banknotes between 1977-1981.

An earlier version of this engraving featured on the Canadian \$1 and \$2 in 1973 and on the \$20 in 1979.



The original portrait was a photograph taken during a Royal Tour to India and Pakistan in 1961.

The engraving has featured on banknotes used by Belize, Bermuda, the Cayman Islands, Jersey and New Zealand.



Taken from a **photograph by Peter Grugeon** as part of the **1977 Silver Jubilee** events.

An earlier engraving by Bradbury Wilkinson featured on New Zealand and Isle of Man notes during the 1980s.

The later engraving by De La Rue featured on notes from issued by the the Falkland Islands, the Bahamas, East Caribbean States, Bermuda, Belize and the Cayman Islands between the 1983 and 2004.



This engraving was taken from a portrait painted by Norman Hepple in 1978. **The original painting hangs in the entrance to the Jersey States Chamber** in the States Building, St. Helier, Jersey.

This engraving featured on Jersey's banknotes from 1989 up to 2010.

Sources

The De La Rue archive

De La Rue Design

<http://www.pjsymes.com.au/>

New Banknotes

Ulster Bank issues polymer £50



The new polymer £50 from Ulster Bank entered circulation on the 15th June.

The new notes were designed by O Street before being passed to De La Rue to turn into a functional banknote. The £50 is printed on SAFEGUARD® substrate and features a portrait design with themes of nature on the front with the reverse celebrating women who have contributed to Northern Ireland, with Dame Jocelyn Bell Burnell foremost.

The note contains a see through window, holographic stripe and tactile emboss feature for visually impaired users.

More details about the note and its security features are available [here](#).

Sierra Leone issues redenomination

On July 1st The Central Bank of Sierra Leone issued a redenomination of the Leone, removing three zeroes from the notes while keeping their value unchanged.

The existing 1000, 2000, 5000 and 10,000 Leone notes will co-circulate with the new 1, 2, 5, 10 and a new denomination, the 20 Leone. The existing notes will have the equivalent purchasing power of the new denominations.

The notes were designed and printed by De La Rue with the new 20 design featuring Constance Cummings-John an educationist and pioneer of African women's rights.

The new notes have a landscape orientation with



embedded security features, including PUREIMAGE™ and KINETIC STARCHROME®.

More information about the redenomination and the new note designs can be found [here](#).



Fiji Reserve Bank launches 88c commemorative

The Fiji Reserve Bank released the fortuitously themed 88c commemorative banknote on the eighth day of the eighth month of this year.

The note was designed and printed by De La Rue and features a PUREIMAGE™ thread and Enhanced GEMINI™. The design features the Chinese god of wealth on the front and a hibiscus flower on the reverse.

It is a numismatic note, not intended for general circulation, but for collectors and is available for purchase from the Reserve Bank of Fiji. More information can be found [here](#).

The Central Bank of Egypt issues first polymer banknote

The new Egyptian 10 pound note launched on the 5th July 2022 and is the first Egyptian banknote to be printed on polymer substrate.

The new £10 was designed by De La Rue and printed by the Central Bank of Egypt in the New Administrative Capital. It includes a large polymer window containing a finely detailed hologram of the Fattah Al Aleem mosque.

In line with its sustainability initiatives, the Central Bank of Egypt has introduced the new note on polymer substrate. Polymer banknotes have greater durability and recyclability than cotton paper banknotes, lasting on average two and half times longer in circulation and being totally recyclable at the end of their life.

More details about the note and its security features are available [here](#).



Central Bank of Peru adds to new family

The new 20 and 50 Soles were introduced on the 20th July. These are the latest additions to the new family of notes Peru introduced in 2021.

The new notes were designed by De La Rue and include GEMINI™ a print feature that reveals itself under ultra-violet light.

More details about the note and its security features are available [here](#).

Pakistan announces new commemorative note

The State Bank of Pakistan has announced the planned issuance of a new note to mark 75 years of the State's Independence.

The new 75 rupee note will be available from the 30th September. The colours of the note mirror the Pakistani flag with green symbolising growth and development with the white reflecting the diversity of the state of Pakistan. The front of the note pays homage to the founders of Pakistan and the reverse depicts the natural

environment with the Markhor and Deodar tree. A PUREIMAGE™ thread was added to the note with a pulsing holographic rainbow effect around the number 75 in the thread. An optically variable ink which switches from green to gold is located around the design of the 75 numeral in the front upper left corner. The publicly available video can be viewed [here](#).

The 75 Rupee is due to be released on the 30th September.

Polymer counterfeit rates



*Kerre Corbin,
Circulation,
Authentication &
Counterfeit Expert
De La Rue Currency*

In their most simplistic form, banknotes are merely ink applied to a substrate. In the banking industry we like to think that everyone appreciates the complexity that goes into designing and manufacturing a banknote, but most do not. It is because of this, that the most popular method of counterfeiting worldwide is a simple scan and print (photocopy) on a plain piece of paper which contains no special inks or features. If ink on paper is all it takes to fool the public, then why do we bother? Most people will never encounter a counterfeit banknote, but the ones that do will not be reimbursed for the counterfeit. When a person or business experiences this loss, they will be understandably furious and will try to prevent it from happening again, by learning about the genuine banknotes. This is where the layering of security into a banknote is most important as people will choose different aspects of the genuine banknote to examine, whether it be look, feel, tilt or check features.

The big question is: Do polymer banknotes eliminate the threat of counterfeiting? Many people assume that once a country converts from paper to polymer banknotes, that they will never see a counterfeit banknote again. Sadly criminals are still incentivised to counterfeit banknotes but there will be fewer (as shown by published central bank statistics) and the quality of those counterfeits are lower quality than those observed on paper.

Polymer banknotes have been proven to reduce counterfeiting rates because the techniques to produce a high-quality counterfeit banknote are slow, expensive and require a high level of technical expertise. The machinery and techniques are also different from counterfeiting paper banknotes, for example: standard desktop printers are designed to print on paper but not on polymer film. Digital inks, such as inkjet and toner, do not adhere to plastic film, so a counterfeiter must invest in a higher quality printer that is capable of printing on plastic film. The cost of specialised equipment and materials, such as the polymer film, helps to deter criminals from producing counterfeit polymer banknotes.

The biggest challenge for a counterfeiter of polymer banknotes is: How do I print on plastic? It is because of this, that most counterfeits of polymer banknotes are actually printed on paper. The counterfeit will have an obvious difference in texture to the genuine, if printed on regular paper. This may encourage the counterfeiter to invest in a coated paper to help imitate the smoothness of polymer. However, now the counterfeiter must determine how to create a window in the paper. If the window in the genuine is a simple shape, such as an oval, the counterfeiter will most likely cut an oval hole into the paper and cover it on both sides with a piece of clear tape. The shape of the window determines how difficult this step is for the counterfeiter, a star is more difficult to cut out than a square. The incorporation of

How do polymer banknotes reduce the threat of counterfeiting?

multiple windows makes this task even harder for the counterfeiter.

What happens when a counterfeiter is willing to invest in the materials and technology to print on a plastic film?

The counterfeiter will need to purchase printable transparent (clear) plastic film that works with an inkjet or laser printer. Conservatively, plastic film costs 50x more than standard copy paper! The problem lies in how to print the banknote image on both sides, as these sheets are usually only printable on one side. Let's leave this one for the counterfeiters to figure out for themselves! Commercially available plastic films usually feel thicker than the genuine polymer substrate.

The counterfeiter could invest in an ultra-violet (UV) inkjet flatbed or a wide format roll-to-roll printer, which are commercially used to produce banners/advertising materials on plastic film. These types of printers start at about £15,000, which requires significant investment by the counterfeiter as well as leaving a "paper trail" for police investigators.

A professional counterfeiter or Organised Crime Group (OCG) could also purchase a commercial offset printing press capable of printing on plastic film. This usually only occurs in countries with serious criminal gangs that are targeting specific currencies to maximize their distribution range and profit margins.

Polymer banknotes are secure, clean and durable.

Statistics prove that polymer banknotes reduce the counterfeiting rates! As shown in the table below, once a polymer banknote has been issued the counterfeiting statistics fall drastically.

MEXICO

Once polymer notes were introduced, there was a sharp decline in the counterfeiting rates of the 20- and 50-peso banknotes (figure 1 & 2). The 20 pesos fell from 18ppm to 1ppm in just 2 years. The 50-pesos declined from 220ppm to just over 60ppm within 2 years of issuance.

However, there is always the threat of professional or OCG counterfeiters that are able to invest in producing polymer counterfeits. In Mexico, 3 years after the polymer 50-pesos banknote was issued they began to see an increase in the counterfeiting rate. In June 2010, there was an initial seizure of some counterfeit 50-pesos polymer banknotes. Over the next 2 years, the counterfeiters continued to distribute their banknotes with increasing quality. Over 200,000 counterfeit notes were eventually seized and "El Chilango" was arrested in December 2012. This was clearly the source of the counterfeiting increase as the rates dropped back to normal levels shortly thereafter (as shown in the graph below, calculated from Banco de Mexico statistical data). In addition to capturing the counterfeiter, Banco de Mexico decided to upgrade their original polymer design to include more complex windows.

CANADA

The Bank of Canada had a counterfeiting issue for quite some time, peaking at 470ppm in 2004 (figure 3&4). Due to great investigative skills as well as an enhanced public education campaign, they were able to get the counterfeiting rate below 100ppm in 2008. But that was not enough so they embarked on a journey to determine if polymer would be suitable for Canada. By the end of 2013, all the denominations had been converted to polymer, although the paper banknotes are still considered legal tender.

The key objective for any Issuing Authority to build a banknote is that it requires a significant investment in equipment, inks, materials, and know-how in order to produce a counterfeit that is good enough to be passed into circulation. Counterfeit resiliency can be further

"Polymer banknotes have been proven to reduce counterfeiting rates because the techniques to produce a high-quality counterfeit banknote are slow, expensive and require a high level of technical expertise. "

enhanced by an interactive and memorable public education campaign as well as effective law enforcement investigations to prosecute these criminals according to the laws of the country.

ENGLAND

The Bank of England conversion to polymer, began with the £5 in September 2016, the £10 in September 2017, followed by the £20 in February 2020 and finally the £50 in June 2021. The £20 and £50 paper banknotes will be withdrawn from circulation by 30th September 2022, as

the paper £5 and £10 are no longer legal tender.

As shown in figure 5, the number of counterfeit £5 and £10 banknotes were already low due to the low profit margin in producing them for criminals. However, the conversion to polymer further decreased the number of counterfeits discovered in circulation.

Issuing Authority	Pre-polymer PPM average	Post-polymer PPM average	Polymer Introduced	Source
Mexico (20 pesos)	2000 – 2002 15 PPM	2003 – 2008 2 PPM	2002 & 2006	Billetaria- Apr-09
Canada (all)	2003 – 2011 190 PPM	2012 – 2019 17PPM	2011 – 2015	Bank of Canada Statistics
Bank of England (£5 & £10)	2006 – 2016 58 PPM	2018 – 2019 4 PPM	2016 & 2017	Bank of England Statistics

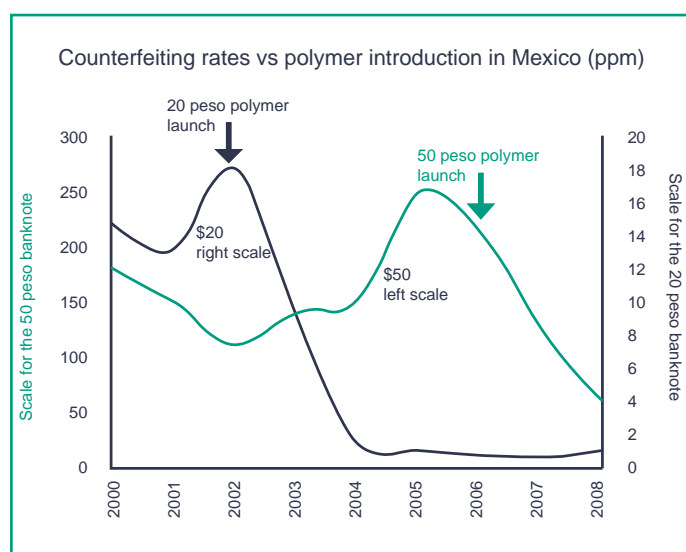


Figure 1. Counterfeiting rates of 20 & 50 peso (ppm)

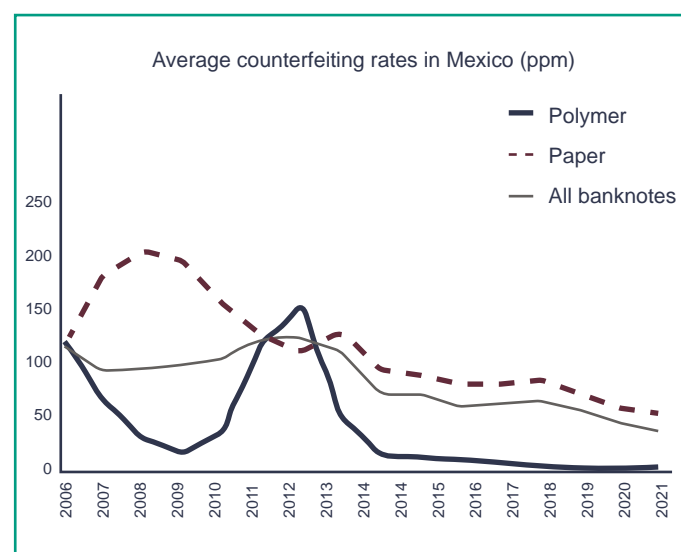


Figure 2. Average counterfeiting rates in Mexico by substrate

"...once a polymer banknote has been issued the counterfeiting statistics fall drastically."

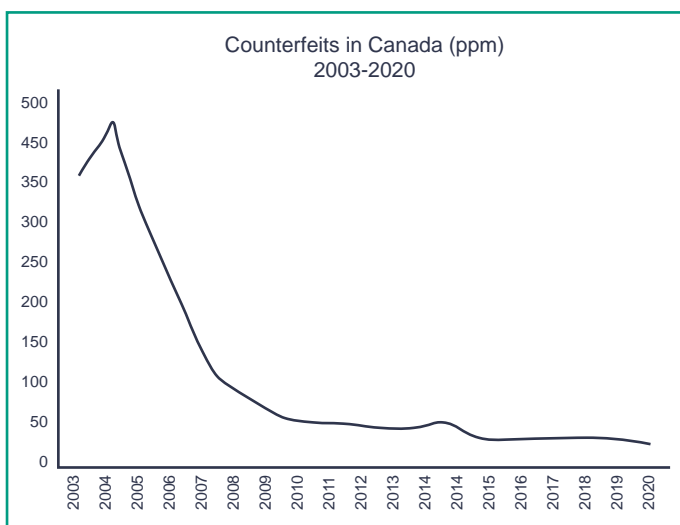


Figure 3. Canadian counterfeit rates between 2003 - 2020 (ppm)

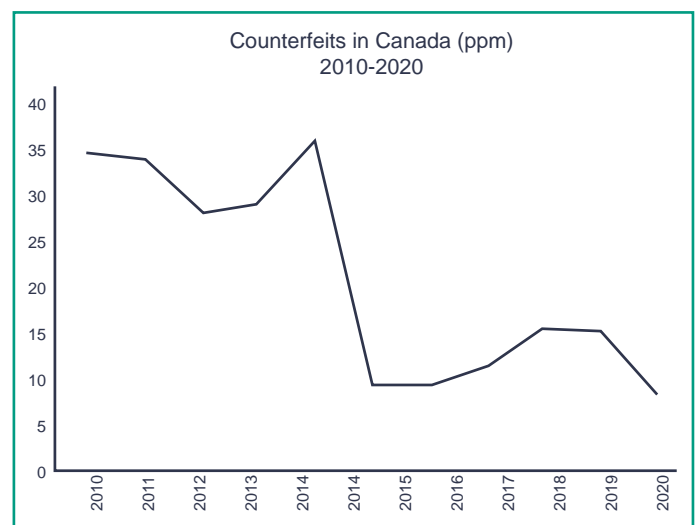


Figure 4. Canadian counterfeit rates between 2010 - 2020 (ppm)

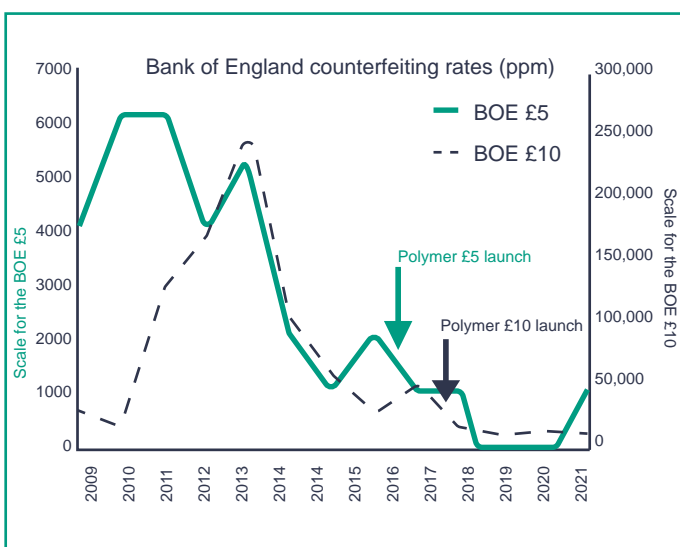


Figure 5. Bank of England counterfeit rates (£5 & £10) 2009-2021

Sources

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- 2.1 <https://www.banxico.org.mx/SieInternet/consultarDirectorioInternetAction.do?sector=11&accion=consultar-DirectorioCuadros&locale=en>
- 2.1 <https://www.banxico.org.mx/SieInternet/consultarDirectorioInternetAction.do?sector=11&accion=consultar-Cuadro&idCuadro=CM4&locale=en>
3. <https://www.bankofcanada.ca/rates/banking-and-financial-statistics/statistics-pertaining-to-counterfeit-canadian-bank-notes-formerly-b4/>

Opinion:

"Quantum Resistance: Additional considerations around CBDC"



Prof. Gideon Samid, PhD, PE

*A recognized innovator (35 issued patents), active in cyber and material sciences, developer of the BitMint*LeVeL digital currency, and the new cryptographic pathway: Trans-Vernam, Quantum-Resistant ciphers. Worked in NASA, Exxon, graduated from the Technion -- Israel Institute of Technology, and is member of the faculty of computer science at Case Western Reserve University. Gideon is the Chief Technology Officer for BitMint.*

Let's face it: most of us, cyber security professionals, we don't really understand the magic of quantum.

It really does not compute without the abstract mathematics that is spoken by very few. So for so many of us, this beast called "*the quantum computer*" is reduced to a fast Turing machine, which, we reckon can be neutralized when used by an adversarial cryptanalyst by simply wrapping our secrets with extra layers of computational load. "*Time to worry about it, when it comes to pass, now we have more urgent fish to fry.*"

The magic of quantum though is parallel computing. If you are sentenced to one million days in prison, and these days run in parallel, then you are behind bar only one day. That's the difference between quantum and old Turing. How best to exploit this new dimension of computing power is not yet known; the finest and most secretive cyber shops in the world are busy finding out. We, on the outside, are clueless. We don't know what will hit us, and we don't know when. Compare this threat to Y2K. We knew exactly what, and knew when: 1/1/2000. Computers will come to a screeching halt. An industry-wide effort saved the day then, and the new century was ushered in painlessly. With quantum we know neither what, nor when, so we are more likely to pay

lip service to this threat, cite it in articles, but look the other way, or at best sign up for an incrementally more complex algorithm we use today, hoping it will suffice.

This is gross negligence. The threat of quantum computing should be faced with the reality of being clueless as to the strength of the attack, as to its exact nature, and as to its timing. Under these alarming conditions the responsive strategy is to deploy a security protocol that is a-priori designed to withstand an omnipotent attacker.

What out there is resistant to super-efficient computing? The answer is singular: randomness. Ad-Hoc randomness withstands any effort to detect any pattern vulnerable for exploitation.

<https://www.weforum.org/agenda/2017/11/what-a-100-year-old-idea-can-teach-us-about-cybersecurity/>.

This property of perfect randomness is certified by the likes of Albert Einstein, Niels Bohr, Richard Feynman -- go argue with them, if you like!

We begin with pattern-devoid cryptography, [\[https://eprint.iacr.org/2021/1510\]](https://eprint.iacr.org/2021/1510) which is resistant to quantum attack by its mathematical foundation; applicable to

"The magic of quantum is parallel computing"

symmetric cryptography. We go on with minting digital money [<https://www.digfingroup.com/bitmint-q-pay/>] which cannot be counterfeited, nor cracked even with computers of unlimited prowess.

But when it comes down to a payment regime where a payee needs to trust money paid to her by a stranger, then we need another innovation: algorithmic mutation. Virtually all the crypto currencies today are based on computational difficulty regarding a mathematical polynomial known as an elliptic curve. No one, as of yet, has published a method to crack it, but that does not imply that no one has. Remember the great length Winston Churchill went to, sacrificing hundreds of British lives just to prevent the Germans from suspecting that their cipher was cracked. It would be imprudent to claim that since no one published a mathematical cracker of the elliptic curve, then nobody found one. Our weakness here is in the enduring reliance on a single algorithm serving as a resting target for our adversaries. Covid-19 for a while served as a resting target for human science, and sure enough effective vaccines were developed. How did Covid react? It mutated, time and again, keeping one step ahead of its predators. Lesson learned. We need a digital money protocol which works on built-in mutation relative to the deployed algorithms, keeping one step ahead of the most powerful quantum computer our adversaries will build, [<https://eprint.iacr.org/2022/130>].

Quantum technology represents a threat not just as a computing machine, but also as a manufacturing capability, fabricating fake products -- banknotes, documents, money certificates, even fake facial images that look real to any eyes. Identity is under assault! Here too the answer is based on the entity that triumphs over quantum: randomness. New technology deploys randomness to manufacture wallets, banknotes, documents, and image plates. Imagine a banknote that is applied to million measurements, the numeric results of which are compared to measurement data stored in a

public ledger. Since the banknote is manufactured using nanotechnology with a random input, it is infeasible to counterfeit.

[<https://www.bitmintcash.com/doqumint>].

The shared attribute of these quantum resistance strategies is their realism. One should not hide behind the expectation that quantum computers are not imminent, neither on the confidence that quantum attack is limited to the published algorithms. A prudent defense is based on expecting a very innovative adversary, and meeting him with our innovation to match.

Day by day we are drawn deeper and deeper into cyber space. Our quantum vulnerability increases commensurably. We are like the frog that is cooked to death in a paddle of water that is heated up very slowly. With all the urgent matters around us, this crawling risk is pushed off the 'to do today' list'. It is time for Churchillian leadership!

Editors note

The video in the link below attempts to explain in simple terms explains what quantum computing is, how it works and potential applications.

<https://www.youtube.com/watch?v=JhHMJCUmQ28>

Good Plastic, Bad Plastic: Good Paper, Bad Paper.



*Dr Nikki Strickland
Group Director
Marketing & Strategy
De La Rue*

*This article first
appeared in the July
2022 edition of Currency
News.*

There are some facts that are undisputed. Single use plastic is bad. We should eliminate the plastics we don't need whilst innovating to ensure that the plastics we need are reusable, recyclable or compostable. This is true of all materials, not just plastics.

There are also some statements that need challenging. Plastic isn't automatically bad. Things labelled as 'natural' aren't necessarily good. The supply chains that service all aspects of global needs are nuanced and complex. Everything we buy and consume has some type of environmental impact. There are environmental trade-offs we make (either consciously or without realising) when we purchase any goods.

As an example, not all cotton used in banknotes is sustainable - cotton cultivation uses a lot of water, severely degrades soil quality and conventional production practices involve the application of substantial fertilizers and pesticides.¹ The Eurosystem began to replace standard cotton with sustainable cotton in banknote paper in 2014, targeting 100% sustainable by 2023² but many banknotes are still based on standard cotton and even organic cotton requires agricultural land to grow. Paper substrate production is then an energy and water intensive process, despite recent efforts to reduce its impact.

A force for good

And plastic can be a force for good and an enabler of innovation when used, designed and managed responsibly. You are probably wearing clothing, shoes or glasses with some type of plastic component.

Your car is more fuel efficient because it has plastic components that weigh less than the alternatives. The water carried to the sink in your house is carried in plastic pipes because plastic pipes are strong and don't rust. Your phone, television and computer all have plastic components. Plastics enabled the COVID19 vaccine to be developed and stop medicines/ vaccines becoming contaminated. It provides protection that extends the growing window of food and packaging that increases the lifetime of food - cucumbers last an extra 14 days when wrapped in plastic and plastic bags reduce the amount of potatoes thrown away by two-thirds³. If you are holding a paper banknote it will also contain plastic in its security features.

Using all materials responsibly

Put simply ... we need to use ALL materials responsibly and it's hard to get away from the fact that plastic is a necessary part of our world. Using materials responsibly means that we need to move towards circular economy principles whereby the value of materials is constantly maximised, rather than wasted, which requires substantial change. The Ellen Macarthur Foundation agrees: 'Bringing about complete system change isn't a small task. But for companies keen to embrace this

thinking, the place to start is upstream innovation - reimagining a product, packaging or business model to design out waste in the first place. Downstream innovations like recycling are still necessary, but it is the upstream efforts that are likely to deliver the widest-reaching changes⁴.

And polymer banknotes are an example of such 'upstream innovation.' Banknotes have been reimagined to produce dramatically less waste in the cash cycle of a country. Polymer banknotes last significantly longer and need replacing less often. So central banks require fewer banknotes over time. Fewer raw materials are consumed and the transport required to replace used notes is also reduced. The banknotes are used hundreds or thousands of times during the lifetime of the banknote and can last for years, making them the exact opposite of single use plastic.

Polymer banknotes are also an example of 'downstream innovation.' It is possible in theory to recycle or compost all banknote substrates with the right equipment and conditions. Cash cycles are perfectly designed to maximise responsible end-of-life disposal - people do not throw away banknotes so they ultimately return to the central bank at the end of their useful life. However, considerably more central banks recycle polymer banknotes, in part because the infrastructure for polymer recycling is more ubiquitous.

Recycled polymer banknotes ultimately become glasses, flowerpots, building materials, pallets and other necessary materials that would have otherwise required virgin plastic.

The discussions in our industry need to move beyond plastic = bad and natural = good. This simplification distracts from the real discussions on how to make our cash cycles more sustainable and causes confusion. Polymer banknotes are NOT single use plastic. They DO NOT end up as waste in the ocean. They are NOT microplastics. Instead they are enabling modern banknotes and have helped some central banks transition from a linear take-make-waste model and move a step closer towards the circular economy.

The bigger picture for banknotes

And discussions on banknote substrates should be put into bigger picture context that the environmental impact of all banknotes is relatively low compared to the physical goods they are used to purchase⁵. In fact, the IMF's recent report 'Digital Currencies and Energy Consumption' includes analysis that suggests banknotes are a very sustainable part of the payments landscape⁶.

There's more we can do as responsible suppliers, but discussing all the nuances and entering into the next level of debate feels like a good start.

"We should eliminate the plastics we don't need whilst innovating to ensure that the plastics we need are reusable, recyclable or compostable."

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2. www.intergrafconference.com/dwl/Infosecura88.pdf
3. www.bpf.co.uk/packaging/why-do-we-need-plastic-packaging.aspx
4. ellenmacarthurfoundation.org/articles/the-rise-of-single-use-plastic-packaging-avoiders
5. Cash - a Roadmap to Sustainability
6. Annex I: Energy Consumption of the Current Payment System calculates the global annual energy consumption of cash as 8.3 TWh per annum (compared to debit and credit card payments at 39 TWh and Bitcoin at 144 TWh).

De La Rue's purpose is to secure trust between people, businesses and governments. As a trusted partner of governments, central banks and commercial organisations seeking to secure their global supply chains and cash cycles, De La Rue provides highly secure physical and digital solutions that underpin the integrity of economies and trade.

De La Rue's Currency division enables a more resilient payments landscape and supports financial inclusion. It provides market-leading end-to-end currency solutions, from finished banknotes to secure polymer substrate and banknote security features to over half the central banks and issuing authorities around the world.

Our Authentication divisions protects the revenues and reputations of governments and commercial organisations via digital and physical solutions that protect goods at every stage of a supply chain

De La Rue's 2,300 employees work with organisations in more than 140 countries, leveraging the group's manufacturing facilities in the UK, US, Malta, Sri Lanka and Kenya.

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We welcome your suggestions, ideas and comments. Please send these to [Nikki Strickland](#) or [Richard Sokl](#).

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