CIBJO CONGRESS 2023

SPECIAL REPORT

TECHNOLOGY COMMITTEE

Optimising a timeless product in a brave new world

By Stéphane Fischler, Chair
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The role of CIBO's Technology Committee is very much about studying the impacts, both current and future, of human ingenuity on the human experience. Thus, while we concern ourselves with inanimate and inorganic systems, our focus remains on the people who make up this industry, and those who depend on it both for the products it creates and the revenues it generates.

It is thus fitting that I begin my report paying tribute to people rather than technology. First allow me to express my deep sorrow and admiration for Harry Levy who passed away

Stéphane Fischler, Chair of the CIBJO Technology Committee.

recently. He was a formidable expert, who often understood the prospects of change brought about by technology long before others did, as well as being a dear friend and a most wonderful human being. All our thoughts go out to his family. We miss you, Harry.

And I would also like to thank all my colleagues on the CIBJO Technology Committee, including Elle Hill, Mahiar Borhanjoo, David Block, Emmanuel Piat, Daniel Nyfeler and Thomas Baillod. I am grateful to you all for sharing your thoughts and work within and outside of our platform. It has been an immensely useful and enriching process, which is a reflection of your individual talents and expertise. This is what CIBJO is all about.

The competitive edge of data analysis

While I was gathering my thoughts to write this report, three events that took place within a two-week period That contributed to shaping this effort.

The first was a presentation by the CEO of the UNI platform (and member of our committee), Mahiar Borhanjo, demonstrating the power and potential of data. The second was a research document shared by one of the authors (and also member of our committee) Daniel Nyfeler, Managing Director of the Gübelin Gem Lab, related to deep learning and gemstone classification. The last one was the Apple conference on June 5, where the computer company presented its new products, including the "star" of the show, the Apple Vision Pro, a "mixed reality" (VR & AR) headset.

All three events are symbolic of how technology has evolved to provide us with more possibilities and efficiencies.

How are these impacting CIBJO's core constituency, the world jewellery industry and, more importantly, the industry's consumers?

The presentation by Mahiar demonstrated the vital importance of data-driven business for the jewellery industry. It showed how critical it is today to use verifiable figures to optimise internal processes, including financial ones, and in building relationships both with customers and suppliers to ensure that you are competitive.

But it is not enough to gather data – you need to understand its relevance and implement measures based upon it to maximise returns.

In essence, gathering, validating, understanding and then protecting information is becoming absolutely essential in enabling us to make optimal decisions at any given point in time. Increasingly, it's what gives some in our business their competitive edge.

The game-changing potential of AI

One of the most debated and some would say hyped subjects these days is of course Artificial Intelligence, or AI as it is known.

I believe we all understand that these systems are not "born intelligent," but rather are dependent on "deep learning" and logarithms that are programmed around models. This it to say that

already existing information and prescribed modi operadi help determine their output.

So, in a broader context, we are not necessarily talking about "truth," because the selected information potentially includes biases. Initially, at least, systems are as strong (or, if you wish, as weak) as the source and range of the input. We need to keep this in mind. Aside from what future legislation might be able to do, there is a very real risk of misinformation, which is difficult to detect because we do not know, or even necessarily understand the processes by which the information was collected, collated or understood.

But, over the long term, AI powered by deep learning is a game-changer that will almost certainly transform our jewellery supply chain, as it will do all other supply chains. For while misinformation is always a concern, deep learning injects a continuing element of self-improvement, meaning that as time as progresses and the data-pool grows, a system's analysis of the information becomes more accurate. It also allows computers to exhibit creativity.

Impacts on jobs and creativity

What impact will AI have on jobs and on income? In a nutshell, it's not clear yet. But there are indications.

One impact seems probable, and this relates to society in general, and that is the way we distribute our time. With AI-technology endemic, consumers will have more spare time to "schedule" in their lives. How this will play out and how the jewellery industry might potentially benefit, is certainly a subject to watch closely.

A recent McKinsey report noted that "Generative AI with tools such as Chat GPT and other foundation models are changing the AI game, taking assistive technology to a new level, reducing application development time, and bringing powerful capabilities to nontechnical users."

Gem-grading and gem-identification are cases in point. Up until recently, these were disciplines that were wholly dependent on human experts, and thus inevitably subect to human fallibility. It can certainly be claimed that well-trained and experienced gemmologists are remarkably
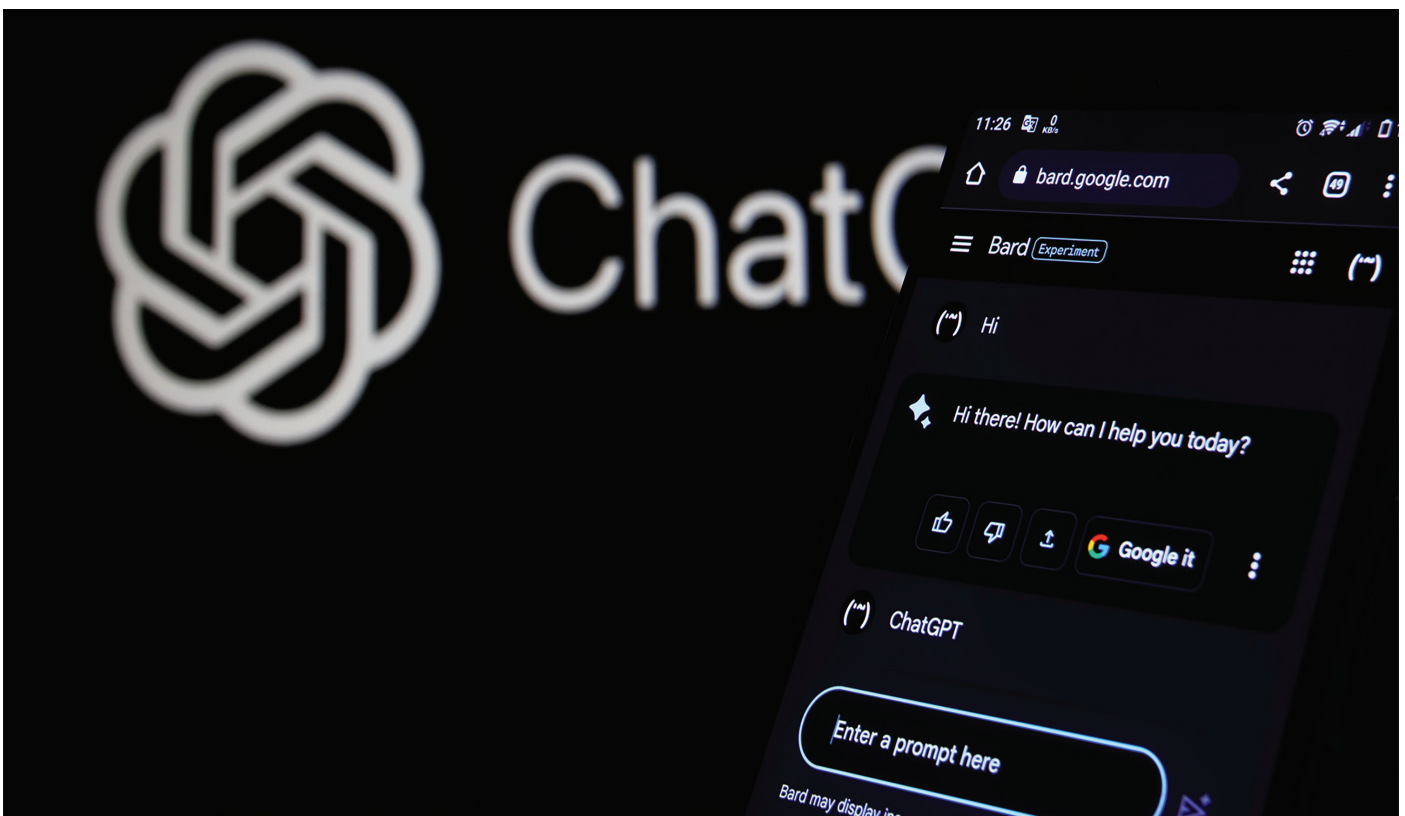
Photo: Mojahid Mottakin on Unsplash.

skilled in detecting minute variations in the the colours, inclusions and light reflected by various gemstones, but 100 percent accuracy, 100 percent of time is simply humanly impossible.

What about automated gem-grading and gem-identification system powered by AI? Initially, as their developers feed their algorithms with different information, one would expect a lack of uniformity in grading results. And, as long as slight variations between the various systems exist, every grade must be considered an "opinion," as is always the case when a flesh-and-blood gemmologist is involved.

But over time, as these AI-powered grading and identication systems educate themselves to recognize an ever-greater of number of patterns, and then test and refine these skills using gowing numbers of data sets, automated systems are created in which the potential for rising accuracy and repeatability is almost infinite.

So when can one decide that the machines have bettered the man? In all likelihood it will be a human decision. The other human decision, especially where grading is concerned, is how the systems are calibrated.

Virtual realities

The Apple Vision Pro launch, besides its amazing special computing capabilities, pointed to a further change in human and sometime non-human interaction. Love it or fear it, the younger (and sometimes not so younger) generation is embracing more of the virtual or augmented reality it operates in.

What are the potential consequences? From a tech standpoint it will create and supply even more data to be crunched and be used to optimize processes and communication.

It will also require retailers to think about VR and AR strategies going forward.

I will leave aside the human relation component, which is no less important for us as a society, and concentrate rather on the huge opportunities and challenges that these digital environments present to jewellery retailers.

Starting with the challenges, organisations need to incorporate the necessary expertise to optimize the use of their acquired data via VR and AR. They will have to study and evaluate properly the cost-benefit of investing in people, and also hardware and software, which today is far from being a standard exercise in our industry. Acquiring information is essential, and adequately protecting it and transforming it into an asset is critical.

Photo: Liam Chalmer on Unsplash.

An image created by AI-powered Chat GPT. The model, the jewellery and the VR goggles were all computer generated on command.

Also, depending on the jurisdictions, legal requirements around data access and processing are becoming more stringent, and concerns are growing about the impact on and the protection of the mental health of users. And last but not least, AI and virtual reality-driven tools and traceability systems such as blockchains require vast amounts computing power, and that translates into large amounts of stable energy supply.

The opportunities are tremendous, especially in the creation of big data that can be used by the industry. There will be an increase in real-time understanding of consumer behavior, an increased ability to enable data-driven personalised product recommendations, better monitoring of product flow and inventory, and pricing optimisation. It will enhance the cost and process efficiency of your supply chain and allow you to increase the quality of the online and offline retail and the consumer experience, including virtual try-ons.

Making the best the new opportunities

The question is now how to make the most of the opportunities that technology offers while maintaining and increasing the unique appeal of jewellery. How do we maintain the centuries-old desire to adorn oneself and enjoy the mental benefit of it, in a virtual setting?

How will jewellery retailers adapt to the virtual mode, and manage to enhance both the digital and physical retail experiences, with customers often connected to one or more device, through which they themselves are producing a steady stream of data. And, importantly, how do we protect creativity and intellectual property (IP)? Are copyright laws currently equipped to face this new challenge? This does not seem to be the case.

From manufacturing to grading to marketing, deep learning-informed AI coupled with augmented and virtual reality tools are creating new possibilities for the jewellery supply chain.

I would like to quote Ashley Dudanerok, a leading marketing expert based in Hong Kong and a participant in one of the very popular CIBJO Jewellery Industry Voices webinars that took place in June 2020.

"To sum up, the rapid advancement of AI and widespread adoption of AR and VR technologies mean that personalised and targeted advertising and tailored content are poised to grow their role in branding and marketing," she said. "From AI chatbots to AI-generated voices and

automated AI marketing tools, the efficiency of these innovative solutions is expected to soar. Businesses must embrace this trend to stay competitive and retain market share."

One issue that must remain our common focus in such an automated, high-speed, and very competitive environment is to maintain the trust of consumers. Because we are still a very "human" business

There definitely remains a critical role and opportunity here for physical retail and its interaction with clients. And for sure, the retail environment will evolve and incorporate more and more technology, enhancing rather than alienating the in-store experience. And, for the near-term at least, eye2eye contact will remain a primary mean of establishing trust.

It is up to each participant in our industry to to integrate technology in their operation, discoverng the best way and the right mix to attract, inform, impress and retain their customers.

I guess many of us, myself included, do not use our hardware and software to their full potential, far from it. That is why attracting experts and retaining them, will remain essential to drive a sustainable and successful business.

I believe it is about using technology in support of innovation, trust, story-telling and image – in support of your name or brand.

We need to learn as we move along, investing in digital infrastructure and talent, and using the data we capture in a legal and optimal fashion. To prosper in this brave new world, we have to innovate in order not to be left behind. But it's largely about method and finding new ways to tell our story, because when it comes to substance – the gemstones, the precious metals and the spectacular jewellery – all remain the same. They are timeless.

As I said at the opening of this report, even with technology, jewellery is about human beings. It is always is the people, our CIBJO members, who make the magic happen.

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