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THINK

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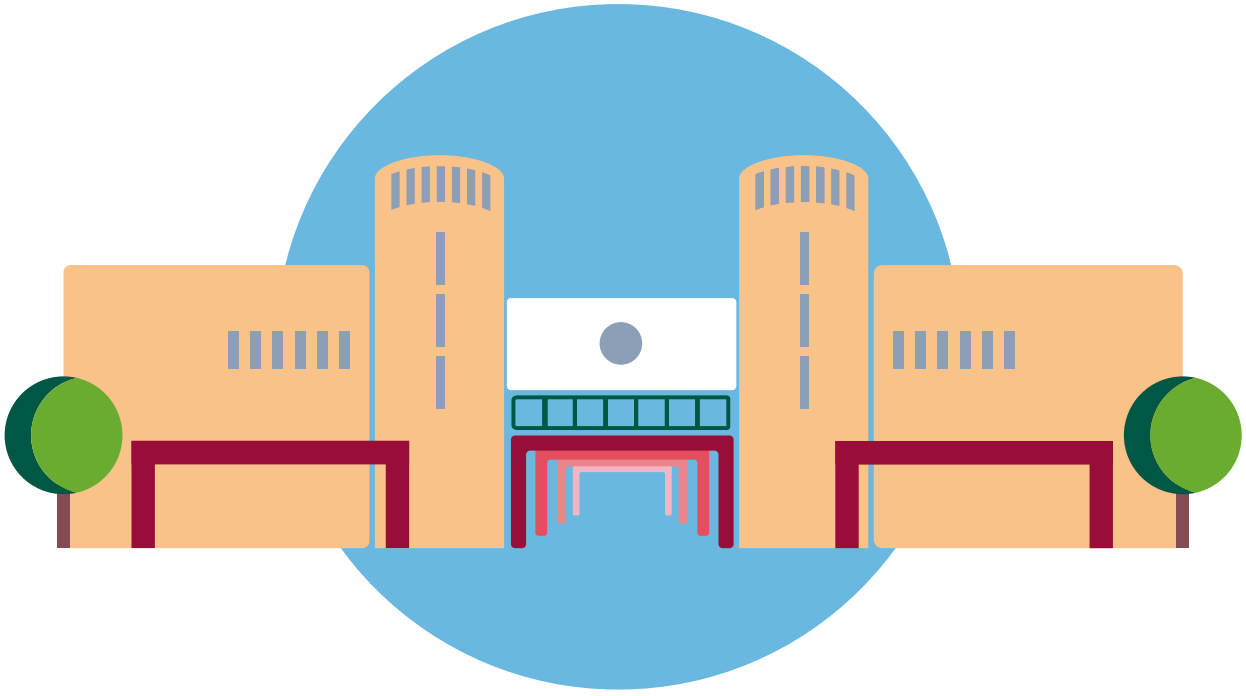

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EDITORIAL

HOME

A new year has brought with it reflection for the team at **THINK** magazine. Our essential purpose is to learn, share knowledge and engage our readers. Ultimately, **THINK** wants to make meaningful impacts on society. But in a world facing so much division, that is a challenge. Inevitably, we asked: what is it that unites us?

The answer proved simple. We're all human.

And as human beings, we share basic needs. Only when we fulfill them—in whichever ways we deem fit individually—can we go out into the world and live a meaningful life. And **THINK** will address those needs in 2019.

Home. Health. Purpose. Love.

In this issue we delve deep into HOME and what that word means (p.12). We look at our island and the impact our chosen lifestyles are having on it (p.26). We dive into identity through Maltese nicknames (p.30) and music (p.34). Local feasts make an appearance too, as well as their harbingers—fireworks. Are these colourful displays worth their impact? (p.22) There is so much worth protecting, as the documentary Kemmuna so brilliantly shows (pg.18).

As we set off into 2019, we do so with a new appreciation of the simple (though not small) things. Home is just the beginning.

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COVER STORY

HOME

Home. Literally. This series of covers uses celestial objects to represent our human needs. As more of them are fulfilled, the more whole we become. From the earth, to the moon, sun and universe.

HOME FOCUS

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MARCH 2019 - ISSUE 27

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TOOLKIT

The FLIR portable thermal imaging camera uses infrared light to hone in on temperature variations from type 2 diabetes mellitus

Heat for health

Over 10% of the Maltese population lives with type 2 diabetes mellitus. This means the local risk for peripheral arterial disease, the one that usually leads to amputation, is alarmingly high. But now, a team of researchers from the Faculty of Health Sciences (University of Malta) has its hands on a new high-tech camera that can be used to detect foot complications before it's too late.

A common symptom of peripheral arterial disease is a gradual temperature increase in a person's foot. The change is very mild, making it difficult to detect manually. So Dr Alfred Gatt and his team are using the state-of-the-art thermographic FLIR thermal camera to hone in on these temperature variations from type 2 diabetes mellitus.

The camera uses infrared light in the same way a regular camera uses visible light to produce an image. Yes, puppy pictures are still possible, but they definitely won't look as cute. Its ability to measure emitted heat means it is non-invasive, reducing risks of infection completely. So while the €30,000 invested by the University may seem high, it will save money in the long run.

The applications of this piece of equipment go above and beyond diabetes. It is being used for multiple research projects and contributing to medical knowledge related to other vascular diseases and physiological processes. Its true value? Priceless.

WITHOUT BORDERS

Safe haven?

Author: Cassi Camilleri

Some refer to the Venice Biennale as the pinnacle of the international art world. Last year, feathers were flurried by the Maltese delegation and their representation of Maltese identity. This year, the works question a specific part of the Maltese narrative.

'We are working around the theme of *MALETH*,' says Dr Trevor Borg, artist, curator, and University of Malta lecturer. *Maleth* refers to the ancient word for Malta. 'It is also called *HAVEN* and *SAFE PORT*.' These were all terms used in reference to Malta over the centuries. But is our island really that? This is the question being tackled by Borg and his colleagues.

Immigration has been a critical issue in recent years, creating an inflammatory divide in Malta. Borg is using the first immigrants, the animals that travelled to Malta during the ice age, to make his point. 'They travelled here because of the heat our island provided and the food that came with it. But as the ice in the North started to melt, sea levels rose and they were unable to return.'

What is the relation between an (apparent) safe haven and a heterotopia? Here, heterotopia refers to Michel Foucault's notion of the 'other place'. Heterotopias are described as 'worlds within worlds', connecting different places. They are places that constitute multiple layers of meaning, that accumulate time, that can be both real and unreal.

My work begins at the cave. But I will then leave the cave behind and delve into a distant world that never was!

Dr Trevor Borg

To represent this visually, Borg is going to create an archaeological find with hundreds of objects from history. Animal remains will feature, as will unusual artefacts and other strange finds. Borg was inspired by Għar Dalam and used it as a starting point, but this work is not about history. 'My work begins at the cave. But I will then leave the cave behind and delve into a distant world that never was! The work responds to fabricated histories, museological conventions, historical interpretations, and hypothetical authenticity. It is based on pseudo-archaeological objects and imaginary narratives,' he explains.

Collaborating on this work, bringing the artefacts to life is Dr Ing. Emmanuel Francalanza (Faculty of Engineering). The process began at the National History museum in Mdina. 'Together, we selected and scanned a number of animal bones from their archives,' Francalanza says. This included femurs, teeth, and skulls among others. 'I then supported Trevor in reconstructing the 3D model and preparing it for printing.'

For Francalanza, this was a chance to apply engineering technologies in new ways, to allow artists to express themselves. But not just. 'At the same time, this opportunity provides us engineers and scientists with an avenue to explore concepts and even utilise thinking patterns which are not traditionally associated with our disciplines. It helps us be more creative and open to innovative practices.'

Working together, Borg and Francalanza are blurring the lines between what is real and what is fake. By recreating the original artefacts in such a way that a viewer cannot determine whether what is being seen is authentic, the project is poignant commentary for the post-truth era we are living in.

DESIGN

Conjuring the ultimate art space

Form follows function. This is the maxim that rules modernist architecture and industrial design: the shape of an object or building is determined by its use or purpose. Around 10 years ago, contemporary artist and architect Norbert Francis Attard embarked on a project that would see the two merge together in a perfect marriage.

Attard envisaged a space within Valletta's walls that would serve as a focal point for anyone wanting to experience the world of contemporary art. He wanted a place where established and emerging artists could come together to trigger dialogue with the community and its visitors.

A few years and several permits later, three warehouses were purchased and transformed. Carefully-designed excavations and beautifully-proportioned internal apertures created triple-height spaces, interrupted only by lightweight steel stairs and floors, or glass railings. The result is a sublime canvas ready to bring art to life and inspire others.

Note: Valletta Contemporary (VC) is open from Tuesday to Friday, and admission is free of charge. VC recently published its first book, *Valletta Contemporary 001*, which includes a compilation of VC's 2018 exhibition program alongside all show catalogs.

This page:
Carlos Coronas, *The Dreamed Territories*
Exhibition at Valletta Contemporary

Opposite page:
Alex Attard, *Parallel Existences*
Exhibition at Valletta Contemporary

Punish or rehabilitate?

Michela Scalpello

Imagine walking into an animal shelter. Sad eyes look to you, nameless. All of them hoping to be shown kindness, all of them hoping for a second chance at happiness. Your heart goes out to them, but there are so many you don't have time to focus on each individual. They have food and water; they are alive—it will have to do.

Prisons are not so different. Desperation is palpable. People walk the grounds alone, shunned and forgotten. Sentenced to prison for criminal offences, they were promised care and rehabilitation to prepare them for a better life. And yet, the first reaction for most people when they see this is not empathy, but scorn. 'Help them? Why should we? Leave them there! They deserve it.'

Prison populations are the most surveilled population, but also the most invisible. Sensationalist stories are plastered all over the news, yet in-depth prison reports are never widely disseminated. The media believes citizens do not want the truth about the dull misery inside. They want a story; they want drama.

> *What they fail to mention is that around 95% of individuals sentenced to prison eventually return to their communities.*

As it stands, prisons are disheartening places. They're spaces for punishment, very rarely offering rehabilitation of any kind. Politicians favour harsher punishments as a show of power and control. What they fail to mention is that around 95% of individuals sentenced to prison eventually return to their communities. They will become your neighbours.

In 2018, a report by Crest gave evidence against the common belief that punishment and rehabilitation can never be effectively combined. It doesn't take much to offer a humane, educative environment behind prison walls. Prisoners need purposeful activity, focusing on education and on developing essential skills aimed at securing a job. We need to look at inmates and remember that they are, first and foremost, people, each with their own individual needs.

People with nothing to do find ways to pass the time. When no positive choices are available, it is all too easy for inmates to get caught up in the prisonization effect, teaching each other the tricks of the criminal trade. On the other hand, those engaged in training programs are at least three times less likely to reoffend, armed with an alternative to criminality.

Do you still think we should throw away that key?

Of robots and rights

Dr Jackie Mallia

In 2019, Malta will create a National Strategy for Artificial Intelligence (AI) in order to establish the country as a hub for investment in AI. Speaking about AI at the Delta Summit late last year, Prime Minister Dr Joseph Muscat stated that 'not only can we not stop change, but we have to embrace it with anticipation since it provides society with huge opportunities.' He followed up with similar declarations at the Malta Innovation Summit, also observing that in the future, 'we may reach a stage where robots may be given rights under the law.'

This latter statement seemed to generate unease. Reading some of the negative comments posted online, I realised that for many, the mention of 'AI' still conjures up images of the Terminator movies.

Although a machine possessing self-awareness, sentience, and consciousness may take decades to materialise, AI is already pervasive in our lives. Many of us make use of intelligent assistants, be it Amazon's Alexa or Apple's Siri. Others use Google Nest to adjust their home's temperature. Then there are the millions with Netflix accounts whose content is ranked in order of assumed preference. All of it is convenient, and all of it is due to AI. But some of the skepticism towards the technology may be warranted. High-profile failures include Google Home Minis allegedly sending their owners' secretly recorded audio to Google. Facebook's chatbots, Alice and Bob, developed their own language to conduct private conversations, leading to their shutdown. In addition, there were two well-documented fatal autonomous car accidents in 2018.

AI is still evolving, but at the same time, it is becoming ubiquitous, which leads us to some very important questions. What is happening to the data that such systems are collecting about us? What decisions are the devices taking, and to what extent are we even aware of them? Do we have a right to know the basis upon which such decisions are taken? If a machine's 'intelligence' is based on big data being fed to it in an automated manner, how do we ensure it remains free from bias? Can decisions taken by a machine be explained in a court of law? Who is liable?

A focus on the regulation of AI is not misplaced. The issues are real and present. But the answer is not to turn away from innovation. Progress will happen whether we want it to or not. Yes, we need 'to embrace it,' as Muscat stated, but we must do so in the most responsible way possible through appropriate strategy and optimal legislation.

Dr Jackie Mallia is a lawyer specialising in Artificial Intelligence and a member of the Government of Malta's AI Taskforce.

Home

Dr Patricia Bonello

The theme of this edition of THINK magazine is meant to evoke feelings of belonging, identity, warmth, and solidarity. Our home is usually a place associated with these positive feelings: a place where I can be myself and, in a safe environment, develop into the me I want to be. This is something valuable, something which we should safeguard passionately. At the same time, as a social worker, I know many for whom 'home' does not have such positive connotations.

The people that come to mind are abuse victims, children and adults living with domestic violence. For them, 'home' means suffering, often accompanied by a feeling of helplessness. Others find 'home' a difficult concept. Think of people who cannot make ends meet, who have difficulty paying their rent, who cannot afford to buy their own house because of high property prices. Then there are those who can no longer live in their own house because they are unable to look after themselves, be it because of old age or health issues. There are members of broken families who have difficulty identifying their home, asylum seekers who left home behind, and people who have lost a family member and now associate 'home' with sadness.

Everybody needs a place where he or she feels 'held' and safe enough to develop their potential. But if 'home' does not fit the bill, where will this be?

This is where a network of social solidarity, both formal and informal, comes into play. Alternatives for people with issues related to the concept of 'home' include foster placements, shelters, or other residential facilities. But these services are tasked with much more than providing mere accommodation. They must create an environment which meets the needs of the persons who live there. They should provide a safe space for people to come in, be themselves, and develop their potential.

For those who don't need to move out of their current home, options include support and professional interventions, such as family therapy, to deal with the sadness associated around the home, or to improve the dynamics within it. Social service providers in Malta and Gozo carry a lot of responsibility. Unfortunately, the supply does not always meet demand, and some people have to wait considerably before being able to move into more comfortable and nurturing placements—sometimes while living in abusive environments. In other situations, the necessary support is not readily available, as in the cases of asylum seekers and homeless people who need a roof over their head.

This is where a network of social solidarity, both formal and informal, comes into play.

While formal support is important and necessary, all Maltese citizens need to share the responsibility and offer a helping hand without judgement. That way, Malta will be able to nurture communities that work together to create 'homes' which cherish everyone, respecting their dignity and worth and encouraging them to flourish.

STUDENTS

Research to business plan: a metamorphosis

Michelle Cortis

In recent years, there has been a shift in the relationship between research and commercial industries. Commercial viability almost always comes into question for ongoing research. Commercialisation can be a boon. When a research project has demonstrated its potential to become a viable business, funding opportunities increase, meaning the research can be turned into a product or service that people can use.

In 2018, as part of a Masters in Knowledge-Based Entrepreneurship, I analysed the commercial potential of an ongoing University of Malta project. I conducted an in-depth market feasibility study on Prof. Ing. Joseph Cilia's Smart Micro Combined Heat and Power System, a device that can be fitted into homes and offices to deliver heat as a by-product of electricity, reducing energy costs. Many EU countries are setting up incentives to make these systems more feasible and attractive to consumers.

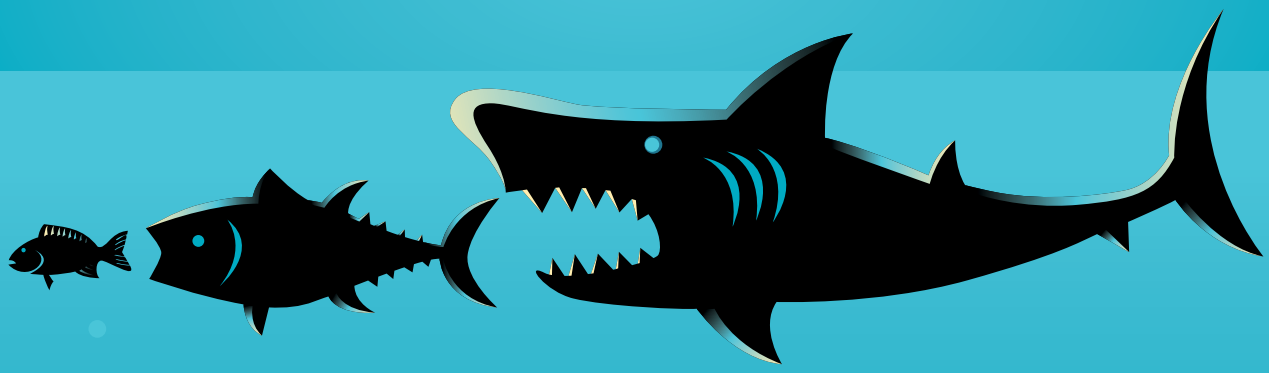
For my dissertation, I developed a business plan for the research team. An engineer myself, and having earned a Masters by Research back in 2014, this was different to anything I had done before. My supervisors, Prof. Russell Smith and Dr Ing. Nicholas Sammut, helped me find the right balance between utilising my technical knowledge whilst also analysing the product's commercial potential. Even my language changed through the process; I began to speak of 'euros per day' rather than 'kilowatt hours'. I learnt to differentiate between technological features and what real benefits future users would gain.

Being presented with a physical product, initially one may assume that it is to be sold to customers, or protected through a patent and licensed to the private sector. However, my market analysis revealed new target audiences that had not been thought of before. Selling the device was not the only way to exploit the project's commercial potential. What if we leased the product instead of selling it? Should we continue developing the product or is it already innovative enough? What if we developed a spin-out—would it be too expensive or is it worth the investment?

By analysing a project through a commercial lens, all these questions arise, pointing out potential ways to make a good project great. But what makes a good business plan great is when all these questions are answered.

The Project 'A Smart Micro Combined Heat and Power System' is financed by the Malta Council for Science & Technology, for and on behalf of the Foundation for Science and Technology through the FUSION: R&I Technology and Development Programme.

Are you carrying out research at the University of Malta which you think may have commercial potential? If so, contact the Knowledge Transfer Office on *knowledgetransfer@um.edu.mt*



Poverty in a prospering country

Samuel Casha

In 2018, anti-poverty organization Oxfam reported how in 2017, the world's 2,043 billionaires increased their combined wealth by $762 billion– enough money to eradicate global poverty seven times over. While in past centuries, poverty was a consequence of a lack of resources, abundance is a far greater issue in today's world. The problem is resource distribution.

The gap between the rich and poor is ever-widening, and this is a reality that is true in Malta.

Our streets might not be blighted by homeless people as in most big European cities, yet hidden poverty is increasing. In 2016, the National Statistics Office reported that 16.5% of the Maltese population live at risk of poverty. Skyrocketing property prices have their part to play, grinding society's most vulnerable members down. Currently, over 900 families live in garages, as stated in a parliamentary meeting in May 2018.

The situation is not the fault of any one political party or another. Poverty is a structural problem. Capitalism generates poverty, just as it generates wealth. Yet, too often, those in the middle-class point their fingers not at the rich and powerful fuelling the machine, but at the poor themselves. Many assume that the poor could climb the social ladder if only they worked harder, but many are employed and still fail to achieve a decent standard of living since the minimum wage is inadequate.

This is where a network of social solidarity, both formal and informal, comes into play.

Throughout history, countless artists have depicted poverty, among them Vincent Van Gogh, whose *Potato Eaters* (1885) remains one of the most powerful paintings about poverty in history. Criticised for its lack of a 'conventional sweetness,' in a letter to his brother, Vincent insisted that 'a painting of peasant life should not be perfumed.' Van Gogh's *Potato Eaters* brings the viewer face-to-face with a type of poverty that exists behind closed doors. Malta's poverty problem is exactly that: behind closed doors. If we cannot do much to help them, at the very least, the poor deserve our empathy, not our judgement. T

This article is based on research carried out as part of the B. A. (Hons.) History of Art with Fine Arts course within the Department of Art and Art History, University of Malta, under the supervision of Prof. Giuseppe Schembri Bonaci.

HOME

Shelter is one of our most basic needs. It protects us against the elements and keeps our belongings safe. But it also enables us to grow roots into our community and the environment that surrounds us. Yes, HOME may be a primitive first step in life's journey but it is also a fundamental cornerstone to prosperity in all its forms. In this FOCUS we explore the meaning of the very word 'home' and what it could mean to live without it. We take a deeper look at our own home, our Maltese islands, our identity and culture, all from the lens of researchers from the University of Malta.

Kemmuna

Despite being one of Malta's hottest attractions, a lot of what Comino has to offer is covered by the cool blue waters that fuel its popularity. ***Prof. Alan Deidun*** *and his team have embarked on a journey to bring what's hidden beneath to the surface, tentacles and all.* ***Gail Sant*** *writes.*

Have you ever googled Comino? Approximately 10,900,000 results pop up, and the vast majority of them relate to holidaymaking tips and weather information, with a sprinkling of research projects. Once the hideout of pirates and smugglers, the little island's crystal-clear waters have now made it a paradise for travellers. But despite the suffocating love and attention Comino gets during the summer months, many of its wonders remain hidden underwater, unattainable to most.

This was the motivation behind Prof. Alan Deidun's most recent documentary, *Comino: A Secret Paradise*. An academic at the Department of Geosciences (University of Malta), Deidun is an avid diver, environmentalist, and advocate who wants 'to bring the underwater world to people who don't normally venture beyond the swimmer's zone.'

Deidun's first foray into documentary filmmaking came with *Dwejra* (2012), a film that featured the long-lost Azure window. Soon after were *Rdum Majjiesa* (2012) and *Mġarr ix-Xini* (2013). His big break came with *Filfla* (2015) which went viral and continues to do rounds on social media today. Even in 2012, the aim was always to highlight the beauty and importance of local Marine Protected Areas. In 2019, this has not changed.

BEHIND THE SCENES

The team met to film the first documentary in the series back in 2012 with Monolith Limited. The experience was so positive and fruitful that the team has remained practically unchanged since. Film after film, they all keep coming back to work together. Directed by Pedja Miletic and funded by the Malta International Airport Foundation, *Comino* is the fifth film in the series.

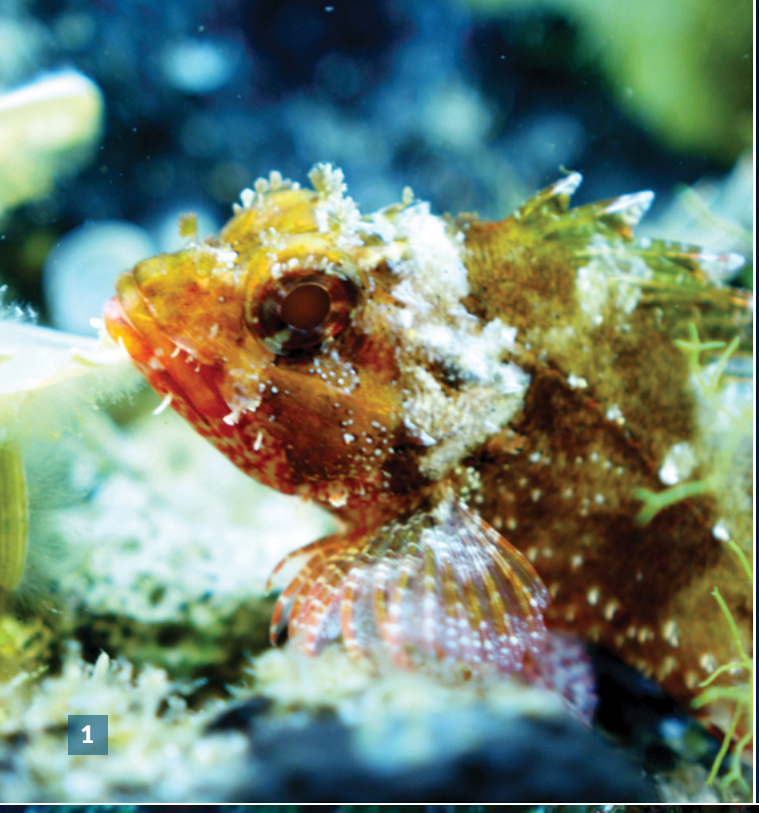
Filming took place throughout 2018, focusing on everything: marine to terrestrial, shallow to deep, diurnal to nocturnal. Deidun admitted that they struggled with finding and filming enough organisms. 'It took around 50 trips to Comino and back to get the footage we needed,' he says. But the result speaks for itself.

Helping them achieve the sheen they needed for the final work, Deidun and his colleagues used a state-of-the-art 8K underwater camera. Hardware of this calibre is the sort you find on big budget productions like the BBC's beloved *Blue Planet*. The camera enabled the divers to film animals from a different perspective, providing audiences with a new experience. Take, for example, the Common Octopus, *Octopus vulgari*, a documentary staple whose camouflaging skills got some well-deserved attention in *Comino*. The camera also came in handy with more delicate, elusive creatures. The weird and wonderful Berried Sea Anemone and the Flying Gurnard, species the team hadn't been able to capture in previous work, could now be seen in all their complexity.

SCIENCE & ART FOR THE ENVIRONMENT

Another big motivation behind this documentary is a lack of science communication—a global issue.

Deidun emphasised that academics need to share their findings. 'You can't just publish in a peer-reviewed journal and stop there,' he says.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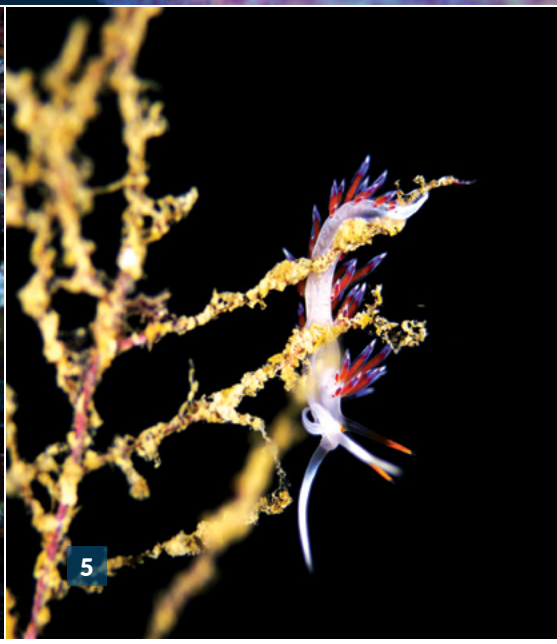
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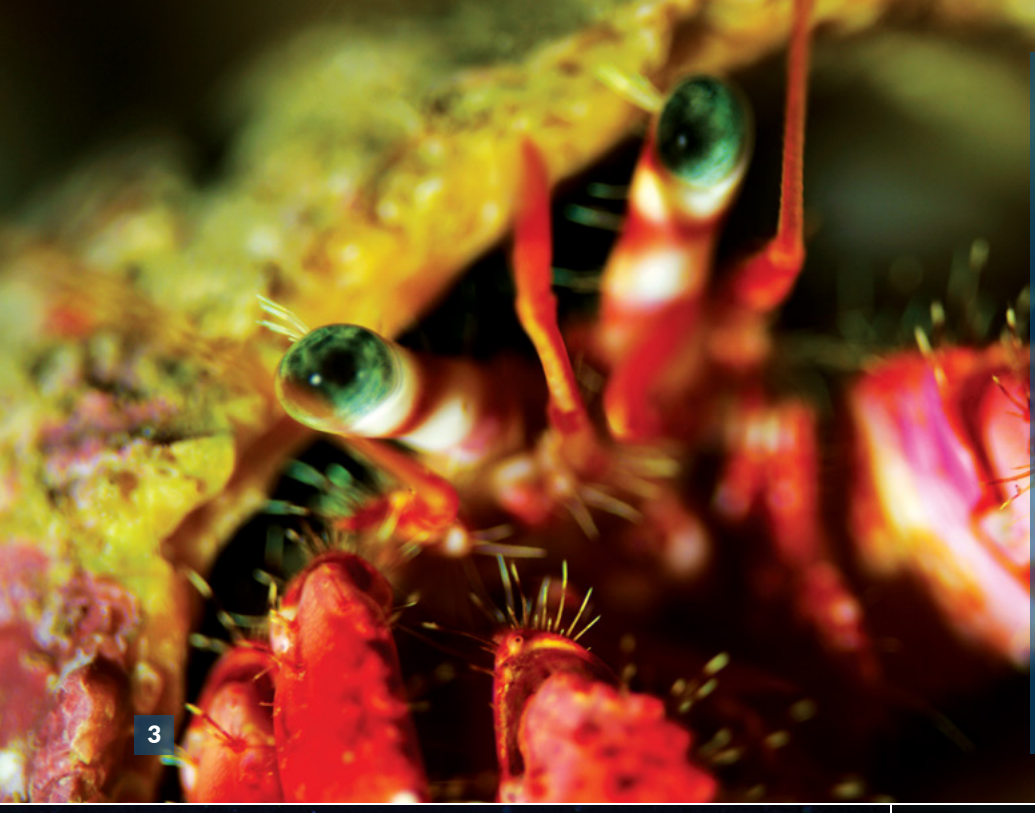
'You need to engage, start a dialogue with society.' Because despite all of us choosing different walks of life, we share one home, and scientific findings should influence how our environment is treated. To move from research to societal action, communication is key. Scientific findings on their own quickly become stagnant, but through discussion and dialogue, they can thrive in the different layers of our communities: from quick, friendly conversations to formal government conferences. A conscious understanding of our environment leads to its conscious use.

In this case, *Comino* can help expose people to marine diversity and show them this complex micro-realm that 'is not just Blue Lagoon.' Most people know about the Damselfish (*Ċawla* in Maltese) or the Mauve Stinger (*BRAMA!* in Maltese). Their large numbers might make people think that Maltese waters are safe from overexploitation, but this is far from the truth. The animals that are difficult to see are those that need the most attention. Fauna such as the endangered Rough Ray, the protected, crimson purple *Echinaster sepositus* starfish and the Striped Prawn all face man-made threats.

'This has resulted in an alarmingly low fish biomass [amount of fish] for the Maltese waters,' Deidun says. 'But that's not surprising. Maltese waters are constantly fished. Overfishing is a reality.' Even Comino, a Marine Protected Area (MPA), is



1 - A scorpion fish excels in the art of blending in, assuming a body colouration which can be easily mistaken for that of surrounding algae.

2 - A squid mesmerises with the visual display it puts up, using body colouration for evading predators but also to communicate with potential mates.

3 - The hermit crab is the textbook example of mutualism, compensating for its soft body armour by lumbering around a mollusc shell which can be colonised by stinging sea anemones on top.

4 - The octopus uses every trick in the book when being pursued, from hiding in the smallest of nooks and crannies to squirting ink as a last-ditch attempt at escape.

5 - Nudibranchs, or naked gills, are every SCUBA diver's favourite, with their mesmerising array of bright colours.

6 - The berried sea anemone comes to life at night, but its 'berries' can deliver a painful sting and are best not disturbed.

7 - The flying gurnard is known for its graceful gliding movements just above the seabed, but also for the grunting sounds it makes during mating season.

Stills from* Comino *documentary

surrounded by nets and fishing lines. It seems that while most of us are proud of our crystal-clear waters, we are not paying attention to the problems ailing it. 'This is what we hope to change,' Deidun adds.

COMINO'S FUTURE; OUR FUTURE

Deidun has plenty of hope. He tells us that 'our MPAs are paper tigers for now, but the Environmental Resource Authority (ERA) is working on having approved management plans' which need to be ready and presented to the European Commission by the end of 2019—a step towards a healthier sea with a sustainable future.

As for these documentaries, Deidun has big plans there too, and they involve Netflix. He also wishes to add the films to digital libraries of local schools. In time, this will all feed into his vision of establishing a local ocean literary centre, a space where people of all ages can learn about our sea through science, arts, and new technology.

The Maltese are an island people. The sea is part of our heritage, a part of our identity. And we must work harder to preserve it for future generations. It is through documentaries like this one that we can appreciate and protect our home. As biologist Jane Goodall once said, 'Only if we understand, can we care. Only if we care, we will help. Only if we help, we shall be saved.' T

Beneath the glow

In Malta, fireworks are the harbingers of summer, joy, and celebration. But news that their chemical leftovers are harming our environment and health cannot be blatantly pushed aside. How do we find the happy medium between heritage and safety? ***Gail Sant*** *writes.*

A child laughs with glee as she skips along a narrow rubble wall. Her mother raises an eyebrow—'*Tilgħabx man-nar*,' she calls out. Translated, the saying that warns against 'tempting fate' also literally means 'don't play with fire', ironic when one of Malta's national pastimes is literally fire play—*logħob tan-nar*. Fireworks.

With around 35 known firework factories peppering Malta and Gozo, the tradition can be traced back to the Knights of St John. They used fireworks to celebrate important occasions such as the election of a new Pope or Grand Master, and so the display became rooted in our past and more recent history, evolving with time to become the complex artform that today wins Malta acclaim the world over. But there is more to the story.

Studies have shown that there's a dark side to this flashy spectacle. Some of the chemicals used to create fireworks are harmful, and as a result, each *festa* leaves behind residue which may be more dangerous than we think.

To get a better idea of the situation, we interviewed two people on opposite ends of the fireworks operation: Mr Karl Rueth, a firework crafter, and Prof. Alfred Vella, an environmental chemist who has studied some of the effects fireworks leave behind after the party is over.

FIREWORKS AND IDENTITY

Rueth is a *Dinglin*, born and raised. Brought up in a village that celebrates one of the most widely recognised patrons on the island, the feast of St Mary, he grew up fascinated by the annual summer bonanzas. The fact that his friends and family were involved helped too. It surprised no one when he eventually picked up pyrotechnics as a pastime. It's been three years now, and the novelty has not worn off.

'It's an art form. It helps you express yourself, bringing out your unique ideas,' says Rueth. The techniques involved, from developing specific colours to altering the shape of the blast, create a myriad of opportunities for self-expression. That said, Rueth swiftly adds, there's much more to it: 'It's part of our culture. And not just for the village feasts. Every activity you care to mention involves fireworks.'

Think of events like those organised by the Valletta 2018 Foundation or Isle of MTV; all of them make use of these colourful bombs to add energy and charm. 'We advertise our island with imagery of fireworks,' Rueth notes. And yes, a lot of press related to tourism and travel to Malta does feature fireworks. They create spectacles, ones which tourists appreciate and enjoy, and with tourism being one of our most important economic drivers, a glowing skyline and a free show does add value to our little island beyond the sun and sand.

The issue Rueth points out himself is the one with noise. 'Nowadays many people see fireworks as a nuisance. It's a reality we can't escape,' he says, also admitting that unfortunately, there is no real solution for this. Many within the fireworks community believe the bang is as important as the colours. However, 'it's all about balance,' says Rueth.

THE OTHER SIDE OF THE COIN

'If I had to live through a summer where not a single bang would be heard, Malta would have truly lost a part of its identity,' says Vella the

Photo by Charlot Ryan Spiteri

minute we sit down to discuss the issue. Thinking back to his time living in the US, Vella laughs, remembering how it felt a little 'too quiet.'

Much like Sunday School's bells, a firework's distant boom is something we've grown accustomed to, a background noise. However, the comfort that comes with those chimes, flashes, and bangs hasn't blinded him to their negative side-effects.

Vella says that one of the biggest environmental impacts fireworks have is the sheer amount of dust they leave behind. This particulate matter in the air causes many health problems, including respiratory issues such as lung inflammation, while exacerbating others like asthma. Respiratory diseases account for one in every 10 deaths in Malta, placing them as one of our biggest killers.

Not only does this dust fall in excessive quantity, it also contains chemicals which are either toxic or which, though initially inert, become toxic once they're burned. 'What we were putting in those explosives was remaining around unexploded or in the form of its products,' Vella emphasises.

Antimony, the chemical used to create a glitter effect, changes into antimony oxide, a known carcinogen, when burned in air. Heavy metals that are used to add colour to the explosion include barium. Accumulation of barium in the body can lead to muscle paralysis, gastrointestinal hemorrhage, and even death.

Finally, Vella moves on to the main player in his research—potassium perchlorate. This chemical is a key ingredient for successful blasts. His studies suggest that a significant amount of perchlorate remains unused after the explosion, settling on our island, both outdoors and indoors. His findings show that the amount of perchlorate dust found indoors is almost twice the amount of China's indoor dust. China. The pioneering country that invented fireworks back in the ninth century is also the country that banned their use in its capital city during the 2018 new year celebrations in an attempt to fight off air pollution.

Related research has also shown that perchlorate can interfere with thyroid function. Currently, there aren't any studies which link the two together locally, but knowing that

Photo by Karl Rueth

Photo by Claudine Despott

there's an excessive amount of this chemical all over our environment isn't great news. 'Why should we have to live side by side with a chemical which is totally alien to our environment?' Vella asks.

Prof. Alfred J. Vella

FINDING BALANCE

Though Rueth and Vella have different ideas of what fireworks mean to them, they both agree that some sort of compromise is needed.

'You need to understand where people are coming from,' says Rueth, adding that for some, noise pollution lasts the whole summer, not just a week. As for their chemical effects, he's 'sure that some harm is caused.' However, he also believes that more research would be beneficial, helping us to understand the topic better. To him, this is not a matter of 'us against them,' but about finding a way to make fireworks safe and enjoyable for everyone.

On that note of safety, Vella thinks that 'it's high time that we control fireworks through making perchlorate a controlled chemical.' At the moment, of the three main oxidising agents used to make fireworks, perchlorate is the only one which doesn't require permits.

Despite negative media framing, Vella takes a moment to emphasise that he doesn't want an outright ban on fireworks. 'For better or for worse, it is part of who we are.'

At the end of the day, few people can deny that the visuals fireworks give us are mesmerising. But we also need to acknowledge the science. 'Much like alcohol consumption, a little of it is probably not all that damaging. We can tolerate a small impact of fireworks because of the benefits they give us,' says Vella. But we cannot go through life drunk. Just like everything else, moderation is key.

Photo by Isabelle Mallia

THE CASE FOR A SPARSELY CARRED ISLAND

As the call for a cleaner, more sustainable future becomes louder, what impact do our individual choices make? ***Nika Levikov*** *writes.*

The alarm blares for the millionth time. You drag yourself into the waking world. You need a shower. You need coffee. Cereal? A weary glance at the clock and suddenly there is no time for breakfast, let alone a packed lunch. I'll grab a *pastizz* and go to the shop later, you think as you jump into your car. Actually it will have to be the supermarket; the green grocer is too far, and you're behind on your latest 'big report'.

The morning rush is a bane shared by most in contemporary society. Multiply that routine by a few hundred thousand, and the impact adds up fast.

Our hectic lifestyle is just one cog in a huge wheel leading to increased waste, pollution, and poor health. What's more, behavioural economist Dr Marie Briguglio (University of Malta), asserts that, 'the main environmental concerns of citizens in Malta today pertain to declining quality of life in urban areas.'

FACTORS BEHIND ENVIRONMENTAL SHIFTS AND PRESSURES

It can be difficult to imagine certain forms of consumption, especially basic needs like food and water, as detrimental. But Malta's State of the Environment Report by the Environment & Resources Authority (ERA) ranks agriculture and the electricity-guzzling osmosis plants high among environmental pressures on the Maltese Islands.

Transport is another indispensable need. Car ownership is a big culprit but the situation is more complicated according to economist Dr Jonathan Spiteri (University of Malta). Older cars emit more harmful pollutants and are often in need of repair. Transporting goods and services around the Islands is key for the Maltese economy, but this contributes to a lot more than just Gross Domestic Product. The environmental stresses caused by cars and lorries are clear.

Malta faces maddening traffic and the degradation of green areas all over the island, met by subsequent demands for wider roads and more parking. There are also more insidious implications for citizens since polluting vehicles lead to higher respiratory illnesses—Malta has a high asthma rate.

MALTA'S CLIMATE CHANGE

Green technologies are booming. Both Iceland and Tokelau have hit 100% renewable energy production, while China invests hundreds of billions in renewable energy. But what has been happening locally?

'It's not all doom and gloom,' Spiteri notes. 'Since 2008, the proportion of total energy generated from renewables has increased from 0.2% to 7.2% in 2017.' There has is also been an increase in the purchase of electric and hybrid vehicles. In 2015, 246 electric cars and approximately 439 hybrid vehicles were registered.

Nonetheless, regular cars are omnipresent. Between 2012 and 2015, the number of vehicles on the Islands grew from 293,498 to 346,918, from one vehicle per 1.4 people to one vehicle

The urban heat island effect is another issue. Highly built up areas, with few green spaces and large numbers of people, see heat getting trapped, raising temperatures fast.

per 1.24 people. These numbers are staggering considering that Malta is the most densely populated country in the EU. In 2011, Malta was home to 1325 people per square kilometer, more than tenfold the EU average of 116.9 people. Looking at ERA's report, Malta's population is expected to exceed half a million by 2060. Will the increase in cars be proportional? Malta needs innovative public transport systems to reduce the addiction to cars.

Speaking about local climate change mitigation, meteorologist Dr Charles Galdies (University of Malta) believes that addressing gas emissions from cars is a priority. However, he also mentions that, according to ERA's report, greenhouse gas emissions decreased 31% from 2012 to 2015. Other positive steps forward include Malta's National Strategy for Policy and Abatement Measures and the Climate Adaptation Strategy enacted in 2012, which are addressing vulnerable areas, including coastal zones and freshwater resources. But Galdies believes we can do more. 'The emphasis on further investment in traditional modes of transport can be problematic,' he says. 'This also applies for maritime and aviation transport.'

The urban heat island effect is another issue. Highly built up areas with few green spaces and large numbers of people see heat getting trapped, raising temperatures fast. Galdies notes the danger this can pose for young children and the elderly, especially during summer. Towns and cities can be up to 6°C hotter than rural areas due to heat being absorbed by roads and buildings during the day and emitted into the atmosphere at night. Green roofs, as proposed by the team behind the LifeMedGreenRoof project (see Issue 21), can be a solution, adding much needed green spaces.

LET OUR VOICES BE HEARD

Alongside political and technological solutions to the environmental problems we're facing as a modern society, we must also tackle how institutions communicate about climate change. We need to speak 'directly to the community,' says Galdies.

Researchers need to work with citizens to better our natural world; they play a crucial role in providing their own visions and ideas. According to Briguglio, 'Contrary to popular belief, repeatedly, our surveys show a willingness by Maltese people to behave pro-environmentally—where infrastructure, institutions, and intervention enable it.'

And this is what ERA is doing now. As they work on a National Strategy for the Environment, a forward-looking plan from 2020 to 2050, they're inviting citizens to contribute in shaping Malta's future. Perhaps there is no better time to make our voices heard, to support an environment that provides for a better quality of life and contribute to a National Strategy that seeks to nourish the lives of all individuals. After all, don't we deserve a breath of fresh air?

MAKE IT

IN MANUFACTURING

Make It is an initiative of the Malta Chamber of Commerce, Enterprise & Industry and Malta Enterprise. The objective is to encourage people to pursue careers in the manufacturing sector.

Follow us on our social media as we discover the real success stories of those who choose the path of a career in manufacturing.

MAKEIT_MT

MAKE_IT_MALTA

THE MALTA CHAMBER OF COMMERCE, ENTERPRISE AND INDUSTRY

MALTAENTERPRISE

Sejjaħli b'laqmi

(Call me by my nickname)

What's the first thing that comes to mind when you think of your best friend? Is it the way they wear their socks up to their knees? Is it their long curly hair that seems to have a character of its own? ***Abigail Galea*** *speaks to linguist* ***Prof. Charles Briffa*** *about the use of nicknames in Malta's communities.*

Experiences feed into our language choices. 'Your choice of words can tell a whole story about you,' says Prof. Charles Briffa, a linguist, researcher, and author who studies language beyond its communicative role.

Briffa looks at words and phrases as a way to understand those who speak them. 'I see language as a reflection of people's minds—their way of thinking, their values and priorities in life, the opinions they have, and their interpretation of the world,' he says.

In one of his most recent publications, *Il-Laqmijiet Karkariżi fil-Kultura Maltija*, Briffa explores the nature of nicknames (*laqmijiet* in Maltese) in our communities. Commissioned by the Birkirkara Local Council, it is a collection of all the nicknames he could find for the locality.

Discussing the early use of nicknames, Briffa says they were customary for those going into battle. Warriors would choose a name for themselves and with it, a narrative of what they brought to the battlefield. 'Our names have our identities wrapped up in them. By only making their nickname known in battle, they believed the enemy would have less power over them.'

Briffa talks about primitive man's belief that the name was a vital portion of the self—a distinct part of man's personality. People also believed that they could be harmed by the malicious handling of their name. And so they often hid their real names to protect themselves from evil-disposed persons who might injure their owners. The nickname was used to make this possible. Everyone could use it freely and divulge it to anyone since it held no

Prof. Charles Briffa
Photo by James Moffett

Il-Laqmijiet Karkariżi fil-Kultura Maltija
Photo by James Moffett

'real' part of the person it belonged to and so would not endanger their safety.

Over time, nicknames evolved into something more social. A nickname was given to you by others in your community, usually based on a trait you possessed, your job, or an experience you had been through. It became a means of describing you as a distinct individual.

For Briffa's book, an electoral register from the early 1930s proved to be a critical source of information. He also posted about his research on a Facebook group called *Muża Karkariża*, asking people to give him nicknames they knew about, as well as the explanations or stories behind them. The response was astounding.

Suggestions and stories from the community came pouring in. Often Briffa needed to go through them carefully and conduct his own research. People did not always differentiate fact from hearsay. Other times, they just did not realise certain words were linked. Take the nickname 'Paxaxa'. No one seemed to realise that it was an alternative form of *paċaċa* (a Maltese vulgarity meaning 'incompetent' or 'silly').

On other occasions, Briffa encountered nicknames with numerous origins. Briffa noted everything he found: 'I felt I had no authority to choose which was right and which was wrong.' For example, 'Tal-Minfuħa' can refer to physical appearance, since *minfuħa* means 'blown up' in Maltese, but could also refer to personality, since *minfuħa* can mean that someone is arrogant.

After collecting all these stories, Briffa also looked into the etymology of the words. 'Some of the names I found had unknown roots. I couldn't find anything about them in Maltese dictionaries. In those cases, I would go back to Sicilian and Arabic dictionaries to find possible meanings.' Some nicknames remained elusive. Briffa says he still can't find the roots of the nickname 'id-Didunna'. But in successful attempts, Briffa would 're-discover' lost words—an occurrence that gives him joy and motivation.

This 'linguistic archaeology' is important, Briffa tells us. It links us to an older Maltese culture, reconstructing what language and society sounded like in the past. 'Ideally every locality would support such publications since they preserve cultural and linguistic wealth. More so, they preserve Maltese identity.'

ARCHITECTURE: A dying art?

Konrad Buhagiar, AP Valletta

Prof. Antonio Mollicone

Making smart choices for our current urban fabric through architecture requires a massive understanding of all the moving parts of the industry. But is it time to go back to basics? ***Cassi Camilleri*** *speaks to* ***Prof. Antonio Mollicone*** *and the talented people at* ***AP Valletta*** *to come up with an answer.*

The changes in the Maltese landscape over recent years has been drastic. All over social media, petitions keep being shared to prevent one original building or another from being torn down and replaced with contemporary apartments. This has 'resulted in discomfort for many,' says Prof. Antonio Mollicone, an architect lecturing within the Faculty of Built Environment (University of Malta).

The discomfort is multifaceted. On one level, it has to do with the physical climate within buildings. Over the last few decades, Malta has seen a shift in the property types people buy, and these properties seem to be leaving people hot or cold in their own homes.

Through his research, which used an old Maltese farmhouse as his case study, Mollicone found that 'a property's orientation, double skin (having two layers of brick walls), ceiling height and window measurements all have a role to play.' Mollicone points out that 'orientation is most important.' In an ideal world, based on Malta's position on the globe, 'houses should be north-south facing and rotated clockwise to east by eight degrees to get the best of the sun in winter and the least of it in summer.' Higher ceilings can create a four-degree difference in the temperature inside a room. As for the floor to ceiling windows you see in all the glossy magazines, Mollicone finds them problematic, noting the costs involved in terms of energy efficiency when replacing stone with glass. 'Certain basic techniques in design are being lost in the fast-paced world of today,' Mollicone asserts.

On this note, founding partner of AP Valletta, Konrad Buhagiar, says that with the 'era of radical pragmatism' we are currently living in, 'the commercial aspect of a project is paramount,' adding, 'It will always be so. It is the nature of the industry.' But with this being said, effort needs to be put into giving buildings and new projects a depth that 'connects [them] to [their] context.'

Even with the best of intentions, challenges still arise. Mollicone laments the flashy features he sees added to a building's façade before a thought is given to function. 'It's make-up for buildings. Nothing more. I call it lipstick architecture.'

Luca Caruso, an environmental architect at AP, also speaks frankly, noting that the 'construction sector is the least innovative worldwide.' However, by putting an emphasis on quality and criticism, this can change. 'Criticism is important in order to raise awareness about the possible consequences of Malta's 'uncontrolled' growth. [...] Debate can lead to new, innovative ways to inspire decision-makers while respecting local characteristics.'

The reality, as Caruso states, is that 'Malta has undergone massive changes over the last 30 years, and this is a process that requires some more years to mature.' Buhagiar announces himself a cynic, saying that 'to produce something excellent, you need an enormous amount of thought and discipline, rigour, and dare I say, *sacrifice*, all words that do not describe the current culture in any way.' But Mollicone has hope that common sense will prevail. 'All we need is to take more time to think about things. Create mindfully. That's all.'

MUSICAL MESSAGING

Politics in Maltese music

Music has been used as a vehicle for political commentary since time immemorial. ***Cassi Camilleri****,* ***Dr Mario Thomas Vassallo****, and* ***Brikkuni's Mario Vella*** *reflect upon the Maltese scene and its contribution to the discussion.*

Music triggers all sorts of reactions and emotions in people. Hollywood's multi-million dollar soundtracks are an eye-watering testament. Throughout history, music has also been used to transmit messages to the masses. Music can simultaneously act as a call to arms and a form of rebellion, depending on your perspective.

As part of his research into the relationship between music and politics, Dr Mario Thomas Vassallo points to the distinctly Maltese practice of adopting international hits to accompany political campaigns. Such adoptions have included *We Take the Chance* by Modern Talking, the anthem used by the Nationalist Party in 1998 after the collapse of Alfred Sant's Labour Government, and, of course, *New Tomorrow*, Labour Party's rallying call for change in 2013.

In another interview by Teodor Reljić, former radio presenter and music journalist Dr Toni Sant described the tendency of Malta's political parties to rely on foreign songs as an unfortunate example of 'cultural colonialism'. 'It relates to the general Maltese idea that whatever comes from Britain, the US, Europe (take your pick) is better than what can be produced in Malta. It shows a lack of national cultural identity, unless the Maltese cultural identity is actually entrenched in its colonial past, rather

Dr Mario Thomas Vassallo presenting his radio show on Campus FM 103.7FM
Photo by Samuel Attard

Mario Vella
Photo by Nicole Parnis

than its more recent political history. And on it goes…' Sant told Reljić.

Vassallo agrees with Sant's reasoning, but adds that this 'colonialism' is not the only reason for the phenomenon. 'In a globalised world, culture is being hybridised,' Vassallo states. 'You cannot tell what is local and what is foreign. Rihanna does not belong to Barbados, where she was born and raised as a kid, but to the world (and to Malta as well).'

Beyond this, Vassallo points to the commissioned music that political parties have funded over the years. These songs' lyrics are usually interpretations of manifestos, used to get the electoral slogan to voters. 'One of the most popular songs in this genre is *Ngħidu Iva* with lyrics by Joe Chircop and music by Philip Vella. This composition was the official song of the Nationalist Party during the 2003 referendum campaign for Malta to join the European Union,' he writes in his paper.

But what of those operating outside the parties' influences? Those who want to criticise and shed light on bad behaviour and problematic choices made by the powers that be? Among those most vociferous on the island are Brikkuni. Frontman Mario Vella explains his motivations saying, 'As a songwriter, I feel inclined to delve into matters that affect me both on a personal level and in a wider context. Little matters whether one is apolitical or dismissive of this age-old phenomenon. Politics will, one way or another, force its way into our everyday lives. Addressing it is but a natural and obvious consequence.'

There are critics, of course. 'I receive endearments of the 'I hate you and your music' variety,' Vella notes; however, the results of this work have seen the band and its music embraced by many who see truth in the lyrics. *L-Eletti*'s message of contempt towards the ridiculousness embodied by those 'elected' (the English translation of *eletti*) is poignant especially when paired with the music's fairground flavour. But loud voices often pay a price, and Vella is no different. 'I have faced considerable censorship, but I hardly look at it as a repercussion. I tend to view it as an inevitable reaction to choices consciously made. There's always some other way out of the hole. Even ones you dug for yourself. Unless you have a couple of kids to provide for. Then you're screwed.' Vella has none.

Vella and Vassallo both believe that there are limits to artistic expression. Vassallo puts an emphasis on 'respect and autodiscipline'. In an interview with Vassallo, singer-songwriter Vince Fabri explained that, 'if I want to criticise someone, I'd rather not offend him. I can definitely be satirical, cynical, or mocking, but I will never resort to vilification and absurdity.' Vella, too, doesn't see artistic limitation as a hindrance 'as long as you're the one setting it.'

There is an element of responsibility that comes with the ability to speak to people on a visceral level. Artists can use their skills for positive effect. In 2007, at the height of the immigration crisis in Malta, singer-songwriter Claudio Baglioni pointed to the fear artists' influence can instil in politicians. This is why, he said, 'we have to be close to politics, but not immersed in it. We can be like sentinels.'

At a time when the line between truth and lies gets increasingly blurred, perspective makes all the difference. If our sentinels can provide us with that, we'll be all the better for it.

Politics with a small 'p'

Dù Theatre are back on stage after an absence of four years. Founder ***Simone Spiteri*** *speaks to* **THINK** *about her newly penned play* Repubblika Immakulata *co-produced by Spazju Kreattiv, the influences that motivated her to write it, and the importance of using daily language on stage.*

Ryan Cutajar as Ir-Rennie
All photos by Andrew Rizzo

Repubblika Immakulata revolves around a Maltese family trying to cope, or not, with being involved in a general election, wedding, and local feast all on the same day.

Premju Francis Ebejer winner Simone Spiteri (visiting lecturer, School of Performing Arts) wrote, and is directing, the satirical comedy as an exploration into Maltese identity and the climate of current affairs.

'So is it about political parties?' is usually the first question most people blurt out when I'm only a quarter into explaining what *Repubblika Immakulata* is about,' Spiteri says. But there is more. 'The play tries to examine our relationship, locally, to straightforward politics drenched in election fever. But that is only part of the whole. The undeniable can't be ignored. To say we are a country that is not affected, polarised, brainwashed even, by partisan politics would be a straight out lie. However, isn't everything else that governs the rest of our lives another type of politics too? Don't we all form part of smaller communities, and even smaller, family (or similar) units?' she adds.

In the early days, Spiteri's focus was always the people rather than the issues at hand. She was also very interested in exploring language.

'It was a time when most plays in Maltese didn't tap into the mundanity of how we speak, how we sound, how we behave around each other. I was particularly interested in dissecting naturalistic dialogue. Code-switching from Maltese to English was not something you'd see characters do in most local plays,' Spiteri points out.

'I wanted to explore how the understated, rather than the epic and dramatic, worked in our mother tongue on stage and how audiences reacted to that. It was, relatively, a most welcomed effort. Not without the odd purist decrying the meshing of two languages in such a vernacular manner.'

Then, unexpectedly, came five years of writing commissioned plays for young people. It was not something Spiteri thought she could or wanted to do, but it was a challenge that ushered in a new way of thinking about writing. She describes it as a process that demands a thick skin. Young audiences were the toughest to please, she notes. The task demanded her to be exact, precise, and concise.

'During these years, the niggling thought of going back to writing for an adult audience started bothering me. I didn't feel the pull to write for pleasure. It felt more like the need to write to purge,' Spiteri says.

'There was plenty to write about. Perhaps that was the problem. All I had to do was read the daily papers or scroll

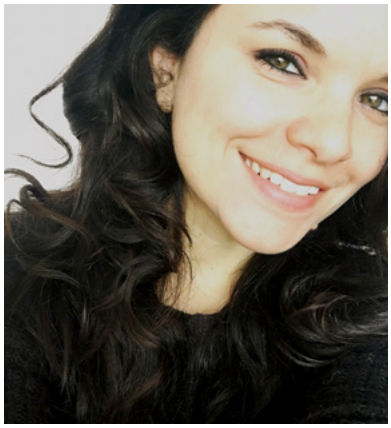

Mark Mifsud as David


Magdalena van Kuilenburg as Petra


André Agius as Anon

through the latest bully-xenophobic-troll infested comment board online. Or eavesdrop *everywhere* on conversations between usually sensible individuals parroting away 'facts' straight out of a politician (of choice)'s mouth. Or take a stroll *anywhere* and witness every last speck of green on this tiny rock being gobbled up. Or observe *everyone* treat one other with some level of impatience, inconsideration, inhumanity. All I had to do was sit somehow and watch this fast-paced, technologically disconnected world pass by... and try to make sense of it.'

Spiteri reports this time in her life as one fraught with frustration, anger, and cynicism. The raw material was there, but moulding it into a play was proving a challenge. 'I tried a few times, hated the attempt, and threw it away,' she admits. 'Then, last summer, the central character of Anon (portrayed by André Agius) somehow popped into my mind and immediately all the disconnected loose ends clicked together.'


Simone Spiteri

'Here was my pivot to this rapid, sometimes nausea-inducing, merry-go-round. This character, who I didn't want to define as anything but a voice, who speaks in the play, but you're not sure is ever heard. Who speaks with authority one minute, but doubts that very same veracity a moment later. Who can be anyone... and no one at the same time. Who, by being there, is a blank canvas for us, upon which we project all those layers of beliefs, self-perceptions, subjective experiences of failure and success as a country, all the divergences of our multifaceted identity,' Spiteri adds.

That's how *Repubblika Immakulata* came to be. But that is not where the writing ends. Currently there is a new writing phase during which the actors imbue the script with their own interpretations during rehearsals. Then, there is the final act of writing: the process of each audience member looking into the metaphoric mirror the theatre stage should always be.

Note: *Repubblika Immakulata* will be performed at Spazju Kreattiv, Valletta in March and April. For more information and tickets visit: *www.kreattivita.org/en/event/repubblika-immakulata/*


LINE DO NOT CROSS
RIME SCENE DO NOT CROSS

THE UNUSUAL SUSPECTS

When it comes to technology's advances, it has always been said that creative tasks will remain out of their reach. ***Jasper Schellekens*** *writes about one team's efforts to build a game that proves that notion wrong.*

The murder mystery plot is a classic in video games; take *Grim Fandango*, *L.A. Noire*, and the epic *Witcher III*. But as fun as they are, they do have a downside to them—they don't often offer much replayability. Once you find out the butler did it, there isn't much point in playing again. However, a team of academics and game designers are joining forces to pair open data with computer generated content to create a game that gives players a new mystery to solve every time they play.

The University of Malta's Dr Antonios Liapis and New York University's Michael Cerny Green, Gabriella A. B. Barros, and Julian Togelius want to break new ground by using artificial intelligence (AI) for content creation.

They're handing the design job over to an algorithm. The result is a game in which all characters, places, and items are generated using open data, making every play session, every murder mystery, unique. That game is *DATA Agent*.

GAMEPLAY VS TECHNICAL INNOVATION

AI often only enters the conversation in the form of expletives, when people play games such as *FIFA* and players on their virtual team don't make the right turn, or when there is a glitch in a first-person shooter like *Call of Duty*. But the potential applications of AI in games are far greater than merely making objects and characters move through the game world realistically. AI can also be used to create unique content—they can be creative.

While creating content this way is nothing new, the focus on using AI has typically been purely algorithmic, with content being generated through computational procedures. *No Man's Sky*, a space exploration game that took the world (and crowdfunding platforms) by storm in 2015, generated a lot of hype around its use of computational procedures to create varied and different content for each player. The makers of *No Man's Sky* promised their players galaxies to explore, but enthusiasm waned in part due to the monotonous game play. *DATA Agent* learnt from this example. The game instead taps into existing information available online from Wikipedia, Wikimedia Commons, and Google Street View and uses that to create a whole new experience.

DATA: THE ROBOT'S MUSE

A human designer draws on their experiences for inspiration. But what are experiences if not subjectively recorded data on the unreliable wetware that is the human brain? Similarly, a large quantity of freely available data can be used as a stand-in for human experience to 'inspire' a game's creation.

According to a report by UK non-profit Nesta, machines will struggle with creative tasks. But researchers in creative computing want AI to create as well as humans can. However, before we grab our pitchforks and run AI out of town, it must be said that games using online data sources are often rather unplayable. Creating content from unrefined data can lead to absurd and offensive gameplay situations. Angelina, a game-making AI created by Mike Cook at Falmouth University created *A Rogue Dream*. This game uses Google Autocomplete functions to name the player's abilities, enemies, and healing items based on an initial prompt by the player. Problems occasionally arose as nationalities and gender became linked to racial slurs and dangerous stereotypes. Apparently there are awful people influencing autocomplete results on the internet.

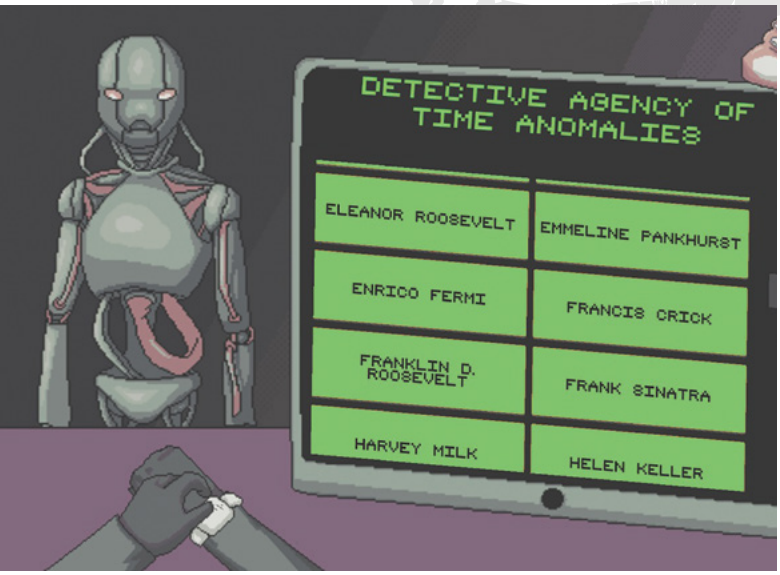
DATA Agent uses backstory to mitigate problems arising from absurd results. A revised user interface also makes playing the game more intuitive and less like poring over musty old data sheets.

SO WHAT IS IT REALLY?

In *DATA Agent*, you are a detective tasked with finding a time-traveling murderer now masquerading as a historical figure. *DATA Agent* creates a murder victim based on a person's name and builds the victim's character and story using data from their Wikipedia article.

This makes the backstory a central aspect to the game. It is carefully crafted to explain the context of the links between the entities found by the algorithm. Firstly, it serves to explain expected inconsistencies. Some characters' lives did not historically overlap, but they are still grouped together as characters in the game. It also clarifies that the murderer is not a real person but rather a nefarious doppelganger. After all, it would be a bit absurd to have Albert Einstein be a witness to Attila the Hun's murder. Also, casting a beloved figure as a killer could influence the game's enjoyment and start riots. Not to mention that some of the people on Wikipedia are still alive, and no university could afford the inevitable avalanche of legal battles.

Rather than increase the algorithm's complexity to identify all backstory problems, the game instead makes the issues part of the narrative. In the game's universe, criminals travel back in time to murder famous people. This murder shatters the existing timeline, causing temporal inconsistencies: that's why Einstein and Attila the Hun can exist simultaneously. An agent of DATA is sent back in time to find the killer, but time travel scrambles the information they receive, and they can only provide the player with the suspect's details. The player then needs to gather intel and clues from other non-player characters, objects, and locations to try and identify the culprit, now masquerading as one of the suspects. The murderer, who, like the DATA Agent, is from an alternate timeline, also has incomplete information about the person they are impersonating and will need to improvise answers. If the player catches the suspect in a lie, they can identify the murderous, time-traveling doppelganger and solve the mystery!



DATA Agent Seeds
Screenshot from DATA Agent

DATA Agent Interface
Screenshot from DATA Agent

Dr Antonios Liapis

This murder shatters the existing timeline, causing temporal inconsistencies: that's why Einstein and Attila the Hun can exist simultaneously.

DE-MYSTIFYING THE MYSTERY

The murder mystery starts where murder mysteries always do, with a murder. And that starts with identifying the victim. The victim's name becomes the seed for the rest of the characters, places, and items. Suspects are chosen based on their links to the victim and must always share a common characteristic. For example, Britney Spears and Diana Ross are both classified as 'singer' in the data used. The algorithm searches for people with links to the victim and turns them into suspects.

But a good murder-mystery needs more than just suspects and a victim. As Sherlock Holmes says, a good investigation is 'founded upon the observation of trifles.' So the story must also have locations to explore, objects to investigate for clues, and people to interrogate. These are the game's 'trifles' and that's why the algorithm also searches for related articles for each suspect. The related articles about places are converted into locations in the game, and the related articles about people are converted into NPCs. Everything else is made into game items.

THE CASE OF BRITNEY SPEARS

This results in games like "The Case of Britney Spears" with Aretha Franklin, Diana Ross, and Taylor Hicks as the suspects. In the case of Britney Spears, the player could interact with NPCs such as Whitney Houston, Jamie Lynn Spears, and Katy Perry. They could also travel from McComb in Mississippi to New York City. As they work their way through the game, they would uncover that the evil time-traveling doppelganger had taken the place of the greatest diva of them all: Diana Ross.

OOPS, I LEARNED IT AGAIN

DATA Agent goes beyond refining the technical aspects of organising data and gameplay. In the age where so much freely available information is ignored because it is presented in an inaccessible or boring format, data games could be game-changing (pun intended).

In 1985, Broderbund released their game *Where in the World is Carmen Sandiego?*, where the player tracked criminal henchmen and eventually mastermind Carmen Sandiego herself by following geographical trivia clues. It was a surprise hit, becoming Broderbund's third best-selling Commodore game as of late 1987. It had tapped into an unanticipated market, becoming an educational staple in many North American schools.

Facts may have lost some of their lustre since the rise of fake news, but games like *Where in the World is Carmen Sandiego?* are proof that learning doesn't have to be boring. And this is where products such as *DATA Agent* could thrive. After all, the game uses real data and actual facts about the victims and suspects. The player's main goal is to catch the doppelganger's mistake in their recounting of facts, requiring careful attention. The kind of attention you may not have when reading a textbook. This type of increased engagement with material has been linked to improving information retention. In the end, when you've traveled through the game's various locations, found a number of items related to the murder victim, and uncovered the time-travelling murderer, you'll hardy be aware that you've been taught.

'Education never ends, Watson. It is a series of lessons, with the greatest for the last.' – Sir Arthur Conan Doyle, *His Last Bow.*

Hercule Project

The taxes of every citizen in the European Union (EU) contribute to the EU's immense budget, and measures are needed to ensure these funds are used properly. ***Benjamin Charles Cassar*** *talks to* ***Prof. Ivan Sammut*** *and* ***Dr Jelena Agranovska****, who are studying the effectiveness of such measures at a national level.*

The EU's Institutions operate throughout the continent on a massive scale, and in the 51 years since its conception, the scope of the EU has expanded to affect each and every one of our daily lives. The world would be very different without the Union.

But this progress has not been without its hiccups. As Brexit's deadline creeps closer, other countries, such as Hungary and Poland are experiencing political turbulence and rising Euroscepticism. Come the European Elections in May, these issues will bare their teeth.

Despite this, the EU has had momentous victories in its pursuit of continental integration. Take, for example, the Common Market allowing for easy trade, the Schengen jurisdiction that simplifies travel, and the much-lauded mandate for free data roaming. The EU has also been moving towards harmonising its efforts to protect its financial interests.

In view of this, over the past few months, Prof. Ivan Sammut and Dr Jelena Agranovska (Faculty of Laws, University of Malta) have been leading the Hercule Project, a comparative study that looks into the implementation and enforcement of European Criminal Law. Together, they are investigating the development of legislation, focusing on the recent PIF (Protection of the Union's Financial Interests) Directive. The aim is to increase people's confidence in EU institutions and ensure that funds are managed transparently and appropriately.

Apart from the legislative side, the study will also look into the bodies that work to protect the EU's (and thus all its citizens') financial interests—namely the European Public Prosecutor's Office (EPPO), the European Anti-Fraud Office (OLAF), and Europol.

To this end, Sammut and Agranovska selected 12 countries based on their size, geography, and legal system to gauge each state's reception of European legislation. These countries include Germany and Malta, among a number of others.

Each country report is being handled and written up by a local expert, with the team at the

The aim is to increase people's confidence in EU institutions and ensure that funds are managed transparently and appropriately.

Prof. Ivan Sammut (left) and Dr Jelena Agranovska (right)
Photo by James Moffett

University of Malta offering guidelines and template questions. However, in practice, each team is given free reign on how to conduct their studies, as long as they stay true to purpose.

Recently, I had the opportunity to sit down with Sammut and Agranovska. They offered insight into its reasoning as well as the practical implications for citizens uninitiated in the intricacies of European law—myself included.

'It affects everyone at the end of the day,' Sammut notes. With blockchain and cryptocurrencies rapidly gaining interest, financial and IT crime protection are becoming more relevant to everyday life. 'However, many times member states are only concerned when there is fraud with their own sources,' Sammut continues. The PIF Directive will fit into existing national legal systems and balance out the field.

The project so far has revealed discrepancies in the uptake of legislation between Member States. Unsurprisingly, Sammut is quick to point out Germany as being at the forefront of implementation. Indeed, Angela Merkel is very proactive in most EU-level discussions. However, states such as Lithuania continue to lag behind, with standards seemingly lower than the rest of Europe. The election cycle can also complicate matters, as is the case with Poland. Initially eager to be part of EPPO, since their elections, this has become increasingly unlikely, with the Law and Justice Party consistently at odds with the European Union.

Diving deep into the implications for each state is impossible. However, the team noted these differences in implementation during a one-day workshop held in Valletta in October, when rapporteurs from each of the 12 participating countries came together to discuss their findings thus far.

Dr Stefano Filletti, Malta's rapporteur in the study, points out the issue with parallel administrative and criminal investigations. As things stand now, OLAF begins an administrative investigation, passes on the information to the Attorney General's office, who in turn prompts the Maltese Police Force to begin its own investigation. This criminal investigation works independently of the previous administrative investigation, disregarding its findings and starting anew. The problem is efficiency. The two investigations should be synthesised, working in tandem, particularly because when investigating activities with a financial interest, speed is key. Dual investigations work against this

With blockchain and cryptocurrencies rapidly gaining interest, financial and IT crime protection are becoming more relevant to everyday life.

goal. Filletti notes that while the PIF Directive should keep this goal at heart, it instead focuses on the definitions of offences, while remaining 'completely silent' on recovery.

Filletti notes the language barrier as one obstacle. For example, the Italian term *sparizione dei soldi* literally translates to 'disappearance of funds'. However, this does not correlate to any Maltese law. So should we consider it as related to fraud? Or perhaps misappropriation?

Prof. Jaan Ginter of Estonia echoes Filletti's concerns on dual administrative and criminal investigations, raising the issue of *non bis in idem*, or double jeopardy. This relates to the concept that a person should not be tried twice for the same crime, which the PIF directive seemingly ignores, allowing for concurrent administrative and criminal proceedings.

Harmonisation of penalties is also a concern for Ginter, as in some Member States (particularly Eastern members) a €1,000 penalty would be deemed steep, while others, such as Germany or Luxembourg, would see it as negligible.

In France, Dr Araceli Turmo notes that while politicians, judges and practitioners are approaching the legislation positively, a multitude of agencies need to show a more coordinated effort.

Agranovksa, serving a dual role as Latvia's rapporteur, expects PIF Directive implementation to go smoothly, as many of its provisions are already in place. However, money laundering remains rife in the country, with the accusation this year that ABLV, Latvia's third largest bank, has been perpetrating large-scale money laundering. Following the scandal, a law was urgently implemented outlawing shell companies. Further implementations will follow, and they are unlikely to encounter much opposition.

The general consensus remains that most national legal systems are not adequately prepared to take on European Law. However, this is partly why this study is taking place—to give states the tools they need to equip themselves.

Sammut, Agranovska and their European counterparts have barely scratched the surface, and the implications of their work will certainly go far in understanding the limitations of the EU's Member States. While the EU is faced with the immeasurable task of legislating for an incredibly diverse membership, it cannot continue going from strength to strength without considering this reality. Member states are not on a level playing field, and everyone needs to work together to adapt to this reality.

Note: In June 2019, Sammut and Agranovska will be discussing the implications and scope of the study at a conference entitled *EU & national criminal law in Fraud, Corruption, Blockchains: friends or foes?* For more information, email Elisa Attard on *elisa.attard@um.edu.mt*.

IDEA

The revolutionary act of owning less

When our wardrobes are bursting, when cars take over our streets, when stuffing our fridges and eating out trumps reading, theatre, cinema—how does that impact us? ***Cassi Camilleri*** *writes.*

Marie Kondo's epic trajectory began in 2014 with a little book called *The Life-Changing Magic of Tidying Up*. Available in over 41 regions and countries, she sold over five million copies. Now she's on Netflix, reaching millions more with *Tidying Up with Marie Kondo*, all the while becoming the most badass / kawaii meme the world has ever seen.

At this point, Kondo has almost single-handedly made decluttering a global trend. But there is more to this movement than getting rid of junk.

Kondo's approach is about making the time to actually look at the items we own and purposefully ask whether they serve a true function in our life—whether they give us 'joy.' In a world where 'more is more' and hundreds of ads scream at us daily, creating neuroses while simultaneously providing the avalanche of products to fix them, the attitude is sadly novel.

Taking time to appreciate our possessions is not something we do often. And this is not entirely our fault. Doing so could see us labelled as 'materialistic.' But this brings up the question of what that word actually means.

In the documentary *Minimalism: A Documentary About The Important Things*, Joshua Fields Millburn, one half of *The Minimalists* duo, flips the notion on its head. 'We are too materialistic in the everyday sense of the word, but we are not at all materialistic enough in the true sense of the word. We need to be true materialists, like really care about the materiality of goods.'

Here, Millburn is referring to quality instead of quantity. One reliable well-made pair of jeans will last you longer than five cheap ones. The result? You generate less waste. You spend less money.

In Malta, we produce 248,784 tonnes of garbage annually, according to the material flow analysis conducted by researcher Margaret Camilleri Fenech. That's equivalent to eight houses made entirely of garbage. Think of the pollution generated by waste when transporting and treating it, or the greenhouse gases emitted when it decomposes, or the space it needs. With our countryside disappearing at alarming rates, wasting the remaining space on waste feels sinful.

But let's just pretend that this whole environmental thing is being blown out of proportion by a tribe of hippy die-hards. What about us? How do our spending choices affect our quality of life? How do our habits impact our pockets?

In 2015, the National Statistics Office (NSO) reports, total annual expenditure of Maltese private households amounted to an average of €22,346 per household. Suffice to say, this is a considerable number given that the average wage that same year was somewhere around €16,500, according to online platform Trading

Economics. What's more important, however, is how the money was spent.

A close look at the NSO's report revealed that the majority of funds went towards food and transport, commanding 34% of all spending. On average, households spent €4,417 on food in 2015. Fuel for cars alone amounted to a yearly bill of €1184.50. We also spent an annual average of €720 on clothing, €1000 on our phones and internet services, and a whopping €1,749 on eating out.

On the flipside, education accounted for only 2.4% of household spending, €624 yearly, making this category second to last on the priority list. Yes, this can be partly attributed to free education in Malta; however, in households without dependent children, we can also see that only €36 were spent on books that were not textbooks over the entire year. Another NSO survey (with Arts Council Malta and the Valletta 2018 Foundation) found that 55% of the population didn't read a single book in 2016. That same study looked at the experiences we fill our time with, finding that less than half of us (42%) went to the cinema even once that year, while only a third (31%) visited an art gallery or experienced theatre (32%).

Looking at these figures, it seems our priorities are dominated by cars, internet services and restaurants. Yet isn't that ironic when a quick scroll through Facebook reveals so many complaints about unprecedented levels of traffic, narcissism, laziness, and a lack of critical thinking?

What is powerful about this, though, is the realisation that we can change it instantly. Instead of going to the fancy new restaurant in Valletta this weekend as we always do, we could choose to cook a nice meal at home for friends then sit down with a good read. We could switch out the Sunday drive with a run in the rural parts of our island. And question yourself: Do I really need that new €15 sweater when I have another 20 that look just like it sitting in my wardrobe? Or do I want to put that money towards a family weekend away?

Marie Kondo

The Minimalist duo

All this might sound minor, even ridiculous. But making deliberate choices about how and where we spend our hard-earned resources has a profound impact. Asking whether a particular purchase will 'bring joy' can spark answers that surprise us. And those answers may well trigger a ripple effect on our lives as a whole.

Saving money will allow us to work less and free up more time for meaningful activity with the important people in our lives. Investing in ourselves and our minds will see us becoming better, more well-rounded people. Can we say the same for the momentary rush we get after dropping an obscene amount of money on a new phone manufactured under questionable ethical standards?

At the end of the day, it's all quite simple. If we all tried to be a little bit more mindful, a little bit more careful about where our money goes, which systems we feed, and what we allow into our lives... well then we could—quite literally—change our world.

Read more: Household Budgetary Survey 2015. National Statistics Office, 2018.

START UP

#GetLearnD

Students tutoring students

According to MATSEC, two in every three 18-year-old students don't make it from sixth form to university. ***Gail Sant*** *speaks to the team behind* ***LearnD*** *to find out more about their take on student-centred education.*

You love films, videos, and photos. You relax while watching Netflix, and learn new skills on platforms like Skillshare and YouTube. Me? I adore the written word. Books, magazines, blogs are all I need to live a happy life. People are unique. And we all learn things in a unique way.

Different people require different teaching methods to learn. But most classroom set-ups involve one teacher, one lesson, and thirty-odd students. The lesson is interpreted in thirty different ways; a few absorb more than others, leaving some in need of extra help to ace their maths test. And how do they do that? With private lessons.

In Malta, private lessons are the go-to solution for students struggling with a subject. However, these sessions tend to be a carbon copy of school classes: one tutor, one lesson, multiple students. This problem was the seed that gave rise to the education-focused startup LearnD.

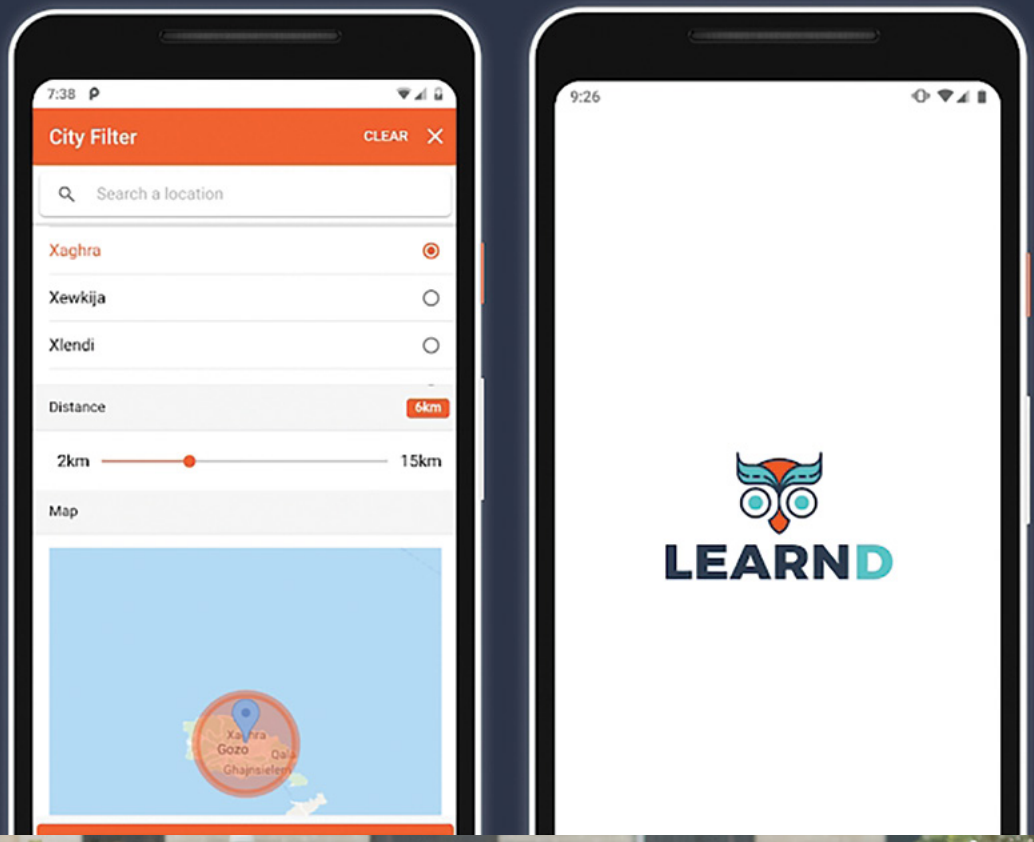
THE PHILOSOPHY

LearnD is a tutoring app invented by Luke Collins, Jake Xuereb, and Dr Jean-Paul Ebejer (Centre for Molecular Medicine and Biobanking, University of Malta). The concept behind it is simple, Ebejer says; 'it's a bridge between students who can act as mentors and students who need the help.'

LearnD does away with the one-size-fits-all standard of teaching and offers students tailor-made tutoring. Individuals are treated as such, their problems tackled through dedicated sessions. As a student, you don't need to sit through a whole syllabus of private lessons. The idea is to identify your weak points and hone in on them in select sessions. This is both time and money-efficient.

Xuereb believes 'private lessons can make students lazy.' They don't need to evaluate their problems, or focus on where their issues lie. Not when they know they'll just cover all the topics at various points during their weekly appointment with their second teacher on Tuesday night. LearnD focuses on dividing attention unequally. If you get an easy A in physical chemistry but struggle to pass organic chemistry, it only makes sense to give the latter some extra TLC. To get to this point, students need to take a step back from their desks and separate their strengths from their weaknesses.

This is also a big plus for tutors who don't want to (or can't) commit to teaching a whole syllabus. They can simply prepare a lesson for the requested topic and leave it at that, earning some extra money to accompany their stipend while gaining teaching experience.



The app comes with features such as the 'Location Filter' that are there to make your life easier.

The LearnD Team. From left to right; Jake Xuereb, Dr Jean Paul Ebejer and Luke Collins.
Photo by James Moffett

'Through LearnD you can find people who have been through the exact same thing and who can offer their best advice on anything from time management to de-stressing, and everything else.'

But LearnD isn't just about academia. Some lecturers lose touch with 'the student life', distancing their relationship with students. Conversely, student-tutors know the struggles a peer would be going through and can provide support. 'No one would have a better understanding of what a sixth former needs to do to get into medicine than a medicine student,' says Xuereb. 'Through LearnD you can find people who have been through the exact same thing and who can offer their best advice on anything from time management to de-stressing, and everything else.'

MAKING IT HAPPEN

The original concept was more related to finding a way for academically inclined 6th form students to contribute productively to society,' says Xuereb. When he spoke to Collins, a fellow University of Malta student and Xuereb's former maths tutor, the idea went from 'an online local network' to 'app'. At the time, there were no local tutoring apps.

Despite both being passionate about the idea, they soon realised that they needed someone with business experience, and that's where Ebejer came in: the LearnD team was born!

The process that made this idea into reality was not a simple one. Xuereb and Collins spent over six months working on the app, learning about the tech behind app-making and coming up with a business plan.

They got their break when they won the Take-Off Seed Fund award in 2018 and got the necessary funds to make the app a reality. They quickly got the ball rolling, hiring designers, app developers, and marketing agents. The team grew; the app was built. Then, during the KSU Freshers' Week in 2018, the app was partially launched, inviting potential tutors to apply. The app is now fully launched and available for students.

TROUBLES

As with all big projects, the team ran into a few setbacks along the way. One prominent techy mishap didn't allow them to launch the app on the Apple Store, making it difficult to keep up with the launch date.

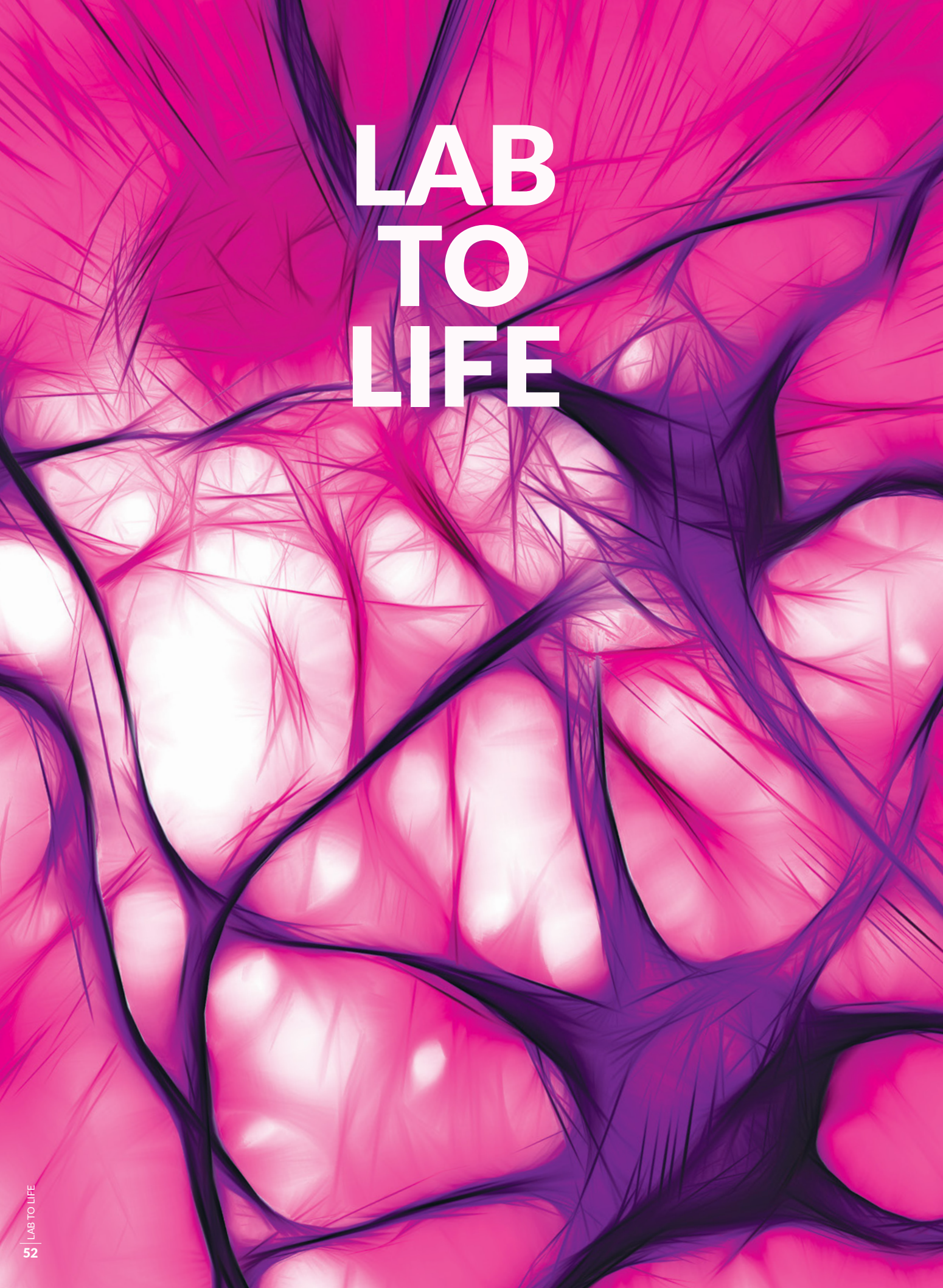
Since the app is used by underage students, there were also a lot of safety features which needed inclusion. Tutors upload their police conducts and ID cards. Also, to make sure LearnD's service is reliable, the team not only analyses tutors' qualifications, but they also try and test each applicant out themselves. And for accounts which belong to students under the age of 16, parents need to authorise any communication which goes on through the app.

The team persisted through the struggles they encountered and continue to work hard to solve any problems which crop up. Despite difficulties with time management, Collins and Xuereb, both undergraduate students, expressed how this app allowed them to dive into the working world. They gained entrepreneurial maturity, understanding the importance of a reliable team which shares the same ideas and work ethic, as well as dividing funds for the project's overall benefit.

A LEARND FUTURE

The LearnD story doesn't stop here. 'We want to renovate the education space,' says Ebejer, adding that they wish to take the next step and make it internationally available. Malta's size makes it the perfect test bed, but they think that the app shouldn't be limited to its home.

According to MATSEC, in 2017 only 27% of 18-year-old students acquired the necessary qualifications to get into university. Collins expressed that students 'shouldn't get lost' because of a bad exam result or because of a mismatched student-teacher scenario. Students deserve to be treated as individuals, and LearnD can offer them that.



LAB TO LIFE

Written in blood

Maltese researchers are leading the way in developing new diagnostic tools for cancer. ***Dawn Gillies*** *finds out more from* ***Prof. Godfrey Grech*** *and* ***Dr Shawn Baldacchino****.*

Breast cancer survival rates have been improving steadily in recent years. In Malta, 86.9% of patients currently survive, up 7% over the last decade. Thanks to new targeted therapies, the outlook is increasingly bright. But precision therapies need precision testing.

Breast cancer diagnosis has reached new heights and with current tests using tissue biopsies, pathologists can classify patients for specific treatment. Precision medicine goes a step further. It provides more information, predicting the aggressiveness of the cancer and measuring the number of cells from the tumour that spread into the bloodstream.

This does not mean that all requirements in precision therapy have been met.

At the time of writing, there is no simple method to test patients' ongoing benefit from treatment or to measure different tumour areas from one sample. For this to be possible, we need super-sensitive tests. This is where Prof. Godfrey Grech and Dr Shawn Baldacchino at the University of Malta come in.

DETECTING THE UNDETECTABLE

During his PhD, Baldacchino studied a new class of breast cancer representing most cases of the triple negative type, which affects 12% of breast cancer patients in Malta.

In triple negative breast cancers, tests for estrogen receptors, progesterone receptors, and excess HER2 protein all result in negatives and are associated with aggressive tumours.

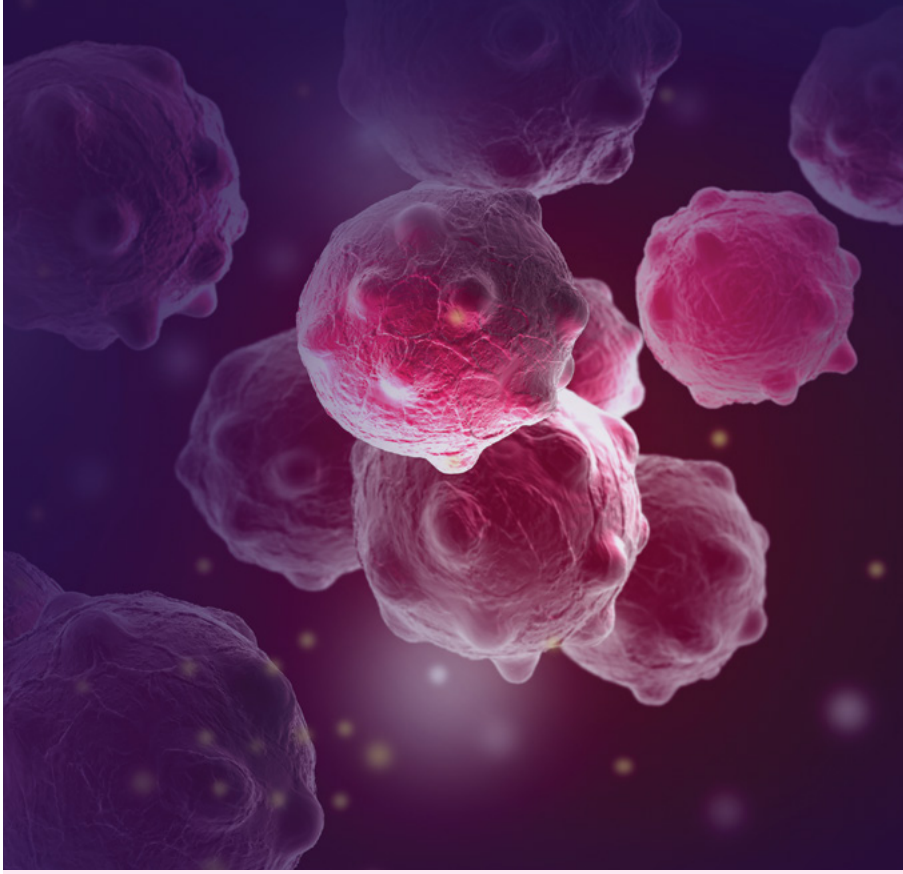
To detect this new class of breast cancer, Grech's team have created a new test that uses molecular substances we naturally produce in our body—biomarkers. By pinpointing the right combination of certain biomarkers, they can test for this new class within the triple negative breast cancer cases.

They initially used the test to look at biopsies from past patients. These exercises showed that they could accurately detect the cases—even in samples that were over a decade old! In fact, the test was so successful that the team is now working with biological testing industry giant Luminex to use it in hospitals worldwide. With a patent filed, research labs will get their hands on it later this year with the hope that by 2021 it will be used to directly help patients in hospitals.

However, there is more work ahead. Encouraged by the results so far, the team wants to take the test and other current biomarker tests a step further. They want to use a simple blood sample which is less invasive, allowing patients to be monitored during therapy.

PUSHING BOUNDARIES

With the method Grech and his team have optimised, obtaining information on new classes



of patients that predict therapy use, detecting different tumour areas in one sample, and the use of blood to monitor the benefits of therapy have become a possible reality. With technologies from Luminex and Thermo Fisher, they can now read over 40 biomarkers in one test simultaneously. But with blood they need a new angle. And that is happening through another test using particles that originate from cells called *exosomes*.

Exosomes are tiny messenger bubbles which cells release into the blood . 'We believe that when there is a tumour in the patient, there will be a signature in these exosomes circulating in the blood,' says Baldacchino.

Finding these exosomes could mean detecting cancer at an earlier stage than is currently possible. The team believes they would be able to detect the exosomes that point to cancer long before a tumour shows up in scans and other regular tests—and so, they would be able to nip the cancer in the bud. But to do this, they need to be able to decode the messages the exosomes are carrying.

POSITIVES FOR PATIENTS

It's not only in the realm of breast cancer diagnosis and classification that the team can help patients—they might also be able to improve treatment. 'Most targeted therapies currently try to inhibit specific

Prof. Godfrey Grech, Dr Shawn Baldacchino and the team
Photo by James Moffett

receptors and proteins to stop the uncontrolled growth of cancer cells,' Grech says. But through their research, the team has found that targeting the low activity of specific complexes of proteins in tumour cells is key. Their research models show that increasing the activity of these protein complexes is possible using specific drugs.

This is true for triple negative breast cancer, where the amount of PP2A protein is extremely low. The PP2A protein enables the body to fight the cancer, so increasing its activity would create a chain reaction in the body which could limit the growth and spread of that category of cancer cells.

This approach to treatment has applications beyond triple negative breast cancer. Grech is hopeful that PP2A production could be amped up for different types of cancer too, and lead to positive results.

MANAGING THE UNMANAGEABLE

When organising a project like this, it's expected that things won't go to plan. One of the biggest challenges for Grech's team has been establishing collaborations with other groups across the globe. They need these connections to provide the samples required to test their systems. With other groups working on similar projects, time is a limited resource. Thankfully, the team found collaborators in Leeds (UK), and Barcelona (Spain), allowing the group access to the samples they need.

What is certain is that support for this work has come in many shapes and forms. The project received funding both from public donations and the Malta Council for Science and Technology. Baldacchino also found an ally in the charity foundation Alive with the help of the Research Trust of the University of Malta (RIDT). He is the first recipient of funding from them, and their first graduate.

PREDICTING THE FUTURE

Thanks to projects like these, cancer research has a bright future in Malta. The team has their product launch to look forward to later this year, which will see a drastic reduction to the time and effort it takes researchers and doctors to determine the type of breast tumour.

But a lot of challenges lie ahead. The biggest challenge will come in the move to early stage cancers. These cancers have low levels of substances to detect, which means that any test they develop will have to be extremely sensitive in order to be effective. Successfully identifying these cancers would signal a massive breakthrough for the global medical community—and, more importantly, for patients. Early detection through basic blood tests would open the door to early stage treatment and a higher rate of survival. Nothing could matter more.

Project 'Accurate Cancer Screening Tests' financed by the Malta Council for Science & Technology through FUSION: The R&I Technology Development Programme 2016.

TAKING SOLAR TO SEA

In a world first, a small team of engineers at the University of Malta is attempting to prove that harnessing solar power in the open sea is theoretically possible and cost-effective. ***Laura Bonnici*** *speaks to* ***Prof. Luciano Mulè Stagno*** *to learn more about the ground-breaking Solaqua 2.1 project.*

Renewable energy is in the spotlight. In Malta—an island that is said to enjoy an average of 300 days of sunshine per year—solar power has become mainstream, enabling the country to reach its goal of using 10% renewable energy by 2020.

But any advantage Malta has in terms of abundant sunshine, it loses through its lack of another vital resource: space. Measuring just 316 km², Malta's limited surface area means that, beyond the existing photovoltaic (PV) panels installed on rooftops or disused quarries, any land left for larger PV installations is rare and expensive.

Prof. Luciano Mulè Stagno at the University of Malta believes the answer to this problem lies not on land, but at sea. Malta being surrounded by water, he has proposed that installing solar panels in open water, in offshore floating PV farms, could be as cost-effective and reliable as those on land—an idea that has never progressed beyond the theoretical stage anywhere in the world.

'There are many PV projects happening on fresh water everywhere, from China and the UK to France and USA. But none of them are working on open sea,' explains Mulè Stagno. 'Their PV farms are installed in more sheltered, land-locked waters such as irrigation ponds or lakes, believing that PV farms cannot survive sea conditions. The Solaqua project aims to prove that they can survive, and do so at a comparable cost to land-based PV farms.'

When funding was secured from MCST in 2012, the previous Solaqua 1.0 project set about achieving these ambitious aims. Testing various prototypes out at sea, it confirmed that large, floating platforms were viable, cheap to construct, and could produce more power than similar systems on land.

The sea proved beneficial for many reasons. 'The offshore panels produced around 3%

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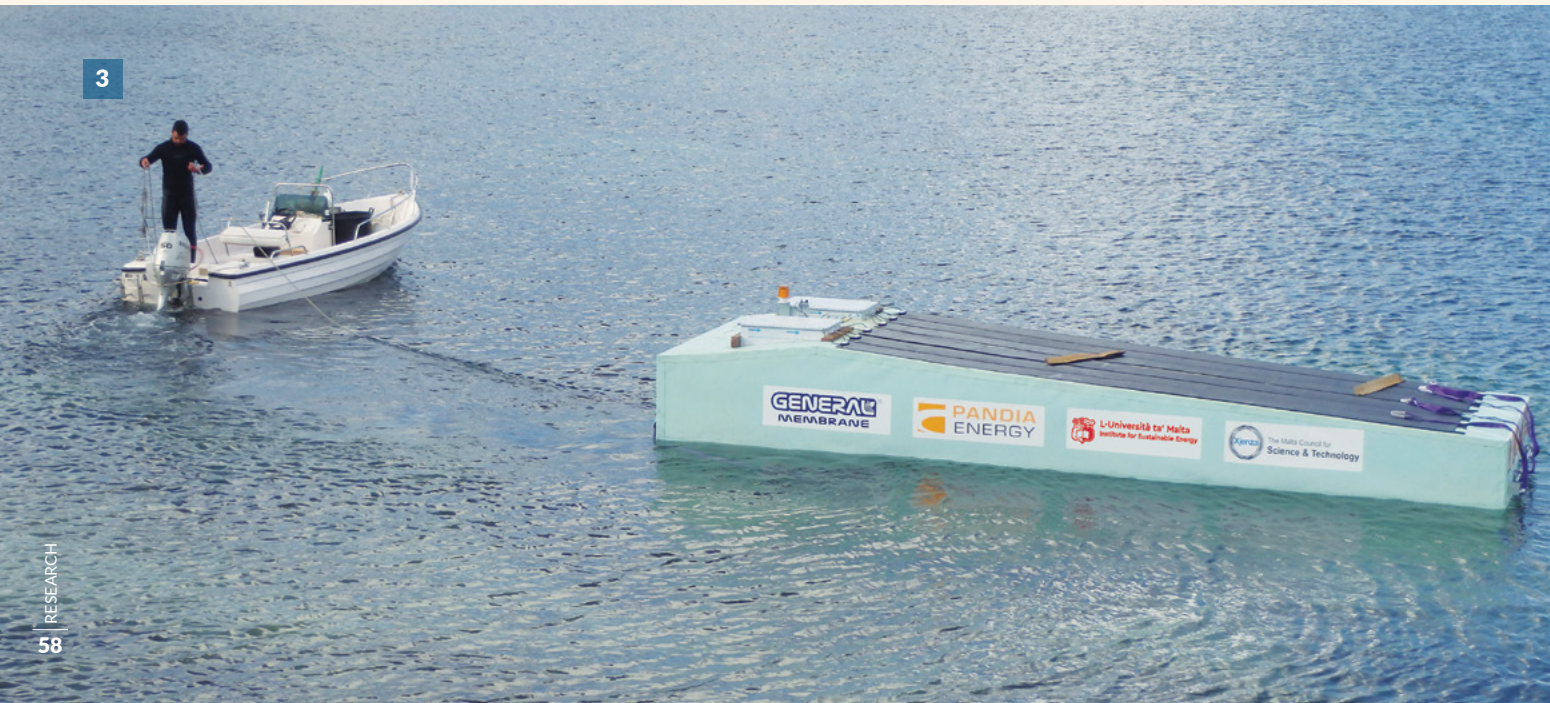
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'The ultimate aim of this research was always to launch a large farm in Maltese territorial water which would be followed by other systems worldwide.

Above:
Prof. Luciano Mulè Stagno

Images on opposite page:
1. Solaqua prototyope 3 - a self-floating PV panel
2. Solaqua prototype 4 - testing concept of low cost structure
3. The launch of prototype 1

Photos by Prof. Luciano Mulè Stagno

more energy than similar land-based modules simply by being at sea, possibly due to the cooler temperatures at sea and a less dusty environment.'

The success of the first project inspired a second. With this one, the modular raft was designed and tested. 'Solaqua 2.0 was financed by Takeoff [The University of Malta's business incubator] in July 2017, with a preliminary design for the platform almost completed. Now discussions are underway about possible patents for the design,' Mulè Stagno elaborates. 'The ultimate aim is to launch a large farm in Maltese territorial water which, if it meets the cost and power output targets, will be followed by other systems worldwide.'

The Professor and his team (marine structural engineer Dr Federica Strati, systems engineer Ing. Ryan Bugeja, and engineer Martin Grech) are now starting the next phase of the Solaqua project. Before the team builds and launches a full-scale system, they have to conduct a series of rigorous wave tank tests. Using a scale model while mimicking the worst possible sea conditions that the system may encounter, the team will be able to refine the design and optimise power output by testing the effect of water motion, cooling, or even different types of panels.

'Through Solaqua 2.1, we hope to reassure investors that the system is viable. Once completed, we will be ready to launch a full-scale system that could be used not only by islands such as Malta, but also in coastal cities around the world which have insufficient land available for PV systems.'

Investors are being invited to join this project to push for global commercialisation. To reach this stage, several local entities supported the project. The Regulator for Energy and Water Services, with the help of the RIDT (the University of Malta's Research Trust), invested €100,000 to cover the cost of constructing the scale model, as well as testing, equipment, transport, and engineers. And now that the project is commanding international interest, potential investors are being sought for the half a million euros needed to achieve a full-scale floating solar farm in Maltese waters.

'This is a homegrown project, in which Malta could be an example to the world,' explains Mulè Stagno. 'We have already placed Malta at the cutting edge of this research area by being the first to test small systems in the open sea. Now we need to find an investor willing to take the plunge and help us create the world's first full-scale floating solar farm. With Solaqua, Malta could be at the forefront of a ground-breaking new global industry—one which has the potential to change the way solar power is collected and used the world over.'

A multi-disciplinary life

Winner of the National Book Council's award for Best Novel ***Loranne Vella*** *has enjoyed an eclectic career, spanning literature, teaching, translation, and theatre, then circling back to literature again. But as* ***Teodor Reljić*** *discovers, her journey across creative modes had its roots at the University of Malta.*

It's not every year that the National Book Council dishes out its annual Best Novel Award to a work of time-hopping speculative fiction. But that's exactly what happened last December, when Loranne Vella won the award for her novel *Rokit* (Merlin Publishers), which details the journey of Petrel, a Croatian youth who travels to Malta in search of his family roots, only to find an island ravaged by climate change.

'With *Rokit*, Loranne Vella distinguished herself with another prize-winning novel that crosses genre boundaries between adult and young adult fiction,' wrote National Book Council Chairman Mark Camilleri.

Such a dense and knotted work suggests hard creative labour, which Vella confirms, pointing out that the novel took five years to put together. But one shouldn't assume that *Rokit* was all that commanded Vella's attention in those years, nor that writing is her only chosen pursuit. In fact, she says the process left her hankering to return to performance.

'I was interested in merging my two artistic passions and experimenting with various possibilities,' Vella says, explaining how this want led to the Barumbara Collective in 2017, 'which focuses on collaboration with artists from different spheres.'

As it happens, Vella being awarded the Book Council prize directly coincided with a Barumbara Collective project—the multi-disciplinary performance *Verbi: mill-bieb 'il ġewwa.*

And while *Verbi* certainly had a role to play in refreshing Vella's creative muscles in the here and now, it also channelled key elements of her past experience. The Barumbara Collective is only the latest iteration of Vella's involvement in the performing arts. The still-active Aleateia Theatre Group was her first and most significant project, beginning as a student project in 1992 and resulting in a generous number of experimental performances held at the Valletta Campus Theatre throughout the nineties and noughties. Vella performed, trained other actors, and documented the group's progress.

The Barumbara project brought more deep-seated memories back to the fore. 'With *Verbi*, I wanted to involve university students from the Department of Digital Arts and the Department of Theatre Studies, seeing how the project was an interdisciplinary one where visual arts, performance and literature come together in one performative installation. I can truly say I was amazed by the hard work done by the students who collaborated. Their enthusiasm reminded me of myself as a student back in the 90s.'

The Waiting Room (Aleateia, 2014)
Photo by Jochem Casier

Vella's own student enthusiasm did not come as immediately as all that, however. While she is now secure in her three-pronged role as writer, performer, and translator (also acknowledging her former role as a lecturer), forging an early path as a student meant first squinting through the fog.

'It took me quite a while to figure out which were the right subjects for me,' Vella confesses. 'Before '91, I had spent a year struggling as a BCom student. This course was definitely not for me, contrary to what my teachers and counselor advised me at the time. Before that, I had registered for the one-year-long Foundation Course at university, intended for students like me who couldn't make up their mind... for a while I was even considering Law...'

It was then that Vella learned about the Theatre Studies Programme, though a couple of years still had to pass for her to take the leap.

'I guess I finally decided to choose what I was interested in, rather than think too much about what my future profession or career should be.' The choices in question were Theatre Studies and English, subsequently opting to specialise in Theatre until she finished her MA in 2000.

'Everything about me, since then, revolves around these two disciplines: theatre and literature.'

These pursuits became an active part of student life for Vella, who loves to turn her passions into more tangible projects. Vella collaborated with fellow Aleateia member Simon Bartolo in establishing *Readers & Writers*, a literary journal which featured original prose, poetry, and literary criticism. Running


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On opposite page:
1. *La Signora Fogli* (Drowning Lilies, Aleateia, 2005)
Photo by Gilbert Guillaumier

2. *Verbi*
Photo by Gilbert Guillaumier

On this page:
3. National Book Prize 2018
Photo by National Book Council

3. *Brocante* (Barumbara Collective, Brussels, 2017)
Photo by Kamini Daems

for five editions, the journal sowed the seeds for Vella's future literary output.

'I was still writing in English back then. It took me almost ten years to start writing stories again, this time in Maltese.'

The breakthrough came in 2004, when Vella began writing the first chapters of what would eventually become *Sqaq l-Infern*, the first volume of the *It-Triloġija tal-Fiddien*, together with Simon Bartolo. Like *Rokit*, the trilogy would be published by Merlin Publishers, and it managed to hit a fresh nerve in the local literary circuit.

Aimed at young readers, the trilogy proved to be a 'Harry Potter moment' for the Maltese literary scene. Graced with eye-catching covers by renowned illustrator Lisa Falzon, its mix of local folklore and coming-of-age yarn was met with excitement and healthy sales. The trio was completed by the novels *Wied Wirdien* (2008) and *Il-Ġnien tad-Dmugħ* (2009).

'By the time the third volume came out, *Fiddien* had a huge following,' Vella remembers, observing how the trilogy also marked her first shift from theatre to literature. Another influence on this decision was her move to Luxembourg to work as a translator at the European Parliament. The next step in her literary output came in the form of *Magna™Mater*, a young adult work of dystopian science fiction published in 2011.

But there was yet another step in the interim to all this—Vella's stint as a lecturer. For five years, she taught at the University of Malta's Department of Theatre Studies. 'This gave me the satisfaction of examining this reality from the opposite side, working with students while keeping in mind the difficulties I had encountered myself.'

Vella had cut her pedagogical teeth much earlier. Right after graduating with a BA Hons in Theatre Studies, Vella taught Drama and English Literature at St Aloysius College. 'Although I had not studied to become a teacher—it was the last profession I had in mind—I had the right background to teach these two subjects. After a few years at the college, I was teaching only the literature part of the English courses, and I also became responsible for directing the annual school concerts, which became bigger and more ambitious every year,' Vella says, adding that her time as a teacher left her with many 'proud moments'.

'The best of these was perhaps the mobilisation of almost the entire body of students to put up a large scale performance—with orchestra, choir, side-acts, chorus, intermezzo, and all.'

Vella is keen to credit her alma mater with the results of this varied career. She has no trouble stating that 'everything is connected, and there is a clear connecting line between my years at university and everything else I've done since.'

Which begs the question: what advice would she give to current University of Malta students, especially those interested in working in multiple disciplines?

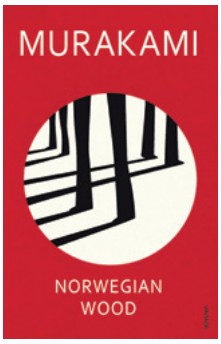
'Be passionate about the courses you follow. Experiment, explore, be curious. Ask many questions and strive to find answers. Do not just study. Discover. And make that discovery your own.'

TO-DO LIST

MUSIC

Intimita' by **Brodu**. A Maltese masterpiece to share with your loved ones.

BOOK



Most of us know it as that song by The Beatles, but ***Norwegian Wood*** is also a bittersweet novel looking back at a person's college life in Japan. Essential **Haruki Murakami**!

YOUTUBE CHANNEL

Whether it's love, success, or human nature, ***The School of Life*** offers insight on topics we all relate to through the most charming animations.

THE SCHOOL OF LIFE

PODCAST

Investigative journalism podcast hosted by **Sarah Koenig**, ***Serial*** tells one story—a true story—over the course of a season. If you liked Making a Murderer, check this one out.

MOVIE

If the warm, 70s-inspired tones and cinematography in this film don't warm your heart, ***20th Century Women***'s ending surely will.

TV

Bandersnatch. You really can't be too surprised about this one. Watch it with a friend and see what happens when your choices impact the narrative. Drop everything. Watch it now. Go.

INSTAGRAM

Award-winning wildlife photographer **Scott Portelli** brings out the David Attenborough in all of us.

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THINK

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