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ABBA's Björn Ulvaeus puts artists' interests center stage



El Salvador makes a fashion statement with its handbags



Genetic scissors: at the cuttingedge of life

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ABBA's Björn Ulvaeus puts artists' interests center stage

By Catherine Jewell, Publications Division, WIPO



"With technology the creator will move to the center of the ecosystem and a new understanding will emerge among music publishers and labels that their role is to serve creators," says Björn Ulvaeus.

Following a stellar career as a singer and songwriter with ABBA, one of the world's most successful pop bands, Björn Ulvaeus is now devoting his time to ensuring that creators are fairly compensated and properly credited for their works. In May 2020, he took over as President of the International Confederation of Societies of Authors and Composers (CISAC), the world's largest network of authors' societies. In this role he will be representing over 4 million creators of all artistic genres across the globe. Björn Ulvaeus outlines his ambitions as CISAC President and shares his vision of the role that technology will play in placing creators at the heart of a transformed music industry ecosystem.

What do you hope to achieve as President of CISAC?

One thing I have learned is that writers in general know very little about the mechanics of copyright and the other rights they have. As CISAC President, I want to share my knowledge and experiences to help ensure songwriters are properly compensated for their work.

I would also like to see that collective management organizations (CMOs) survive. The small ones do a tremendous job in supporting local culture, but they find it difficult to invest in the technology needed for the digital world. I would like CISAC to take a bigger role in developing tools (in collaboration with third-party companies) that all CMOs can use so they don't have to invest songwriters' money in technology that already exists.

Traditionally, CMOs have been like siloes. That is not good for songwriters. I want to see more openness and efficiency and less rivalry. I want them to be driven by the ambition to serve creators and make their lives easier. That is what they should be doing.

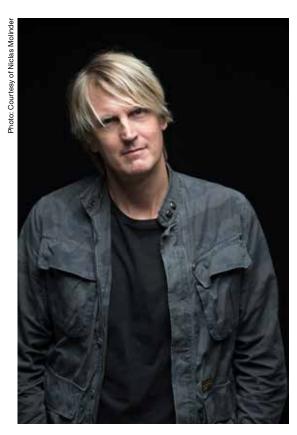
I am also looking forward to meeting with senior policymakers to explain how important it is for governments to support creators. Next year (June 7, 2021) is the deadline for implementation of the EU Directive on Copyright and Related Rights in the Digital Single Market, which among other things, introduces new rules for online content-sharing providers (Article 17). It is extremely important





The Swedish pop group ABBA formed in 1972 and includes Agnetha Fältskog, Björn Ulvaeus, Benny Andersson and Anni-Frid Lyngstad. They are one of the best-selling music groups of all time, giving us hits like *The Winner Takes It All, Dancing Queen, Mamma Mia* and *Money, Money, Money.*





Swedish songwriter and founder and CEO of Session, Niclas Molinder (above). Session's technology platform makes everything that happens in a music studio fully transparent so the right people are paid and credited for what they do, with no room for misunderstandings.

About Session

Founded by Swedish songwriter and producer, Niclas Molinder, and backed by Björn Ulvaeus and songwriter Max Martin, Session is a "data hub" for creators. Session's technology platform is designed to make the management of music rights very simple for everyone. It makes everything that happens in a music studio fully transparent so the right people are paid and credited for what they do, with no room for misunderstandings.

"Session enables music creators to better manage their rights and to collect song data that will allow them to be correctly credited and paid for their contribution to its creation," says Niclas Molinder.

"Having worked as a songwriter, producer and publisher for 20 years, I discovered how much the absence of standardized data reference points affects creators. Creators, publishers, labels, managers and CMOs often spend huge amounts of time grappling with missing information, credits, disputes and incorrect payments. The best way to get creators to supply accurate data is to involve them in data collection as early as possible in the creative process," Mr. Molinder explains.

Session's technology records creator metadata, embeds them into a work at the point of creation and automatically feeds the information downstream to managers, record labels, CMOs, distributors and streaming platforms. "Our technology performs a handshake with music society systems to authenticate creators and associate industry identifiers with their account," Mr. Molinder explains. "This is a critical step in ensuring that creators are compensated for their contribution to the creation of a work."

The technology is built around standard industry identifiers that are assigned to creators when they become affiliated to a CMO. For example, an IPI number is a unique identifier that is assigned to a songwriter and publisher to identify them as a right holder. Similarly, performing artists are assigned a unique IPN number. Other important identifiers include the International Standard Recording Code (ISRC), which identifies a particular music sound or video recording, and the International Standard Musical Work Code (ISWC), which, like an ISBN for books, is "a unique, permanent and internationally recognized reference number for the identification of musical works."

Session's platform is expected to go live in around 18 months. It will be licensed to CMOs and will be available free of charge to creators.

to lobby for creators' interests. Creators across all genres have been at the core of European culture. Politicians don't always get that; they think they need to back consumer interests. But in the music industry, it makes no sense to chase the listener; the listener should be chasing the creator.

How has COVID-19 affected the creative sector?

The industry has taken a big hit and is down around 30 percent on last year. The pandemic has been especially hard on songwriters and artists. Pre-COVID, streaming was a way for artists to promote their live shows. That's where they made their money. Now, they're in the same situation as songwriters and are finding it difficult to earn a living. COVID has really focused attention on the unsustainability of the music industry ecosystem. It is just not working for artists and songwriters and it has to work for all the players. The songwriter can no longer be on the periphery. There will be disruption. Technology will bring change and the creator will move to the center of things. The old CMO and music industry world will have to get used to the openness and transparency that technology enables. That is the future. The transformation is gradual, but it is happening. As CISAC President, I would like to nudge the transformation forward, I have a clear vision of what I want to achieve. I can see what is going to happen and want to be around when it does.

Technology has made music more affordable and accessible for fans, but what needs to be done to ensure creators are fairly compensated?

Technology will help ensure that creators get fair and accurate payment for the use of their work and can make songwriting their profession. Right now, with the right information, Spotify could pay an artist or a songwriter directly, at least monthly and soon in real time. With technology the creator will move to the center of the ecosystem and a new understanding will emerge among music publishers and labels that their role is to serve creators. If someone has a talent to write songs, and is able to hone that talent (because they are paid for their work), they can become a better songwriter. I was distinctly average when I started out. After ABBA won the Eurovision song contest with *Waterloo*, the money came in and Benny and I were able to write every day and became quite good at it.

Tell us about your involvement with Session.

I am a shareholder in the company and have been working with Max Martin and Niclas Molinder, Session's CEO, for many years. In collaboration with key music industry players, Session is creating technologies that will support creators by making it easy for them to register their works so they are duly paid and credited for them. Session is a data hub for creators, it tracks who does what, where and when, at the point of creation. This information is essential for artists – from the lead singer to the drummer and the percussionist – to be paid and credited for their work. Technologies like those

"Technology will help ensure that creators get fair and accurate payment for the use of their work and can make songwriting their profession."

"AI will write perfect utility music. But for the disruptions, there needs to be the human element and the courage of a human heart to break boundaries – a new Dylan, a new Elvis, a new Beatles."

developed by Session will significantly improve the flow of accurate data about all those who contribute to the creation of an audio work. A lack of accurate data is a big problem in the music industry today. It means a lot of money that should be going back to artists isn't being paid out. Session's platform has been developed in collaboration with leading music industry players, including CMOs, record labels and streaming platforms. The aim is to embed the software in the digital workstations, like Pro Tools, which are used by songwriters and producers everywhere. It will definitely help to ensure that creators in less developed countries are properly credited and compensated for their work.

What were the key challenges in developing the platform and the app?

Securing buy-in from the music industry and streaming platforms has taken a long time, but Session is now getting the support it's been waiting for. Another big challenge is the low level of IP awareness among creators and the need to educate them about what they need to do to register their work so they are properly credited and compensated for it. If creators don't understand how to register a work, a platform like that offered by Session is worthless. That is why Niclas Molindar, Max Martin and I set up the Music Rights Awareness Foundation (MRAF).

So how is MRAF linked to Session?

Session is a tool that creators can learn about through the Foundation, which is a non-profit entity. Its aim is to educate creators about what they need to do to get properly credited and compensated for their work. The Foundation runs various education programs for creators free of charge.

And how is that linked to WIPO for Creators?

We rolled out MRAF's first project, Music Rights in Africa, in Malawi, Rwanda and Tanzania. It was great, but we soon realized a scaled-up digital music rights education platform for creators was needed. So, we began talking to the team at WIPO, who really liked the idea – it fit well with their own ideas. The outcome was the launch of WIPO for Creators, a consortium that will initiate activities to raise awareness of IP rights for creators around the world. There is huge potential for

CMOs in Africa, in particular, to leapfrog legacy rights management systems and take advantage of innovative IT tools. It will be interesting to see what the WIPO for Creators consortium can do to improve the situation of creators in developing countries.

How important is it for creators to be IP savvy in today's rapidly evolving creative landscape?

It is extremely important; their livelihood depends on it. If they are savvy, they will make technology work for them, make more money and become better songwriters and make it a profession.

Streaming services are often characterized as the saviors of the music industry, but are they undervaluing musicians' contributions?

Streaming platforms were, indeed, the saviors of the music industry. At one point, the industry was dying from illegal downloading. But the impact the platforms are having on the industry and musicians' livelihoods today is an interesting and complex question. At present, most Internet Service Providers (ISPs) keep around 30 percent of their subscribers' monthly payments. Of the remaining 70 percent, CMOs currently get around 16 percent and the recording label gets around 54 percent. That isn't sustainable. Some new thinking is needed. The labels and musicians haven't yet figured out where the separation between publishing and recording lies. This is a hot topic. COVID-19 may well help even things up for publishers.

But that is just one part of the challenge for songwriters and artists. The other is data, which are often inaccurate. And when data inputs are wrong, so too are the outputs. This means the right people don't get paid. When data are captured manually, there is great scope for inaccuracy and error. Take for example, The Winner Takes It All, which Benny and I wrote. It should have one unique identifier or code, but the last time we checked it had 84 different codes and many unrecognizable names attributed to it. With technology, we can remove these inaccuracies and ensure the right identifiers are in place. That means more money will be paid out to the right people. That is why it is so crucial to assign these codes and verify the artists early on in the creative process, and why Session has been working so hard to get industry-wide support for its technology. You can no longer say it's | The Beatles.

too complicated to assign payments to the millions of songs played every month. It's just a question of having the right technology and using it.

What impact do you think artificial intelligence (AI) will have on the way content is created, produced and consumed?

Without doubt, Al systems will write songs and some of them will be as good as those composed by humans. A lot of music today streams in the background. It's a utility, like electricity and water. Al will write perfect utility music. But for the disruptions, there needs to be the human element and the courage of a human heart to break boundaries - a new Dylan, a new Elvis, a new Beatles. I don't think any machine is capable of creating such shifts. The Beatles weren't chasing the listener. There is something to learn there.

I think it is inevitable that creators and consumers will become closer in future. With the technology for consuming music and for producing it, the distance between creators and consumers will be very short. And that's positive.

You have set a standard in leveraging your music catalogs to create new experiences for your fans. Do creators need to be more creative in leveraging the value of their work?

Today, creators need to be entrepreneurs with a vision of how their work can transcend different forms of entertainment. For me, it wasn't a conscious strategy to make our music live longer. I was intrigued by ideas and visions and wanted to fulfill them. That's what pushed Benny and me to write Chess and Kristina. It's why we are releasing ABBA avatars next year. These projects were opportunities to expand and find new and interesting ways to express ourselves. But I always return to the song. There is a universe in a song that is so interesting. With a song you can move people in seconds. The only thing I haven't done yet is to find some way of creating a world for children. I have eight grandchildren so I am thinking about that.

Who is your biggest musical inspiration?

Diversity and overlapping IP rights in the comic world

By **Franziska Kaiser**, Department for Economics and Data Analytics, WIPO



A new study by WIPO, Batman forever? The economics of overlapping rights, explores how comic characters are protected both by copyright law and trademark law, and what this means in economic and policy terms.

Who is your favorite comic superhero? Batman? Wonder Woman? Black Panther? Comic superheroes are an integral part of contemporary pop culture and a multi-billion dollar global industry. New research by WIPO reveals that, over the last 40 years, Batman, Dracula and Spiderman are the top three most-used franchise characters for movies and video games in the United States, the world's biggest media market. Franchises are derivative works which build on characters developed in original creative works for use in a variety of mediums.

The study, Batman forever? The economics of overlapping rights, explores how comic characters are protected under both copyright law (commonly used to protect creative works) and trademark law and what this means in economic and policy terms. For example, from a legal

perspective, the overlapping of IP rights which arise from the use of both copyright and trademark law to protect comic characters is sometimes considered dysfunctional as rules laid out in both legal frameworks are not always consistent. And from an economic perspective, registering a comic character as a trademark can increase transaction costs for cross-media uses of characters, but may also help build the character's brand across multiple sales channels.

The WIPO study, which analyzes the use of comic characters in the book, movie and video game publishing industries, explores how overlapping copyright and trademark rights affect the franchising of comic characters. Are they expanding opportunities for character use and media franchising or are they reducing them and causing a dip in content sales?

According to the study, the comic character *Batman* has seen the most revivals in franchise media (i.e. movies and video games). Since 1980, the character has appeared in 73 movies and 84 video games, generating more than USD 2.8 billion in movie and video game sales. Similarly, *The Avengers, Captain America, Black Widow*, and *Hulk* have evolved beyond comic books to become hugely successful franchises with top grossing movies and video games. Given the transmedia appeal of comic characters, when analyzing reuse of copyrighted content for franchising purposes, it is important to consider the different media platforms and formats from which revenues are generated. Although a given comic character may appear in fewer films or video games than others, franchises with which it is associated may still generate higher sales. WIPO's research points in this direction.

PROS AND CONS OF OVERLAPPING RIGHTS FRAMEWORKS

Batman forever? The economics of overlapping rights builds on an extensive matched data set from the crowdsourced Grand Comics and TM Link databases. The authors collected data on the reuse in film and video games of almost 2,000 copyright-protected comic characters between 1980 and 2019 to analyze whether complementary US trademark registration helped or hampered any corresponding media franchising and the implications of this in economic and policy terms.

More specifically, the WIPO study provides empirical evidence that trademark registrations affect franchises in different ways. Trademark registration boosts the average number of movie franchises for the same character by up to 15 percent per year, but does not lead to a systematic increase in sales and box office revenues. The study suggests that trademark protection results in such an increase because it allows for more effective branding and merchandising, enabling the owners of comic characters to take advantage of the growing popularity of franchise characters. Trademark rights on top of copyright protection may also open up new financing opportunities as they can sometimes be used to back investments in new movie franchises.

Finding: The economic impact of overlapping IP rights depends on the type of media the character enters.

However, for video games, overlapping rights may deter production companies from integrating comic characters into new video game franchises, and may thereby reduce the diversity of characters appearing on gaming screens. This could be related to higher licensing and transaction costs, especially if the cost of copyright and trademark licenses takes up a bigger portion of the total production budget of a video game (which is generally much lower than for making a movie). However, fewer options to find a comic character could also lead to higher average prices and may help boost sales revenues once trademarks are registered and brand popularity increases. For video games, the data predict an average 75 percent increase in sales revenue with a trademark registration.

"Over the last 40 years, Batman, Dracula and Spiderman are the top three most-used franchise characters for movies and video games in the United States, the world's biggest media market."

From a policy perspective, the impact of overlapping IP rights really depends on the type of media franchise the character enters; each deserving separate consideration. As noted above, the WIPO study shows that overlapping copyright and trademark rights can block some characters from appearing in franchise video games. At the same time, franchises around fewer characters are generating higher sales in that sector. However, if competition between new franchises is limited, there is a risk that sales and IP rights become increasingly concentrated. It follows that policies around overlapping rights that support the development of a variety of content may also help keep markets competitive. For film franchises, overlapping rights seem to have a different economic impact, because of the financing and merchandising opportunities they might help to create in that sector.

WHERE ARE THE FEMALE COMIC CREATORS?

Drawing on global data by the Lambiek Comiclopedia, the authors of the WIPO study have also tracked the participation of female cartoonists in the industry from the early 20th century.

A brief look at the history of the comic industry in the United States reveals a number of stand-out female cartoonists. These include figures like Nell Brinkley, the "Queen of Comics," and creator of the *Brinkley Girl* (circa 1907); Jackie Ormes, the first successful African-American female cartoonist (1940s); and Barbara Brandon-Croft, the first nationally syndicated African-American female cartoonist (1990s). The global data suggest, however, that labor markets for comic creators were slow to pick up on gender and ethnic diversity trends in society. The data reveal persistent low levels of participation by women in the creation of comics for much of the 20th century. In the United States and the rest of the world, women's participation in the industry declined in the post-war years. And of the comic designers born in the 1950s and 1960s, only 10 percent were women.

Finding: Globally, women aged 30 to 40 represent around 40 percent of all cartoon creators, the research suggests.

Only in the late 1970s, with the rising popularity of feminism, did women's participation in the industry begin to increase. Since then, the global community of comic creators has steadily become more diverse. Today, in the United States, more than 50 percent of cartoon creators between the ages of 30 and 40 are women. Globally, women represent around 40 percent of cartoon creators in this age group, reflecting a dramatic change in gender diversity in recent years.





"Notwithstanding the recent success of comic superheroines, the diversity of characters in the comic universe remains limited."

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A MORE INCLUSIVE WORLD OF COMIC HEROES AND HEROINES?

The rich data from the WIPO study make it possible to draw a detailed picture of franchise reuse per comic character and their evolution over the past 40 years. The data also help to identify the latest trends in gender and ethnic diversity among cartoon characters, which reflects, to some extent, the societal changes outlined above.

Over the last decade, the superhero universe has become more diverse, with *Black Panther* and *Black Widow* now featuring among the official top ten franchised heroes and heroines. *Black Widow* trails *Batman* as the second most used franchise character in video games. So far, the games in which she appears have generated global sales of USD 15.3 million.

Finding: Over the last decade, the superhero universe has become more diverse, with Black Panther and Black Widow now featuring among the top ten.

In the past, major game sales were dominated by *Star Wars'* heroes like *Yoda, Luke Skywalker*, and *Darth Vader*. By 2010, two female characters, *Harley Quinn* and *Catwoman*, which respectively have generated USD 31.3 million and USD 32.2 million in sales, started competing with *Batman* and *Robin*, which respectively have generated USD 108 million and USD 21.3 million in sales, for the top spot in video games.

Similar trends can be observed in franchise movies, with more heroines rising to the top ranking. Four female comic characters – *Wonder Woman*, *Black Widow*, *Harley Quinn*, and *Lois Lane* – feature among the top 15 characters used in movies since 2010.

The success of *Wonder Woman* may be attributable to the fact that at last, in 2017, an eponymous blockbuster was released. She is the only non-male comic character among the top three franchise characters in movies since 2015. Over the last decade, *Wonder Woman* alone has generated movie and video game sales of USD 418 million. She has, without doubt, shaken up the male-dominated comic universe!

Notwithstanding the recent success of comic superheroines, the diversity of characters in the comic universe in terms of gender and ethnic diversity remains limited. This is also true of the *Avengers* movies, the most successful comic franchise movies ever produced. Moreover, non-male comic characters are often represented in outmoded stereotypical ways, suggesting that the comic world still has some way to go in terms of gender equality and has significant scope to expand its universe with more ethnically diverse characters.

*For more information, see the working paper Batman forever? The economics of overlapping rights and WIPO's Creative Economy Notes.

El Salvador makes a fashion statement with its handbags

By María Luisa Hayem, Minister of the Economy of El Salvador, San Salvador



Handbag by Salvadoran designer Raquel Arana (right). Registered trademarks "Raquel Arana" and "Hecho en Casa" have enabled Raquel Arana to protect her design innovations, which have gained



After launching her brand in 2015, Eva Innocenti (above), one of a growing number of successful female Salvadoran designers, has showcased her designs at both London Fashion Week and Panamá Fashion Week.

El Salvador's handicraft sector stands out for its exceptional creativity and beauty and for being the main source of income for many Salvadoran families. The sector is replete with talent, creating pieces in which history is hidden and innovation is revealed.

El Salvador is a country of some 7 million people covering an area of 21,040 square kilometers. The country's expanding and youthful population is a major asset. It has an exceptional tropical climate, idyllic ocean, mountain landscapes and a population density of around 316 people per square kilometer. It is a country full of determined, resilient and creative people.

"El Salvador's handicraft sector stands out for its exceptional creativity and beauty and for being the main source of income for many Salvadoran families."

WOMEN-LED FASHION STARTUPS GAIN PRESTIGE

In recent years, El Salvador has seen a rise in the number of fashion startups led by women. Highly talented female designers have come to the fore, gaining prestige at home and abroad with their clothing and accessory lines. Some have injected innovation into traditional artisanal processes and products to create original designs with Indigenous characteristics. Aside from their outstanding aesthetics and quality, these products are generating employment and helping to keep certain traditions alive.

TRADITION MEETS LUXURY

Eva Innocenti is one such designer and entrepreneur. Ms. Innocenti designs luxury handbags, made mainly from the highest quality Salvadoran leather, embellished with gold-plated elements and other materials. A number of her handbag collections are named after the women who inspired them.

The designer launched her brand in 2015, and has been carefully managing her intellectual property (IP) since. In addition to a registered trademark, the designs for her original collections are registered with the National Center of Registries (CNR), the national IP office of El Salvador.

"It all starts with a dream. That is what the Eva Innocenti brand is for me – my lifelong dream," the designer says.

Today, Ms. Innocenti has a workshop that creates jobs for a group of Salvadoran artisans, a retail outlet in a prestigious area of the capital city and an online shop that ships goods all over the world. In 2019, she participated in London Fashion Week and Panamá Fashion Week.

IP AND WOMEN'S EMPOWERMENT

Raquel Arana is another noteworthy Salvadoran designer and entrepreneur. Ms. Arana is a storyteller who uses figures and colors instead of words.

The designer got her start in the creative industries at the end of 2014 with a very successful handbag design, which set her on an unexpected path. Ms. Arana learned along the way that IP can be very useful in supporting her business goals and her commitment to empowering women.



Eva Innocenti's branding is protected by a registered trademark, and her designs are registered with the National Center of Registries in El Salvador.



Ms. Innocenti's designs combine the highest quality Salvadoran leather with gold-plated elements and other premium materials.





Eva Innocenti takes much of her design inspiration from women, after whom she has named a number of her collections.

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Forging emotional bonds to support women is central to Raquel Arana's work. She recounts narratives of women's empowerment through her illustrations.

Like other designers in El Salvador, Ms. Arana has benefitted from government-led programs to promote IP awareness among El Salvador's business community.



Raquel Arana (right) uses her handbag designs as a vehicle for visual storytelling, replacing words with bold color palettes and detailed illustrations.

The success of Ms. Arana's designs has led her to expand her product range, which now includes personal accessories and home decor.













Ms. Arana has a passion for illustration, and when designing a product, she aims to forge emotional bonds to support women: each handbag tells a story and each story is one of women's empowerment.

By combining these two loves – design and women's empowerment – Ms. Arana has helped other Salvadoran women to further their entrepreneurial ambitions, namely through the Velasco Program, which mentors aspiring female entrepreneurs.

"It's important to continuously innovate the products one sells, and it's okay if not all of them sell. The point is to keep creating and testing the market," Ms. Arana says.

To share her success, Ms. Arana opened a store, "Hecho en Casa" ("homemade"), with her two partners. The store is a marketing channel for her creations and products as well as those of other artisans.

Ms. Arana has expanded her product lines to include other personal accessories and home decor items. The registered trademarks "Raquel Arana" and "Hecho en Casa" have gained broad recognition both locally and internationally. There are now two "Hecho en Casa" stores in San Salvador. The designer's products can also be purchased via Facebook or Instagram and may be shipped internationally.

IP is helping Ms. Arana to raise her professional profile as a designer. It is also bolstering her business and enabling it to grow. But, like many other popular designers and artists, her work is now being copied by unauthorized third parties. It is in this context that Ms. Arana has come to recognize the true importance of IP rights in protecting her creations and safeguarding her business interests.

IP AWARENESS IN EL SALVADOR YIELDS DIVIDENDS

Over the last five years, El Salvador's average annual handbag exports have generated more than USD 630,000. Export markets include the United States, countries in Central America and Latin America, as well as in Asia and Europe.

Thanks to a range of government programs, recognition of the importance of IP as a business tool has grown in El Salvador in recent years. Various governmental institutions offer programs to support businesses, especially micro-, small- and medium-sized enterprises, in their use of IP to support business growth. These institutions include the Ministry of the Economy; CONAMPYE, which supports micro- and small-sized enterprises; and the CNR, the national intellectual property office.

"Thanks to a range of government programs, recognition of the importance of IP as a business tool has grown in El Salvador in recent years."

Genetic scissors: at the cutting-edge of life

By James Nurton, freelance writer



Professor Jennifer A. Doudna (left) and Professor Emmanuelle Charpentier (right) have been jointly awarded the Nobel Prize in Chemistry for their discovery of the CRISPR-Cas9 "genetic scissors," one of the most important scientific developments of the 21st century.

On October 7, 2020, the Nobel Prize in Chemistry was awarded to Professor Emmanuelle Charpentier, Director of the Max Planck Unit for the Science of Pathogens, Berlin, Germany, and Professor Jennifer A. Doudna, of the University of California, Berkeley, USA, "for a method of genome editing". Their discovery of the CRISPR-Cas9 "genetic scissors" is one of the most important scientific developments so far this century. It has the ability to transform agriculture and medicine, and even cure inherited conditions such as Huntington's disease, cystic fibrosis and certain types of cancer. But, as the researchers themselves have recognized, it also raises complex ethical, patent and policy issues, which are only just beginning to be explored.

The collaboration between Professor Charpentier and Professor Doudna brought together their expertise in pathogenic bacteria and RNA interference, respectively. It began in 2011 and was, according to Professor Charpentier, "short and intense", but its impact will be felt for many years. Their key achievement was identifying that CRISPR, a natural defense mechanism found in the DNA of bacteria, and Cas9, an enzyme, could be programmed to cut a DNA molecule at any point.

As Professor Claes Gustafsson, Chair of the Nobel Committee for Chemistry, explained in a paper published by the Royal Swedish Academy of Sciences, "the development of this technology has enabled scientists

Common terms

DNA: Deoxyribonucleic acid, a molecule present in all cells that carries genetic instructions.

RNA: Ribonucleic acid, a single-stranded molecule sometimes referred to as DNA's "cousin."

CRISPR: clustered regularly interspersed short palindromic repeats – arrays of repeated DNA sequences.

Cas: CRISPR-associated proteins that cleave virus DNA. There are 93 of them, one of which is Cas9.

TracrRNA: trans-activating CRISPR RNA, which enables long RNA created from a CRISPR sequence to mature into its active form.

to modify DNA sequences in a wide range of cells and organisms. Genomic manipulations are no longer an experimental bottleneck. Today, CRISPR-Cas9 technology is used widely in basic science, biotechnology and in the development of future therapeutics."

A REVOLUTIONARY TOOL TO SHAPE BIOLOGICAL SYSTEMS

"CRISPR-Cas9 is a powerful tool that has made gene editing faster, more accurate, cheaper and easier to operate. It's also a socially disruptive technology with many applications including to human medicine, agriculture and biofuels," says Dr Kathy Liddell, Director of the Centre for Law, Medicine and Life Sciences at Cambridge University in the UK. As of October 2020, 115 clinical trials using human genome editing (HGE) technologies are underway, according to the World Health Organization HGE Registry, including for widespread genetic diseases such as sickle cell disease and beta thalassemia. In March 2020, the first CRISPR-Cas9 gene therapy was administered to someone suffering from a rare condition known as LCA10, which causes childhood blindness and for which no other treatment is currently available. In this instance, the therapy was used to remove a mutation in the gene (CEP290) which causes the condition.

But CRISPR-Cas9 has also resulted in some less favorable head-lines, with a long (and as yet unresolved) patent battle and ethical debates about "designer babies". Professor Jacob S. Sherkow of the College of Law, University of Illinois at Urbana-Champaign in the United States, says this reflects the fact that CRISPR-Cas9 is "the most important advance in biotechnology in the past 40 years." "It allows scientists, researchers and developers to precisely edit the genome of a living cell. In other words, you can edit the software that makes us alive," he adds.

RESPONSIBLE DEVELOPMENT

The two Nobel Laureates realized the magnitude of their discovery early on. Professor Doudna has spoken about how, by 2014, she felt a growing responsibility to engage in the public ethical debates. In early 2020, she told the *Financial Times*: "We need to be thinking about these broader implications of a powerful technology and how to develop them responsibly." She helped establish, and is currently President and Chair of the Governance Board at the Innovative Genomics Institute in Berkeley, California, USA. The Institute is committed to advancing public understanding, providing resources for the broader community and guiding the ethical use of genomic technologies.

Ethical issues came to the fore in November 2018, when Chinese scientist He Jiankui announced that he had used CRISPR-Cas9 to create genetically edited twin girls. Other scientists condemned

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"We need to be thinking about these broader implications of a powerful technology and how to develop them responsibly."

Jennifer A. Doudna

the research – including Professor Doudna, who immediately flew to Hong Kong (SAR) to investigate. He Jiankui was subsequently fired from his university, fined and imprisoned for three years.

The case was very much an outlier: He Jiankui's research was not regulated or published and not even scientifically credible (his claim that the genetically modified embryos would confer HIV immunity met with considerable skepticism). Professor Sherkow notes that the ethical debates about editing human embryos to avoid genetic illness or favor certain characteristics are not new, and have been present since the introduction of *in vitro* fertilization (IVF) in the 1970s. "Some concerns about CRISPR-Cas9 are greatly overblown. It's not that different from what is being done now," he observes.

Dr. Liddell agrees, saying: "In the UK, for example, we have a track record of broad, pragmatic deliberation on ethically contentious issues, such as IVF and prenatal screening. It's important to scrutinize arguments about whether there are real harms to society or human values from heritable gene editing." In many countries (including the UK) IVF research is regulated by a public authority so that new issues can be debated and resolved as they arise.

THE ROLE OF THE PATENT SYSTEM

The ethical issues raised by CRISPR-Cas9 are not limited to human germline editing. In view of its potential to transform biological systems, there are also questions such as: Who decides how the technology can be used and by whom, and which uses are safe and socially acceptable? Which research should be prioritized? How to ensure fair access to life-changing therapies that may cost millions of dollars per treatment, particularly in health systems based on public payment? What is the social and economic impact of modifying the genes of crops or fuels on farmers and agricultural workers and what effect will such uses have on ecological systems?

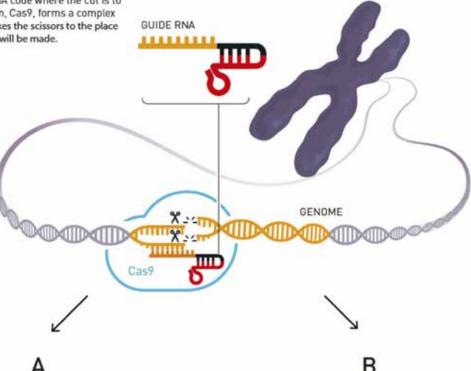
Some of these questions inevitably concern the role of the patent system, which is designed to incentivize innovation for the benefit of society as a whole. Researchers have applied for thousands of patent applications involving CRISPR technology over the past decade, demonstrating the importance of patents in attracting and encouraging investment in research and technological development. As Professor Doudna herself has said: "There's a huge layer of IP [intellectual property] that's been developed. It will be interesting how that plays out in the future once we have products with value." Standards body MPEG LA has even proposed creating a CRISPR-Cas9 joint licensing platform (or patent pool) to promote access to related patented technologies.

PATENT BATTLES ENSUE

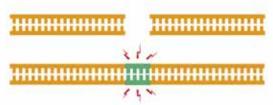
Professors Charpentier and Doudna filed their first application in the United States in 2013, and this has been extended to many other countries via the Patent Cooperation Treaty (published as WO/2013/176772). Since 2015, UC Berkeley and the University of Vienna (the patent applicants) have been locked in patent interfer-

The CRISPR/Cas9 genetic scissors

When researchers are going to edit a genome using the genetic scissors, they artificially construct a guide RNA, which matches the DNA code where the cut is to be made. The scissor protein, Cas9, forms a complex with the guide RNA, which takes the scissors to the place in the genome where the cut will be made.

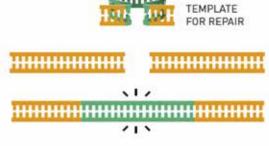


Researchers can allow the cell itself to repair the cut in the DNA. In most cases, this leads to the gene's function being turned off.



ERROR-PRONE REPAIR

If the researchers want to insert, repair or edit a gene, they can specially design a small DNA template for this. The cell will use the template when it repairs the cut in the genome, so the code in the genome is changed.



INSERTED DNA

©Johan Jarnestad/The Royal Swedish Academy of Sciences

Story of the research

1953: Francis Crick and James Watson identify the molecular structure of DNA.

1987: Yoshizumi Ishino identifies repeated structures in prokaryotic DNA.

1993: Francisco Juan Martínez Mojica coins the term CRISPR.

2005: Mojica proposes that CRISPRs provide a defense against foreign DNA.

2008: Erik Sontheimer and Luciano Marrafinni identify the CRISPR mechanism as a gene-editing tool.

Spring 2011: Emmanuelle Charpentier, a microbiologist, and Jennifer Doudna, a biochemist, meet during a conference in Puerto Rico and discuss CRISPR-Cas9 for the first time.

June 2012: Professors Charpentier and Doudna and others publish their research in *Science* under the title *A Programmable Dual-RNA–Guided DNA Endonuclease in Adaptive Bacterial Immunity*.

March 2013: The University of Vienna and University of California file a US patent application titled *Methods and compositions for RNA-directed target DNA modification and for RNA-directed modulation of transcription* (priority date 25 May 2012). Professors Charpentier and Doudna are among the inventors.

December 2012: Feng Zhang of the Broad Institute publishes a paper showing that CRISPR works in eukaryotic cells, and subsequently files US patents. A series of USPTO patent interference cases between UC Berkeley and the Broad Institute begin, with the latest decision published in September 2020.

October 2020: Professors Charpentier and Doudna are awarded the Nobel Prize in Chemistry "for the development of a method for genome editing".

ence proceedings before the United States Patent and Trademark Office (USPTO) against the Broad Institute in the United States to determine the validity of their application. There have also been disputes between these parties in other jurisdictions. They are not over yet – which, as Professor Sherkow says, raises the prospect of further battles being fought in the courtroom. "One of the big questions is why these disputes have not been resolved, and who is reluctant to settle. The stakes are very high, and we could yet see a full trial about who was the first to invent "single guide RNA", with testimony from the various scientists involved," he says.

So far, and perhaps surprisingly, the patent disputes have concerned issues about breadth and priority, rather than patentable subject matter. As Professor Duncan Matthews, Director of the Queen Mary Intellectual Property Research Institute at Queen Mary University of London, UK, says, the patent system is "part of the overall governance of technologies" such as CRISPR-Cas9. In particular, many patent laws have morality or ordre public exclusions from patentable subject matter. These are defined in national patent law and addressed in a document produced by the WIPO Standing Committee on Patents (last updated in April 2020). "I think patent examiners at the European Patent Office, where they are required to apply a morality exception, have done a good job by not rejecting applications outright but instead allowing claims to compositions or vector systems (delivery methods) for genome editing. They are applying the law as it is stated," says Professor Matthews, who has convened an expert group on patents and genome editing to study the topic. "In other patent systems, it is perhaps too early to say [how the exclusions will be interpreted] and we haven't yet seen disputes about the exceptions concerning morality or products of nature."

PATENTS AS A TECHNOLOGY GOVERNANCE MECHANISM

Professor Matthews believes more work should be done on whether patent offices would allow genome inventions to be patented: "Until now, patents have been largely absent from the debate about human genome editing. I was pleased to be invited recently to give evidence before the WHO Expert Advisory Committee, which is considering patents as part of the governance of human genome editing." The international WHO expert panel was established in December 2018, and published a statement on governance and oversight in July 2019.

Professor Matthews points out that the patent system could be a means of preventing rogue research: "Patents could be used responsibly to block unregulated use through a system of ethical licensing."



The discovery by Professors Charpentier and Doudna revealed that a DNA molecule could be 'cut' at any point by CRISPR, a natural defense mechanism present in the DNA of bacteria, and Cas9, an enzyme.

A BOLD FUTURE

While the details of gene editing may seem complex to the uninitiated, scientists speak of the relative simplicity of the CRISPR-Cas9 tool, which has made it available to researchers across the globe in a wide range of fields. "Academic research into CRISPR has taken off in the past few years," despite the well-publicized patent battles, says Professor Sherkow. "The limit of CRISPR is the human imagination," he notes.

The Nobel Laureates have contributed greatly to this research, each of them being named on dozens of patent applications. Professor Charpentier has licensed IP to the biotech companies CRISPR Therapeutics and ERS Genomics while Professor Doudna has co-founded Caribou Biosciences, Intellia Therapeutics and Mammoth Biosciences. "This is the first time that two women have shared a Nobel Prize in Chemistry and they will be an inspiration, especially to girls around the world who are interested in science," says Dr. Liddell.

Their work has inspired hundreds of other researchers who have published papers on the use of CRISPR-Cas9 in many organisms. Scientists are also investigating the potential of other CRISPR-associated systems such as Cas12a and Cas13, including to test for and treat COVID-19. Some of this research uses powerful artificial intelligence tools including machine learning and deep learning to improve predictability and reduce off-target effects. Less than 10 years since the landmark collaboration between Professors Charpentier and Doudna, enormous strides have already been made – but it looks like many more achievements are just around the corner.

"The limit of CRISPR is the human imagination."

Jacob S. Sherkow



By: Marumo Nkomo, University of Cape Town; and Jabulani Mthombeni and Trod Lehong, AfriqInnov8 (Pty) Ltd., Pretoria, South Africa





"Increased intra-African trade is what will drive economic development post-COVID-19."

Wamkele Mene, Secretary-General of the AfCFTA

The COVID-19 pandemic has wreaked havoc on economies across the globe. Although it experienced a peak in infections later than countries in the global North, Africa has not been spared the economic fallout of the pandemic. The World Bank's *June 2020 Global Economic Prospects*, forecasts the deepest global recession in decades. The study predicts that global gross domestic product (GDP) will contract by at least 5.2 percent with a downside contraction of close to 8 percent in 2020.

GDP in Sub-Saharan Africa is expected to fall by 2.8 percent in 2020, with the continent's largest economy, Nigeria, projected to shrink by 3.2 percent. Africa's most industrialized economy, South Africa, is expected to contract by 7.1 percent.

Unlike the member countries of the Organisation for Economic Cooperation and Development (OECD), African economies may not have the fiscal resources to provide multi-billion dollar stimulus packages and furlough programs. This reality has prompted the Secretary-General of the African Continental Free Trade Area (AfCFTA), Mr. Wamkele Mene, to state that, "for Africa, the stimulus package is the actual AfCFTA, the implementation of this agreement. Increased intra-African trade is what will drive economic development post-COVID-19."

The World Bank agrees. In a July 2020 study on the economic and distributional effects of the AfCFTA, it underlined the Agreement's transformative potential, noting that its full implementation could result in lifting around 100 million people out of poverty. But how did the AfCFTA come about? What are its key elements and what role will intellectual property rights (IPRs) play in achieving its objectives?

HISTORICAL BACKGROUND

Since the 1960s, when various African countries gained independence, the Organization of African Unity (OAU) and its successor institution, the African Union (AU), have sought to advance the ideal of Pan-Africanism and the interdependence and economic integration it encompasses.

Attaining African economic integration, however, has been inhibited by a variety of persistent challenges. These include small markets, insufficient industrialization, poor infrastructure and low levels of intra-African trade. For example, in 2019, intra-regional trade accounted for 17 percent of Africa's exports compared to 59 percent in Asia and 69 percent in Europe.

To address these challenges, the OAU called for the establishment of an African Economic Community by 2028. To this end, African nations have placed regional economic communities at the center of the continent's economic integration initiatives.



The AfCFTA Agreement aims to eliminate barriers to intra-African trade.

Despite these laudable intentions, progress in establishing the African Economic Community had stalled by the early 2000s. This was due, in large part, to a proliferation of regional economic communities with overlapping membership, which resulted in a "spaghetti bowl" of conflicting obligations.

In a drive to reinvigorate progress towards establishing the African Economic Community, the 18th AU Summit, which took place in Addis Ababa, Ethiopia, in January 2012, focused its discussions on boosting intra-African trade. The Summit endorsed the Action Plan on Boosting Intra-African Trade (the BIAT Action Plan), which introduced a road map to expeditiously establish the AfCFTA.

The following year, the AU celebrated the 50th Anniversary of the Charter of the OAU and launched its Agenda 2063, which outlined the AU's development goals for the next 50 years. Significantly, the AfCFTA features prominently among the Agenda 2063 milestones, which call on AU member states to fast-track the establishment of the AfCFTA with a view to doubling intra-African trade.

AU members heeded Agenda 2063's call. AfCFTA negotiations were launched in June 2015. Less than three years later, in March 2018, negotiations culminated in the conclusion of the Agreement Establishing the AfCFTA (the AfCFTA Agreement), which was signed by 44 of the AU's 55 member states. Just over a year later, the Agreement entered into force.

KEY ELEMENTS OF THE AFCFTA

The AfCFTA Agreement aims to eliminate barriers to intra-African trade progressively by resolving the problem of overlapping membership of regional economic communities, thereby promoting trade liberalization and enabling structural transformation.

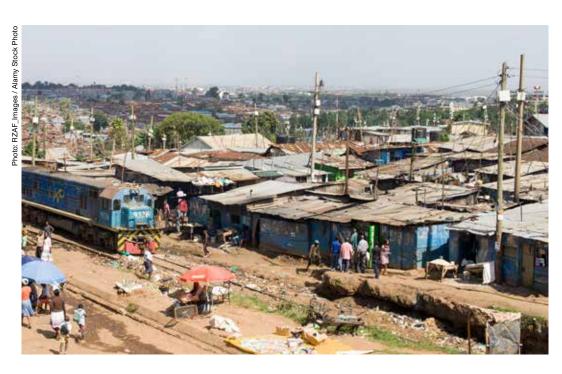
The Agreement has three layers: The first is the AfCFTA Agreement itself, which serves as a framework agreement. The second consists of Protocols on Trade in Goods, Trade in Services, Rules and Procedures on the Settlement of Disputes (Dispute Settlement), Investment, Competition Policy and Intellectual Property Rights (IPRs). And the third layer consists of Annexes, Guidelines and Schedules to the aforementioned Protocols.

The Protocols on Trade in Goods, Trade in Services, and Dispute Settlement entered into force concurrently with the AfCFTA Agreement. These instruments are the outcomes of Phase I of the AfCFTA negotiations.

Phase II negotiations will deal with Protocols on Investment, IPRs, and Competition Policy. It was initially hoped that Phase II negotiations would be completed by January 2021, but due to the COVID-19 pandemic, this timeline has been delayed.

The inclusion of investment, IPRs and competition policy in the AfCFTA architecture is apt as poorly calibrated IPR and investment regimes and anti-competitive practices can undermine the benefits of trade liberalization.

"Implementation of the AfCFTA has significant potential to serve as a catalyst for Africa's post-pandemic recovery."



A 2020 World Bank study highlights the AfCFTA's transformative potential, noting that it could result in lifting around 100 million people out of poverty.

THE IPR PROTOCOL

As observed by the proposal of Geneva-based representatives of African countries ("the African Group") for the establishment of a Development Agenda for the World Intellectual Property Organization (WIPO):

"IP is just one mechanism among many for bringing about development. It should be used to support and enhance the legitimate economic aspirations of all developing countries, including Least Developed Countries (LDCs), especially in the development of their productive forces, comprising of both human and natural resources. IP should, therefore, be complimentary and not detrimental to individual national efforts at development, by becoming a veritable tool for economic growth."

Since Africa is made up exclusively of developing and least developed countries, the IPR Protocol offers AU members an opportunity to develop an IP framework that addresses the specific developmental needs and interests of Africa.

There has been a long-standing divergence of perspective between developing countries and various member countries of the OECD at the World Trade Organization (WTO) on biodiversity, traditional knowledge and patenting of life forms, the so-called "triplets". This is one example of multilateral IP negotiations that have not been able to address the concerns of African countries.

During negotiations within the WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (IGC) and other similar platforms, the African Group has consistently advocated for recognition of the central importance of the interplay between IP on the one hand, and traditional knowledge, indigenous cultural expressions and genetic resources on the other hand. Regrettably, however, this view is not shared by some OECD countries. As a result, international negotiations within the IGC have been unable, as yet, to yield agreement on an international instrument for the protection of relevant subject matter from misappropriation, despite consistently diligent work from the WIPO secretariat in trying to facilitate a positive outcome.

The AfCFTA's IPR Protocol affords AU member states the opportunity to prioritize areas of comparative advantage for African countries in an international IP instrument. Furthermore, it can be used to promote IP rules and

standards that are calibrated to the continent's level of industrialization and in line with the AfCFTA's objectives.

The COVID-19 pandemic is highlighting the importance of technology in the global economy, including within the economies of Africa. In these circumstances, IP is set to assume greater importance. The IPR Protocol can serve as a catalyst for technology transfer, technology diffusion and the economic transformation of Africa's economy from one that is primary resource-based, to one that is driven by knowledge, information and ideas.

This is occurring in a context where a consensus is emerging among economists that a "one size fits all" approach to IP policy is not effective or appropriate. As stated by Rob Davies, the former Trade Minister of South Africa, when he opened WIPO's inaugural conference on IP and Development in 2016: "Countries have taken different paths in pursuing economic development and they have used IP protection in different ways and at different times to support their development effort."

Finally, various attempts have been made to deal with IP issues that have regional and sub-regional dimensions in Africa. These include the proposed Pan-African Intellectual Property Office, the African Regional Intellectual Property Organization (ARIPO), the African Intellectual Property Organization (*Organisation Africaine de la Propriété* (OAPI)), the East African Community Regional Intellectual Property Policy on the Utilization of Public Health-Related WTO-TRIPS Flexibilities and the Approximation of National Intellectual Property Legislation and the IP Policy of the Common Market for Eastern and Southern Africa (COMESA).

Some of these continental arrangements have divergent approaches and overlapping memberships. The AfCFTA IPR Protocol affords AU member states the opportunity to reflect on how best to achieve policy coherence within and among these initiatives. This process can also be used to develop mechanisms to facilitate better coordination at multilateral fora.

Implementation of the AfCFTA has significant potential to serve as a catalyst for Africa's post-pandemic recovery. The AfCFTA is an important vehicle for realizing the Pan-African vision of regional economic integration and structural transformation of Africa's economy. The IPR Protocol can help AU member states ensure that IP policy is applied in a manner that is supportive of Africa's developmental goals.

Working ethically with Indigenous cultural and intellectual property: Australia launches new protocols

By **Patricia Adjei**, Head, First Nations Arts and Culture, Australia Council for the Arts, Sydney, Australia



Traditional knowledge is a central aspect of Indigenous cultural expression. *Broken Glass* (2018) (above) is a collaborative performance and installation exploring how First Nations traditional knowledges and practices about ceremony and death have changed over time.

Australia's unique First Nations artistic and cultural expression is deeply and firmly connected to over 75,000 years of heritage and continuing practice, and its uniqueness has been recognized both within Australia and internationally.

However, as is the case in many countries, there remains a significant gap in legal protection for traditional cultural expressions and knowledge in Australia. Australian copyright law currently only protects works by individual Indigenous artists, with no law to specifically prevent the misuse, distortion or alteration of Indigenous cultural and intellectual property (IP) that is communally owned or part of an Indigenous group's heritage.

International negotiations within the WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (IGC) are seeking to put into place an international legal framework to address these issues. Pending the outcome of the IGC's work, a number of countries, including organizations in Australia, are developing practical ways to support Indigenous communities in protecting their IP interests.

Safeguarding of Indigenous traditional knowledge and cultural expressions in a responsible way is crucial to ensuring that Indigenous cultural heritage is maintained and can be passed down from generation to generation.

In Australia, Indigenous music is made up of an extensive collection of stories, songs and styles of singing and dancing that come from Indigenous communities across the country. From the Tiwi islands to Arnhem land in the Northern Territory, to the Kimberley region in Western Australia, to the states of Victoria and Tasmania, there is limited protection for these historic styles of cultural expressions from communities.

NEW PROTOCOLS SUPPORT WORKING ETHICALLY WITH INDIGENOUS CULTURES

At the end of September 2020, the Australia Council for the Arts, the national arts funding and advisory body to the Australian Government Office for the Arts, released the latest edition of its *Protocols for using First Nations Cultural and Intellectual Property in the Arts*. The Protocols aim to bridge the existing legal gap and provide traditional knowledge protection by recognizing and engendering respect for customary practice.

The Protocols address key legal, ethical and moral considerations for the use of Indigenous cultural material in the Australian arts sector. They were last updated in 2007. The new revised edition, authored by Indigenous Australian solicitor Dr Terri Janke, consolidates five guides into one, with case studies spanning visual arts, music, literature, dance, theatre, multi-art forms, emerging and experimental arts and events-based projects.

The updated protocol guide lays out ten principles for respecting Australian traditional cultural expressions and knowledge:

- 1. Respect
- 2. Self-determination
- 3. Communication, consultation and consent
- 4. Interpretation
- 5. Cultural integrity and authenticity
- 6. Secrecy and confidentiality
- 7. Attribution
- 8. Benefit sharing
- 9. Continuing cultures
- Recognition and protection

PROTOCOLS IN PRACTICE

The guide demonstrates the implementation of these ten principles through 14 case studies. They include the *Mission Songs Project*, founded by First Nations Australian musician and producer, Jessie Lloyd. The project sought to revive contemporary Australian Indigenous songs from the 1990s and to create a space for Indigenous Australians who lived on state-run and other

settlements to share and reclaim their stories and cultural expressions. Senior First Nations musician, Archie Roach, and First Nations Australian academic, Marcia Langton, from Melbourne University, were senior cultural advisors on this project.

Over a period of two years, Jessie Lloyd met with Indigenous elders and senior family members and learned about the songs and song traditions that had been orally passed down, consulting with communities to record and publish communally owned songs from old Aboriginal missions in the states of Queensland, New South Wales and Victoria. Crucially, in working directly with the storytellers – the knowledge holders – she ensured the authenticity and cultural integrity of her work. The project culminated in the production of a music album, The Songs Back Home (2017), a website and a Choir Songbook, as well as performances at different festivals like Yirramboi, Melbourne's Indigenous festival, the Woodford Folk Festival in regional Queensland, and the Sydney Festival. Overseas, Jessie Lloyd has performed her work in Canada, Mexico and the USA.

The case study details how, throughout her research, the musician consistently adhered to the ten principles set out in the guide, ensuring that her project successfully celebrated the resilience, resistance and healing of Indigenous communities in a culturally appropriate way.

The guide outlines current best practice and is an invaluable resource for anyone working with First Nations Australian artists or within the First Nations Australian arts and cultural sector. It is also a useful tool for anyone wishing to learn more and build knowledge about Indigenous cultural heritage in the arts and creative sectors in general.

The guide includes specific clauses for traditional knowledge and cultural expression in recording and other contracts, ensuring that consent is secured from any First Nations Australian musician or community involved and that royalties are shared with the relevant communities when an album, song or project is communally owned. A range of clauses and sample agreements for projects that relate to the use of traditional cultural expressions are available to Australian artists and art organizations from the Arts Law Centre of Australia.

WIPO's hands-on training for Indigenous peoples and local communities

WIPO has designed an intensive, hands-on training program for Indigenous peoples and local communities to protect their music, performances, art, designs and other traditional cultural expressions (TCEs).

The Organization's Creative Heritage Project comprises a cultural documentation and IP management training program that would assist communities to:

- create intellectual property (IP) rights in their cultural heritage (in the form of digital photographs, audiovisual material, sound recordings and databases);
- exercise control and make informed decisions on access and use by third parties; and
- enable communities, if they so wish, to draw income from the commercialization of their cultural assets in a way that corresponds to their values.

The program was piloted with the Maasai community and has two components: a hands-on technical training on how to record and document their cultural expressions; and training on intellectual property rights and their use.

The program also makes a number of useful resources available to the communities who wish to take part in the program, and others seeking to work with them. These include a collection of codes of practice, guidelines and best practices for the recording, digitization and dissemination of TCEs.

More information about the program is available at: www.wipo.int/tk/en/resources/training.html.



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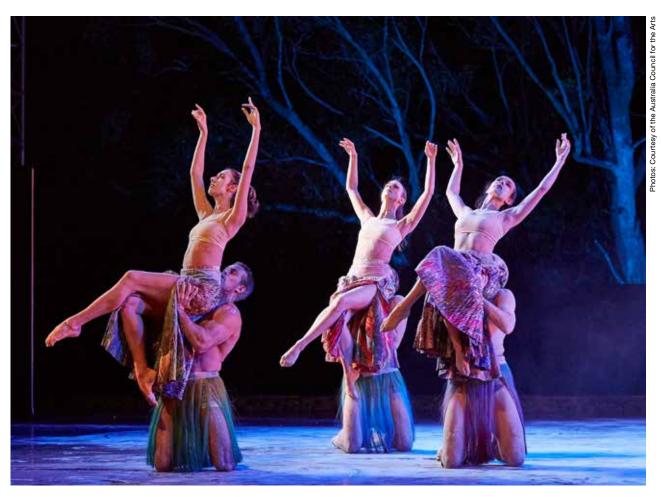


Installation (untitled) by Wiradjuri/Kamilaroi artist Jonathan Jones from the $9^{\rm th}$ Asia Pacific Triennial of Contemporary Art, Gallery of Modern Art, Brisbane, Australia.



"Safeguarding of Indigenous traditional knowledge and cultural expressions in a responsible way is crucial to ensuring that Indigenous cultural heritage is maintained."





Engagement with Indigenous Australian communities and their cultural heritage spans multiple art forms. Milnjiya, Milky Way - River of Stars (pictured) is a collaborative piece that uses contemporary ballet and opera to tell the Milky Way creation story of the Yolngu people, who live in north-eastern Arnhem Land in the Northern Territory of Australia.



The ten principles set out in the guide encompass Articles from the United Nations Declaration on the Rights of Indigenous Peoples. Article 31 of that Declaration, for example, specifically refers to the right for Indigenous peoples to maintain, promote, control and practice their traditional knowledge, traditional cultural expressions and genetic resources. And Article 18 refers to consent and consultation to be considered when an external party wants to use Indigenous cultural material and work with Indigenous communities.

The updated protocols are being used by the Australia Council for the Arts to inform our work, decision-making, research and promotion of cultural safety. Under our governing legislation, the Australia Council Act, we are mandated to provide support and advice to First Nations Australian artists and arts organizations. To deliver this, the Council has a First Nations arts strategy panel which provides strategic advice to our Aboriginal and Torres Strait Islander arts team.

The Australia Council funds Australian artists and arts organizations and specifically supports and advocates on behalf of First Nations Australian artists and arts organizations across all art forms. These art forms include First Nations arts, emerging and experimental arts, visual arts, literature, music, dance, theatre and community arts and cultural development in Australia. The updated guide will support Australia Council-funded activities that engage with Indigenous Australians, communities and their cultural heritage. It sets out a framework and methodology – from concept development to project delivery. Beyond these activities, the guide is relevant to anyone working with Indigenous Australian artists or in the Indigenous Australian arts sector, including:

- Indigenous and non-Indigenous artists;
- International organizations and artists;
- People working within related fields of Indigenous art form practice;
- Commonwealth and State/territory government agencies in Australia;
- · Local governments/councils;
- Industry agencies and peak organizations;
- Galleries, museums and arts centers;
- · Educational and training institutions; and
- Indigenous and targeted mainstream Australian media.

The work of the WIPO IGC, and the draft provisions that are under discussion, reflect issues raised by Indigenous representatives, including many Indigenous Australians. The updated Australia Council protocols reflect the customary practices of Indigenous Australia and may serve as a useful basis for guiding international discussions within the IGC. The guide refers to the IGC's on-going work and while not legally binding, it may offer valuable policy guidance for WIPO member states.

The new protocols, which also include a project checklist and useful templates, is available now from the Australia Council's website (www.australiacouncil. gov.au) and that of WIPO's Traditional Knowledge Division (www.wipo.int/tk/en/databases/creative_heritage/).

Turkmen inventors tackle water scarcity

By **R.A. Karliev**, IP attorney, Ashgabat, Turkmenistan

Turkmenistan's arid conditions mean that innovative water-saving technologies are essential for improving the country's agricultural capabilities.



Water covers over 70 percent of the earth's surface, yet the freshwater required to sustain agriculture, industrial and municipal services makes up just a fraction of the planet's water resources. That is why it is imperative to develop new ways to use existing supplies responsibly and also to search for new sources of freshwater.

In countries like Turkmenistan with large expanses of arid land, agricultural development is held back by high levels of soil salinity and acute shortages of freshwater. Most crops cannot tolerate saline soils. High levels of salinity can result in low yields or even crop failure. Scarcity of freshwater also inhibits efforts to claim new lands for agricultural production. In Turkmenistan, just 11.5 percent of the country's land surface is used for agricultural development. Only with the most efficient use water resources will it be possible to bring 20 percent of its territory into cultivation.

Up to 80 percent of the country's irrigated lands are in close proximity to saline groundwater, which lies between one and two meters below the surface. At this depth, soil becomes saline very quickly. Water rises through soil capillaries to the earth's surface and evaporates leaving concentrations of salt in and on the soil. This leads to losses in soil fertility.

Soil salinity also creates a favorable environment for moisture-loving weeds, insects and other pests. In Turkmenistan, these challenges are made all the more difficult by earthquakes, which are quite common. In an attempt to overcome these challenges, Turkmen inventors have come up with various ingenious solutions to lower groundwater levels, desalinate the land and secure alternative sources of freshwater.

About authors' certificates

Authors' certificates existed during the Soviet period. These certificates had the same legal effect as a patent. Unlike patents, inventions protected by authors' certificates were the property of the State and could be used by anyone, without the author's permission. The inventor or author received a small percentage of the annual revenues generated by the invention.

A COST-EFFECTIVE TOOL FOR SOIL DESALINIZATION

Inventors like Gennady Galifanov and Victor Vavilov observed that excess salt from clay bricks used for housebuilding formed an unsightly exterior crust on buildings – a process known as efflorescence – making it difficult to maintain the walls of a building. This same process of efflorescence occurs on land that lies above saline groundwater sources.

Intrigued by this process, Gennady Galifanov and Victor Vavilov found a way to convert this natural salinization process into a tool for desalinization. In so doing, they have developed various technological devices to extract salt from soil while at the same time capturing water for irrigation through a process of condensation. The technology, developed 30 years ago in 1988-1989, was protected with USSR author's certificates No. 1547789, No. 1634641, No. 1638110, No. 1654261, No. 1761681, which at the time had the same legal effect as a patent.

Unlike traditional land desalinization methods, these devices offer a cost-effective solution for removing fertilizer and pesticide residues from surface water. The desalinization process is 80 times cheaper than conventional methods and the cost of capturing water for irrigation is five times cheaper than those methods. The process also allows for the harvesting of up to 13 tons of dry salts and 800 cubic meters of freshwater per hectare.



Salt deposition in the Karakum desert, Turkmenistan. High levels of soil salinity presents significant challenges for agricultural production in Turkmenistan, greatly impacting soil fertility and crop yields.

"In Turkmenistan, just 11.5 percent of the country's land surface is used for agricultural development."

Various pilot projects have demonstrated the huge potential of these inventions for land reclamation. The technology is quite simple. On lands where groundwater lies between 1.3 and 2 meters below the surface, a trench chain excavator cuts slits (20 to 30 cm wide and 1 to 1.7 meters deep) every 10 to 20 meters. The bands of land between each slit are covered with mulch to reduce evaporation of surface moisture. With this technology moisture moves vertically through the soil capillaries and evaporates when it reaches the surface where the salt ore – which is practically free from impurities – is deposited.

The land desalinization mechanism shown in Figure 1 has since inspired a range of other technologies that both extract freshwater and harvest dry salts from saltwater. Unlike traditional desalinization plants, these technologies do not produce any environmentally harmful by-products. They are solar powered and can produce around 2,000 liters of freshwater per year, per square meter of land. Such output is more than double that of traditional plants.

→



In Turkmenistan, innovative irrigation technology to support efficient use of water resources is the key to bringing more land into production.



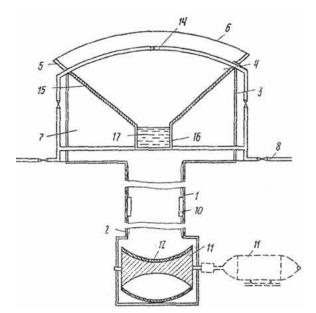


Figure 1: Unlike traditional desalinization methods, this eco-friendly device and others invented by Gennady Galifanov and Victor Vavilov offer cost-effective solutions for removing fertilizer and pesticide residues from surface water.

About our planet and water

Did you know:

- One cubic kilometer of cloud contains about 2,000 tons of water.
- Every year, 520 thousand cubic kilometers of water evaporate from the earth's surface and that the same amount precipitates. This is comparable to the volume of the Black Sea (492.6 thousand km³ of water).
- The moisture in the atmosphere changes 40 times a year, or every nine days on average.
- 70 percent of all atmospheric moisture stays within the first 3.5 kilometers of the earth's surface, with the first 5 kilometers containing 90 percent of the total water vapor.

Source: The World of Water by Vladimir Derpgolts

Production costs are also significantly lower than conventional operations. The technologies can be used in both stationary plants and mobile units and can treat water of any salt concentration to produce dry salts for the chemical industry. Unfortunately, to date, the inventors have been unable to secure the investment required to commercialize their inventions in Turkmenistan or elsewhere.

TECHNOLOGIES FOR OPTIMAL MANAGEMENT OF FRESHWATER

Ninety-nine percent of the root biomass of agricultural plants stays in the soil to a depth of 60 to 120 centimeters, from which they extract moisture and nutrients for their development. It follows, therefore, that if plants are to thrive, water from irrigation systems needs to penetrate the soil to these depths. However, water penetration beyond these depths can result in leaching soils of nutrients and wastage of freshwater.

To address this issue, Gennady Galifanov and Victor Vavilov have developed a range of irrigation signaling devices to ensure that irrigation systems optimize plant growth, while minimizing water loss. When the root layer is sufficiently moist, the device tells the operator to stop watering. When soil moisture falls to critical limits, the device signals the need to start watering again. The process repeats periodically as the crops grow. This ingenious device eliminates any loss of water and nutrients beyond the root zone and reduces the engineering drainage load.

Excess water is channeled beyond the irrigated area via a system of pipes that lie 2 to 2.5 meters below ground to create a closed drainage system. Alternatively, an open drainage system of excavated drainage channels with a depth of 3 to 4 meters may be used. Water that seeps away from the root layer through a closed drainage system is discharged into a network of open drains and then discharged through a network of larger drainage channels (collectors) into natural or artificial reservoirs (or depressions). Insofar as they prevent water logging and the salinization of irrigated lands, such drainage solutions allow for better management of freshwater resources and increase agricultural productivity through more efficient use of fertilizers and pesticides.

These devices have been tested successfully in the cotton fields of Turkmenistan and are protected in various countries in the region through a range of authors' certificates and patents, as follows: author's certificate No. 1680019, No. 1681772, No. 1743480, No. 1757533, No. 1787373, No. 1804751; Russian Federation patent No. 2050117, Eurasian patent No. 027647.

OPTIMIZING DEEP FILTRATION IRRIGATION CHANNELS

Up to 35 percent of freshwater is lost in deep filtration irrigation channels that lie in sandy soils and are lined with concrete slabs. The joints of these slabs are a point of weakness in these systems. Temperature variations often weaken and destroy the seals and thereby significantly reduce the filtration capacity of the channels.

To overcome the problem, Gennady Galifanov, Shabanova Larisa, Ata Annaniyazov and others have developed joints that can withstand thermal and biological decay. Once again, the inventors sought to protect their innovative solution with IP rights in

the form of author's certificates and patents – author's certificate No. 1541339, No. 1708933, No. 1715941, No. 1715942, No. 1723236, No. 1728339, No. 1730340 and No. 1788130, and Russian Federation patent number No. 2012707, No. 2029821 and No. 2031194.

With the exception of Eurasian Patent No. 027647, all of the aforementioned IP rights are in the public domain. A detailed description of these technologies is available online. Alternatively, the inventors will provide copies of author's certificates and patent documents on request.

The inventors want their technologies to be used for the benefit of society. They hope that others will recognize the value of their achievements and build on them to develop new patentable technologies that can further improve the cost-effectiveness and efficiency of freshwater resource management in Central and Eastern Europe and beyond.

Unfortunately, for reasons beyond their control, the inventors of these technologies have not been able to take their cost-effective and environmentally friendly solutions beyond successful experimentation and would welcome an opportunity to explore commercial partnership opportunities. Driven by the desire to help improve the ecological state of irrigated lands in arid zones, they stand ready to share their knowledge, experience and advice on the practical implementation of these environmentally friendly water-saving technologies.

The Irish playwright George Bernard Shaw once said, "if you have one apple and I have one apple, and we exchange these apples, then each of us will have one apple. But if you have an idea and I have an idea and we will exchange these ideas, then each of us will have two ideas". That is the value of ideas and that is why we need to encourage opportunities for scientists, inventors and policymakers to exchange their ideas to pave the way for new technological advances.

Our ability to extract moisture from the atmosphere is still in its infancy. However, with the ingenuity of inventors and scientists, and a policy environment that supports them and the commercialization of their outputs, it will be possible to develop efficient and inexpensive ways to mitigate and even eliminate water scarcity and to find other eco-friendly ways to harness nature's vast resources.

The path to protection – good trademark strategies start at the beginning

By **Kathryn Park**, Strategic Trademark Consulting, formerly General Counsel for Brand Management, GE, Connecticut, USA

"Legal guidance is critical to a successful and smooth product launch."

Introducing a new brand is a costly creative enterprise that will require taking some calculated risks. Often, the lawyer stands in the background. Attention is generally focused on the branding consultants, the surveys and focus groups that provide feedback on the branding options under consideration, the marketing team that is creating the brand story and a promotional blitz to herald its launch, and, of course, the CEO, who will unveil the brand. But do not be fooled. Legal guidance is critical to a successful and smooth product launch.

A great deal has been written about how to protect a trademark. One of the most important steps in establishing a protectible brand is trademark clearance. But trademark clearance initiatives can differ. Several strategic questions need to be addressed to determine how to conduct an effective search. Whether you are in-house counsel or advising your client as outside counsel, the following tips offer a guide.

ESTABLISH TIMELINES AND BUDGETS

Educate your client about the time and costs associated with proper trademark clearance and establish a budget. Once the business plans to proceed have been approved, marketing teams typically want an immediate launch. So, it is important for counsel to explain why this may not be possible; that time is required to clear the trademark and that while things can be expedited, doing so involves a greater outlay of resources. A rapid launch may be hard to accomplish if a multinational search is required given the vagaries of how counsel work in different jurisdictions and the potential need for follow-up investigations to assess potential risks. It goes without saying that the earlier the lawyer is involved, the better are the chances of securing rapid trademark clearance. As a lawyer, you can help troubleshoot preliminary searches to weed out potentially unusable and unregistrable marks.

SELECT WHERE TO SEARCH

Selecting where to conduct searches to clear a trademark for use can be more complex than it might first appear. Many brands are intended for use in multiple jurisdictions, but there are few, if any, companies that will underwrite true global trademark searching. In practice, companies opt to conduct searches only in the most important markets. In making this compromise, they reason that if a mark is available in those markets, it is unlikely to face serious challenges elsewhere. However, identifying those critical markets is more than just sizing up the largest potential customer bases. Those markets matter, of course, but it is also important to take into account the country in which your client's major competitor is based and where it is sourcing goods. For example, while a search of the European Union Community Trademark database gives a snapshot of the European playing field, if your client's competitor is a company based in Germany, a search of the database of the German Trademark Office should also be considered.

You also need to consider countries in which you will seek recordation of your client's trademark with national customs authorities. They are key to border enforcement and protection against counterfeits. These documents are typically based on a valid and subsisting trademark registration in the country in question. Customs can stop the export (and import) of counterfeit products. If the mark your client is considering will identify a product that is likely to be copied illicitly, countries at higher risk of manufacturing and exporting counterfeited goods should also be included in the search strategy.

DETERMINE THE CLASSES TO SEARCH

While trademarks are searched according to the class or classes of goods and services for which the proposed mark will be used, a broader look at related goods and services often offers a strategic advantage. A prior user of the mark in a related class of goods or services may have expanded its operations to those in the class of interest to your client, but may not yet have sought registration for the relevant goods or services. Or your client may decide to expand his or her usage of the trademark to different classes of goods in the future. A good knowledge of the industry in which the mark is to be used is key to making this assessment.

DESCRIPTIVE MARKS - ENHANCED RISKS IN CLEARANCE

Trademark lawyers know that the strongest marks – those that are coined (e.g. Pepsi® or Oreo®) or arbitrary (e.g. Apple® or Amazon®) and that do not indicate the product or service that is being offered in any way – are the easiest to clear. And post-registration, they are the easiest to protect.

"Selecting where to conduct searches to clear a trademark for use can be more complex than it might first appear."

However, for many companies, the countervailing wisdom mandates that a trademark should give the buyer some indication of what he or she is purchasing. The more descriptive a mark the harder it is to clear. Registries are crowded with similar marks requiring the parsing of often small differences. When elements of a mark are commonly used in, or are descriptive of, a particular field, the lawyer needs to weigh the number of such marks; whether they are being used by another company for the same or overlapping products and are closely similar to the proposed mark; and, whether any of the prior registered marks are sufficiently well-known for their owner to argue that they qualify for enhanced protection.

An additional step in clearing a descriptive mark involves closely examining the goods and services identified in the registrations and applications of prior users. In the United States, where a trademark identification must delineate with specificity the actual goods and/or services the mark will be used to identify, it may be possible to use and register a similar mark if the goods are sufficiently distinct. But in many other jurisdictions where more general identifications and even class headings will suffice, the mark may not be registrable absent a consent or co-existence agreement.

CONSENT AND CO-EXISTENCE AGREEMENTS – RISKS AND REWARDS

When a search reveals a prior user or registrant of an identical or nearly identical mark, it is hard to convey the bad news. An agreement with that other party, whereby it consents to the use of the mark, or agrees to co-exist with the new mark provided certain undertakings are met, can save the day. When seeking such an agreement, the first thing to consider is the likelihood the prior registrant will entertain the request and the second is the willingness of your client to pay for such consent. Unless your client is prepared to walk away from its proposed mark if permission is not granted, or if an amount of compensation for the permission cannot be agreed upon, asking for consent is risky. Seeking permission tacitly acknowledges the validity of the prior user's rights. Thus, proceeding to use a mark when consent has been sought but not given may give rise to a claim of willful infringement, which can lead to enhanced damages among other consequences.

You also need to consider whether such an agreement will be recognized by the trademark office(s) in the country in which registration is sought. Not all offices will automatically accept such an agreement. Even



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countries that do may critically examine the agreement and may refuse to accept it if they deem its terms do not adequately prevent confusion on the part of consumers. Experienced counsel in the region can provide valuable guidance on this point.

A third consideration is that a consent to registration, or a co-existence agreement as to the use of a mark, often only addresses current usage. Markets evolve, and an agreement that does not anticipate future changes may present serious issues for business expansion, and may give rise to expensive multi-jurisdictional litigation to resolve the parties' respective rights.

LEAVEN RELIANCE ON SEARCH FIRMS AND TECHNOLOGY WITH SOUND LEGAL JUDGMENT

Today, there are many great services that promise and deliver faster comprehensive global trademark searches. Artificial intelligence has greatly enhanced the speed at which search results can be compiled and delivered. However, robust legal analysis and sound judgment still need to be brought to search results generated in this way. Often, depending on the nature of the product and its market, the sophistication – or lack thereof – of potential customers, and the industry practice, a mark found to be high risk in a search report may be acceptable to you and your client in light of other factors. Similarly, a mark that is "cleared" by a search report may actually pose a risk given facts that are known to your client's business.

BEWARE OF THE UNAUTHORIZED PRACTICE OF LAW

Know your limitations when giving an opinion. Today, it is easier than ever to access information about trademarks that are registered or in use anywhere in the world. But unless you are licensed to practice in the jurisdiction at issue, be wary about giving a legal opinion about the availability of a mark. First, what might present a problem in your home country may be viewed differently elsewhere. Second, a trademark professional who understands how the laws are applied within a given country or region can better advise a client as to the risks that may arise in those locations. And third, if you are not licensed to do so, at least in some countries, you could be accused of the unauthorized practice of law.

KEEP UP WITH MARKET TRENDS

Be aware of trends in the industry in which the mark may be used. Ask who your client's competitors are and look at their marks when developing your search strategy. Many branding companies capitalize on industry trends when establishing new marks for their clients. These trends may be advantageous to a company that is looking for a new brand that seamlessly enters the vernacular, but it also means that other companies may be considering similar marks. Adopting hyper trendy marks is risky, not least because of the time lapse between the filing of a trademark application and its entry (and searchability) onto a trademark register and the time frames for registration set out in the Paris Convention for the Protection of Industrial Property.

Further, consider the risk of adopting a term that subsequently may be determined to be descriptive. When companies first started filing trademark applications with the term "smart" for connected devices, trademark offices granted registrations with no disclaimer requirements. But as the term has come to be understood by trademark registrars to signify a capability, it is no longer a protectible element of a trademark registration. Even companies that had acquired trademark rights in "smart" marks have been unable to enforce them against later entrants to the "smart" field of marks.

USE COMMON SENSE THROUGHOUT THE PROCESS

Clearing a trademark also requires common sense. Make sure you understand what an unfamiliar term means. Is the trademark clear (i.e. available) because it is a word that has a meaning that most companies would not want associated with their products? Second, how does the mark translate if it is to be used in multiple countries? Does a mark that is desirable in one region convey a negative image of the product or offend sensibilities in another region? Surprisingly, marketing teams are not always aware of these issues. A good lawyer can make such analyses part of her practice as legal issues can arise from inadvertent brand messages.





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