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Artificial intelligence: the new electricity

By **Catherine Jewell**,
Publications Division, WIPO



"For AI to reach its full potential, governments should be thoughtful about protecting citizens, while also creating room for the positive innovation that AI can bring," says Andrew Ng.

The British-born computer scientist, Andrew Ng, is a leading thinker on artificial intelligence (AI) and has been a pioneer in its application for many years. He founded the Google Brain project, served as Chief Scientist at Baidu, and co-founded the online learning platform, Coursera. Today, in addition to his academic work at Stanford University (USA), Mr. Ng is heading up two startups: Landing AI, which works with enterprises to adopt AI, and deeplearning.ai, an AI education company. Mr. Ng recently spoke with *WIPO Magazine* about the

transformative power of AI, and the measures required to ensure that AI benefits everyone.

Why is AI attracting so much attention?

AI is the new electricity. It will transform every industry and create huge economic value. Technology like supervised learning is automation on steroids. It is very good at automating tasks and will have an impact on every sector – from healthcare to manufacturing, logistics and retail.

“AI is the new electricity. It has the potential to transform every industry and to create huge economic value.”

When you talk about AI, what exactly do you mean?

Much of the economic value generated by AI today is driven by “supervised learning,” which is really good at figuring out simple input–output, or A to B responses, and mapping them. When you join up lots of input–output pairs, this is called deep learning. Deep learning is really good at image recognition, speech recognition and natural language processing. Today, the technology’s most lucrative application is probably determining whether consumers will click on an advertisement. Large online platforms are using this technology to create enormous economic value.

But supervised learning and other AI techniques can do much more. For example, we can input a satellite image of an area, and generate an output that tells us whether it is poverty-stricken and needs more resources. We can input data from a city, and generate an output that identifies areas with the greatest risk of gas leaks. Or we can build more accurate climate change models. There are huge untapped AI opportunities in sectors like agriculture, healthcare and manufacturing.

Earlier this year, WIPO launched the first report in the WIPO Technology Trends Series on AI. Why is this important?

The *WIPO Technology Trends Report* offers a clearer understanding of growth trends in AI, and who is using this technology and in which parts of the world. For example, it shows that until now, only a small number of regions and organizations have focused on AI technology. The report also reveals that deep learning is the biggest and fastest growing technique in AI. While great progress has been made with deep learning in terms of collecting more data and creating more powerful computers to make it work, we still have a long way to go. Effective “unsupervised learning” – learning without labelled data – will be very important.

So are there any downsides to AI?

AI will have an impact on some jobs. To ensure that AI reaches its full potential, drives tremendous global economic growth, and that the fruits of AI are shared fairly, we need government, educators and businesses to work together.

What role can governments play in ensuring AI delivers on its promise?

Governments must invest heavily in education to give citizens a path to success in this AI-powered future. That doesn’t mean simply asking people to work harder, it means asking them to study harder. We need to give people an opportunity to learn the skills they need for an AI-powered society. Today, society needs more AI engineers, but it also needs more healthcare workers,

Photo: Alamy Stock Photo / © Hero Images Inc.



“Most of the inventions and most of the value to be created through AI have not yet been realized,” notes Andrew Ng. “My advice to government leaders of developing nations is to focus on their strengths. For example, if your country is a large coffee exporter, work on AI technologies to optimize how you farm, process and export coffee beans. You have huge opportunities in doing that for your local economy.”

“If governments, universities and corporations work together to encourage education and innovation, then all nations and all people have an almost unlimited opportunity to be part of this new AI economy.”

caregivers and teachers. It also needs more wind turbine technicians. There are many important roles to fill and we need to help individuals step into those roles so they can participate in the exciting AI future that we are building. At a time when AI is disrupting many jobs and industries, governments have an important role to play in helping individuals succeed, contribute to and reap the rewards of this AI-powered economy.

Do governments need to regulate AI?

Thoughtful regulation will be important. For AI to reach its full potential, governments should be thoughtful about protecting citizens, while also creating room for the positive innovation that AI can bring. Take for example, the US start-up, Zipline that uses drones – computer controlled airplanes – to deliver blood. One of the main reasons why Zipline launched its drone service in Rwanda was because of the regulatory clarity that exists in Rwanda. What we are seeing over time is that governments with more thoughtful policies that allow AI-innovations into their economies will create value for their citizens more rapidly and thereby help grow their economies.

What role can educators play?

We need to build a society of life-long learners where we constantly update our skills and knowledge. The availability of online digital learning tools and content, such as those offered by Coursera, can now let many more people gain knowledge much more inexpensively than was possible with traditional analogue-based models of instruction. At Coursera, 45 percent of learners come from developing economies. Many organizations are working hard to ensure they can deliver digital content to learners around the world.

In addition to pure online digital models of education, blended learning models show great promise. With blended learning, some content is delivered online with classroom time reserved for students to participate in much richer discussions with professors or their peers. If you let a computer do what it does best – record and deliver multiple types of content – it is possible to free up instructors' time to deliver education in a way that is much more inexpensive and scalable than traditional methods of instruction. I hope education institutions worldwide will embrace ideas like blended learning and the flipped classroom because the world needs us to deliver high-quality education to many more people.

About WIPO Technology Trends 2019 – Artificial Intelligence

The report provides a common information base on AI for policy and decision makers in government, business and others who are grappling with AI, which promises to transform many areas of economic, social and cultural activity.

Among the report's findings:

- Since the emergence of AI in the 1950s up to the end of 2016, innovators and researchers filed applications for nearly 340,000 AI-related inventions and published over 1.6 million scientific publications.
- AI-related patenting is growing rapidly, with more than half of the identified inventions published since 2013.
- Companies represent 26 out of the top 30 AI patent applicants. Universities and public research organizations account for the remaining four.
- International Business Machines Corp. (IBM), (USA), had the largest portfolio of AI patent applications at the end of 2016, followed by Microsoft Corp., (USA), Toshiba Corp., (Japan), the Samsung Group (Republic of Korea) and NEC Group (Japan).
- Chinese Organizations account for three of the four academic players featuring in the top 30 patent applicants, with the Chinese Academy of Sciences ranked 17.
- Machine learning is the dominant AI technique disclosed in patents, included in more than one-third of all identified inventions.
- Deep learning, a machine-learning technique that includes speech recognition systems, is the fastest growing AI technique.
- Computer vision, which includes image recognition, is the most popular AI application, mentioned in 49 percent of all AI-related patents.
- The transportation sector, including autonomous vehicles, is among the fields with the fastest rates of AI-related growth.
- Significant growth rates were also registered in telecommunications, life and medical sciences (esp. robotic surgery and drug personalization) and personal devices, computing and human-computer interaction.

The report is available at: www.wipo.int/tech_trends/en/artificial_intelligence/

And the corporate sector?

For many years, developing countries have been asked to climb a predictable ladder (e.g. starting with textiles, moving up to low-end manufacturing and then to high-end manufacturing and eventually manufacturing high-end electronics). One of the problems with AI is that we may be automating away the lower rungs of this ladder. But developing economies still need a way to climb the ladder so they can educate their citizens and enable them to move to higher value jobs and grow their economies. With corporations, governments and universities working together I hope we can replace the ladder with a trampoline and give people the education they need to take advantage of the opportunities that AI offers.

What advice do you have for policymakers in developing countries?

Don't re-invent the wheel. For example, I would not recommend that a small country builds the next great search engine. We already have multiple great search engines. Most of the inventions and most of the value to be created through AI have not yet been realized. There is still a huge opportunity for everyone, including developing economies, to own a piece of the AI pie. My advice to government leaders of developing nations is to focus on their strengths. For example, if you have a strong mining industry, build AI solutions for mining, because your country will have huge advantages in finding AI solutions for mining compared to a Silicon Valley company. Or if your country is a large coffee exporter, work on AI technologies to optimize how you farm, process and export coffee beans. Again, you have huge advantages in doing that for your local economy. Markets are increasingly global and with AI and an Internet connection, I think it is possible for almost everyone to improve their core industries and provide better products to the world.

Is leadership important?

In moments of technological disruption, leadership matters. Here in the United States we once trusted our government to put a man on the moon. And we did it. The AI world is immature, even the leading cities for AI – Silicon Valley (USA) and Beijing (People's Republic of China) – do not have mature AI ecosystems because the field is just too new. So if governments, universities and corporations work together to encourage education and innovation, all nations and all people have an opportunity to be part of this new AI economy.

“We need to give people an opportunity to learn the skills necessary for an AI-powered society.”

Harnessing the benefits of IP for development

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“Climate change is a threat to our very existence and calls for accelerated innovation to mitigate greenhouse emissions and support the development of green technologies,” says Ambassador Mohamed.

In May 2019, WIPO hosted an international conference to explore, in practical terms, how developing countries can benefit from the intellectual property (IP) system in a rapidly evolving and globalized world. The International Conference on Intellectual Property and Development took place on May 20, 2019, at WIPO's Geneva headquarters. The following keynote address by **Ambassador Amina C. Mohamed**, Cabinet Secretary of the Ministry of Sports, Culture and Heritage of the Republic of Kenya, highlights the opportunities and challenges for developing countries in embracing the IP system to promote their social and economic objectives and ambitions.

THE GROWING IMPORTANCE OF IP

Intellectual property is a subject of increasing global importance. Policymakers have long recognized the need for IP rights to protect the inventions and creative works of individuals and firms. In an age when knowledge capital, the product of the intellect, has become an increasingly important basis of social and economic progress, IP has acquired unprecedented importance, and issues relating to the generation, evaluation, protection, and exploitation of IP systems have become crucial. In this context, the role of the World Intellectual Property Organization (WIPO) in supporting the creation of a balanced and robust international IP rights regime that fosters innovation is critical.

WIPO has done outstanding work in balancing the delicate interests of all – developing and developed countries, the private sector, civil society and academia – and creating an environment that incentivizes private investment in innovation. I have no illusions about the complex processes involved in the development of international instruments for the protection of IP, having actively taken part in that process in the past.

RISING GLOBAL DEMAND FOR IP RIGHTS

As the Director General observed in his address to the WIPO Assemblies in 2018, “3.1 million patent applications, 7 million trademark applications and 963,000 design applications were filed in IP offices around the world in 2016. These are prodigious numbers and represent increases over the last 20 years of 189 percent, 253 percent and 388 percent, respectively.”

WIPO's abiding commitment to its core mandate has made this progress possible. It is always refreshing to see how much WIPO is doing to build capacity, to provide technical assistance and to support the establishment of IP offices across the developing world. It is critically important to enrich this cooperation further, given the evolution of technology and commercialization of traditional knowledge and beneficial community practices. Resources devoted to technical assistance and capacity building need to be enhanced and directed towards developing countries to create a seamless global IP regime.

“The tremendous increase in IP applications witnessed in recent years reflects the growing importance of technology and innovation in the global economy and our daily lives.”

“The complexity of the architecture of innovation, delivery systems and value chains requires creative approaches to ensure [all] people benefit from the IP system,” says Ambassador Mohammed.



Photo: Getty Images / E. / © zellkossantrac

The tremendous increase in IP applications witnessed in recent years reflects the growing importance of technology and innovation in the global economy and our daily lives. Their importance will continue to grow as humanity responds to the critical global challenges of our time: climate change, global health and food security.

Climate change is a threat to our very existence and calls for accelerated innovation to mitigate greenhouse emissions and support the development of green technologies.

In health, we face the massive challenges of antimicrobial resistance, new diseases, neglected tropical diseases, and other threats, which require the development of new drugs and vaccines and new approaches to the delivery of health services and products.

With regard to food security, experts estimate that a 40 percent increase in the world’s population will require a 70 percent increase in agricultural productivity by 2050. This underlines the need for innovation in biotechnology and other attendant technologies, such as drones and robotics, to support sustainable agriculture.

About WIPO Re:Search

WIPO Re: Search catalyzes the development of new medicines and technologies in the fight against neglected tropical diseases (NTDs), malaria and tuberculosis. Through innovative research partnerships and research and development collaborations WIPO Re:Search makes IP available to researchers who need it.

The mission of WIPO Re:Search is to improve global health through innovation that mobilizes IP and the power of private and public sector collaborations.

Members of WIPO Re:Search include some of the world’s largest pharmaceutical companies, prestigious academic institutions and product development partnerships.

More information is available at: www.wipo.int/research/en/

About Pat-INFORMED

The Patent Information Initiative for Medicines (Pat-INFORMED) provides a service to the global health community, particularly those involved in procurement of medicines, by facilitating easy access to patent information.

Pat-INFORMED is an initiative of WIPO, the International Federation of Pharmaceutical Manufacturers and Associations (IFPMA) and 20 leading, research based biopharmaceutical companies.

Anyone can search the Pat-INFORMED database simply by entering a medicine's INN (International Nonproprietary Name) to obtain relevant information about its patent status in a particular country.

Pat-INFORMED is unique in that it provides a facility for procurement agencies to make follow-up inquiries directly with participating companies.

Pat-INFORMED currently provides information on key patents for all small-molecule products submitted by participants in the Initiative. It covers HIV/AIDS, cardiovascular diseases, diabetes, hepatitis C, oncology, respiratory conditions, and all products on the WHO Essential Medicines List that are not within these six areas.

More information is available at: www.wipo.int/pat-informed/en/

CREATIVE THINKING REQUIRED TO ADVANCE THE GLOBAL AGENDA

While innovation has the proven potential to tackle these global challenges, the key concern of market failure remains. At the end of the day, innovations are profit driven. Individual or corporate innovators will only commit resources when they can be sure that their investments and the returns on those investments are protected. These factors continue to pose significant challenges to advancing the global agenda. In the health sector, for example, we have witnessed situations where lifesaving drugs are not available to those in need because they cannot afford them. We know that resources for research and development on some tropical diseases have not been available because the populations affected are too poor to guarantee good returns.

These scenarios raise the critical issue of how people who are excluded from the advantages of innovation can benefit from the IP system. What can and needs to be done to make the cycle of product discovery, development, and delivery responsive to the needs of the people who require these innovations without compromising the interests of the innovators? These are extremely important questions.

Within the health sector, the shift from a market-based innovation system to one driven by need and based on public-private partnerships (or international funding mechanisms, such as the Global Fund for AIDS) and underpinned by a strong IP system offers a way forward. Under these arrangements, needs are identified by public or global entities, which then bring partnerships and collaborations into play.

The same challenge is present in the other key areas for which innovation is required, namely, climate change and food security. For climate change, we need to address the challenges of ensuring the rapid diffusion of green technologies, such as solar technology, to all parts of the world. And in agriculture, key issues include whether the data gathered by agricultural drones and robots are patentable, and if so, how such protection affects their diffusion and use. In the field of biotechnology, there are also valid concerns about whether current IP rights regimes are adequate to address the use of nanotechnology, which is being deployed more and more in healthcare and other systems.

The complexity of the architecture of innovation, delivery systems and value chains requires creative approaches to ensure people benefit from the IP system. At the core of these creative approaches lie partnerships that bring together governments, the private sector, civil society, the United Nations system and other actors to mobilize the required resources.

WIPO, the World Health Organization and the World Trade Organization have shown great leadership in this regard. In particular, I thank WIPO for the WIPO Research (see box) and Pat-INFORMED (see box) initiatives, which facilitate the sharing of IP and scientific data across the health sector.

THE POTENTIAL BENEFITS OF PROTECTING TRADITIONAL KNOWLEDGE AND CULTURE

The question about how the IP system can benefit holders of traditional knowledge, traditional cultural expressions, and genetic resources remains unanswered. To date, traditionally accumulated skills or knowledge relating to plants and animals on the one hand; and traditional cultural expressions, such as rituals, narratives, poems, images, designs, clothing, fabrics, music or dance, on the other hand, remain at risk of misappropriation and commercialization by unauthorized third parties with no benefits accruing to the indigenous communities responsible for developing them.

The need to protect this knowledge and these cultural expressions is acknowledged, and discussions on their protection have been ongoing since 2000. The result has been a wide range of agreements, laws and conventions, which have had limited impact beyond the jurisdictions of those sponsoring them.

Beyond the Convention on Biological Diversity, the International Treaty on Plant Genetic Resources for Food and Agriculture, and the Nagoya Protocol, no comprehensive international IP mechanism to protect these assets exists, as yet.

The whole world stands to gain from effective governance of this field of knowledge and culture; in particular, in relation to the generation of new products for nutrition, personal care and medicine, but also in relation to heritage-based cultural and creative industries.

In Kenya, for example, we are undertaking an exciting scientific study to validate the ethno-botanical knowledge of a traditional local plant, long used by local communities as a natural contraceptive. Our aim is to develop an improved natural contraceptive, which will be of enormous benefit to women around the world who are facing serious threats to their reproductive health.

We appreciate progress made towards ensuring that traditional knowledge, traditional cultural expressions, and genetic resources benefit from the IP system. And we hope that all parties involved reach agreement on outstanding issues to ensure that indigenous communities can benefit as well.

LEVERAGING OPPORTUNITIES IN CULTURE AND SPORTS WITH IP

IP systems promote and sustain creativity by ensuring inventors and creators benefit from their creativity and talent. The creative industries contribute significantly to world trade and the global economy. The value of the global market for creative goods doubled from USD 208 billion in 2002 to USD 509 billion in 2015.

I am confident that, as IP rights continue to be reinforced, this trend will continue – especially in the developing world, where IP rights in the arts are yet to be adequately exploited and enforced.

This also applies to sports, a sector worth more than 3 percent of world trade. Sports broadcasting rights, image rights, branding and advertising contribute significantly to the value of the sports industry.

The protection and commercialization of related rights in the arts and sports sectors offer an immense economic opportunity for millions of young people in the developing world who are seeking gainful employment. The protection and commercialization of

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Ambassador Mohammed observes that many developing countries now appreciate the value of IP right in creativity, and that there is "widespread realization at the level of government that mechanisms need to be put in place to spur the use of IP rights."

sports image rights of well-known teams and sports persons in the developed world are inspiring examples of how IP rights can benefit sportsmen and women in other countries.

While enormous sports talent abounds in all regions, significant discrepancies exist in the ability of athletes to harness the value of their IP rights. Kenya and Ethiopia, for example, are famed for producing world class athletes – particularly, long-distance runners. However, these top athletes are not leveraging the IP system adequately.

Eliud Kipchoge, the current marathon world record holder and winner of the 2019 London Marathon, exemplifies great personal achievement, but does not benefit as much as he should from his sports image rights. His situation contrasts sharply with that of other top-class sports personalities, such as Cristiano Ronaldo, a top footballer, whose earnings are boosted significantly by the exploitation of his sports image rights.

A number of factors may account for this contrasting situation, but the role of IP rights in the promotion of the sports and creative sectors is key. In Kenya, as in many developing countries, appreciation of the value of IP rights in creativity, in general, and sports, in particular, is fast evolving. There is now widespread realization at the level of government that mechanisms need to be put in place to spur the use of IP rights.

EMERGING CHALLENGES AND OPPORTUNITIES

As IP systems continue to evolve in response to the changing global environment, considerable challenges and opportunities are emerging. These include:

First, the rapid emergence of disruptive technologies and the enormous impact they are having on existing IP regimes. These technologies present unique challenges for policy formulation and enforcement. For instance, the ability of creators to enforce their digital rights is a significant challenge at a time when Internet radio operates in a largely unregulated space. Coupled with this, there are huge differences in the technological capacity of different regions. This has important implications in terms of crafting effective development policies and building effective IP administration and governance systems.

Second, IP is increasingly global, yet IP systems remain largely national or regionally based. This poses a major challenge because IP rights granted in one jurisdiction may not be applicable elsewhere. This is not good for innovation, creativity or business. More coherence in this area is required.

Third, we need to recognize that, whereas weak patent protection can lead to suboptimal innovation, patent rights that are too strong make successive innovative work more costly. Similarly, ambiguous or broad IP protection regimes are unsupportive of growth, especially in relation to software patents.

Finally, although the world benefits from the work of women inventors, designers and artists, the gender gap in access to and use of IP rights remains a significant challenge. The gender gap matters because gender equality is a human right, and we are all better off when women and girls are empowered to make their full contribution to innovation and creativity. Data from WIPO show that less than one-third of all international patent applications filed in 2015 included women inventors. While a significant improvement on previous years, it is imperative that efforts are re-doubled to close this gender gap.

I am confident the ideas generated in this Conference will help strengthen the IP system for the benefit of the global community as a whole.

A person wearing a white t-shirt and dark blue pants is kneeling on a concrete floor, painting a large abstract artwork on a white canvas. The artwork features vibrant blue, red, and purple colors. A paint can is visible on the floor near the canvas. The background is a blurred studio setting with wooden beams and a ladder.

Copyright and the currency of creativity: beyond income*

By Alexander Cuntz, Economics
and Statistics Division, WIPO

*For more information see *Creators' income situation in the digital age* and *Unpacking predictors of income and income satisfaction for artists*. Views expressed here are those of the author, and do not necessarily reflect the views of WIPO or its member states.



New research from WIPO shows that creators engage in creativity for a wide range of reasons and are not driven by income alone. The research also explores the implications of this for copyright policy and public funding of the arts.

New research by WIPO shows that a wide range of factors, and not income alone, motivates creators to engage in creative activity and explores what this means for copyright policy and public funding of the arts.

Legal scholars worry about the increasing disconnect between the formal exercise of rights conferred by copyright law and the underlying economic purpose of copyright law, which is to provide the incentives to create and distribute works. Much of the conversation surrounding the effects of copyright policy focuses on monetary incentives and how well such incentives guide the allocation of resources around creative expressions and works. However, these debates fail to recognize that artists' motivations are wide-ranging and often driven by non-monetary considerations. In this context, copyright law as it is may not achieve its full potential as a mechanism to generate incentives for creativity. Why? Because the motivators that drive creators are not reflected adequately in current copyright law and practice. In fact, a mismatch may exist among the factors that motivate creators, how they behave, and the incentives certain elements of copyright law provide.

MOTIVATING FACTORS FOR CREATIVE ACTIVITY

WIPO's research points in this direction. The study – *Unpacking predictors of income and income satisfaction for artists* – builds on unique survey data for current artists working in the United States. It shows that motivations other than income predict a non-trivial fraction of artists' income satisfaction, and, arguably, generate substantial creative activity.

More specifically, the WIPO study provides empirical evidence that reputational rewards and returns from altruistic behavior are important sources of artists' satisfaction. For example, prizes and grants generate appreciation and recognition for artistic work that exceed satisfaction derived from transferring money and annuities (income/prize money alone). However, there are notable trade-offs. For instance, while altruistic behavior such as personal time spent practicing and performing arts in public makes artists more satisfied, such a "give-away culture" also decreases their income from commercial activities. Moreover, the evidence on "procedural utility" as another source of motivation – in other words, the satisfaction that artists derive from working in the arts and "immersing" themselves in creative processes – is less clear-cut than one would have expected from previous economic research.

These findings indicate that artists have different concepts and criteria when it comes to job satisfaction and may derive value from their work in a variety of ways aside from income. This is in line with findings from previous research, which shows that artists are much more satisfied with their jobs than other workers with similar professional and occupational standing. The WIPO study, however, attempts to identify the specific sources of motivation for artists that copyright law may also want to address and cultivate. One caveat to this research, however, is that we do not know whether the current legal system encourages or lowers artists' satisfaction and their levels of creativity. This might be an area for future research.

IMPLICATIONS FOR COPYRIGHT POLICY

What do these findings mean for copyright policy and public funding of the arts?

When determining intervention goals and assessing their impact, policy makers may want to consider all relevant sources of motivation that nurture creativity so that society benefits from its full potential. At minimum, policies may want to account for the side effects that a single policy focus on monetary incentives entails.

Many debates on reforming copyright frameworks in the digital age, however, put strong emphasis on balancing rights with monetary incentives. This is the case, for example, with the new European Copyright Directive, which attempts, among other things, to improve the bargaining position and remuneration of authors.

In concrete terms, then, which elements of copyright law deserve more attention and why?

First, legal mechanisms affect the way works can be attributed to artists. Attribution ensures they are recognized for their work, which in turn helps them build artists reputation and gain recognition from their peers. Such peer recognition is a source of satisfaction. For example, certain jurisdictions grant "unwaivable" moral rights, which link an author to their work. These rights are perpetual and non-transferable. In these jurisdictions, over time, the contribution authors make is likely to remain more visible to peers, for instance when referenced as the source of follow-on creativity. Attribution and the value of moral rights to creators have been given too little attention in previous research. However, the research that has been undertaken in this area, does call into question whether moral rights should differ across national copyright systems, which is currently the case.



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“A mismatch may exist among the factors that motivate creators, how they behave, and the incentives certain elements of copyright laws provide.”



Photo: Getty Images / Veitta / © elkor

When determining intervention goals and assessing their impact, policy makers may want to consider all relevant sources of motivation that nurture creativity so that society benefits from its full potential.



“What we need now is more discussion on the mechanisms enshrined in copyright law; a discussion that goes beyond income and income effects on creativity.”



Photo: iStock / Getty Images Plus / © agsandrew

Second, income-focused reforms may effectively miss policy goals. Previous research shows that artists often hold multiple jobs to cross-subsidize lower paying art jobs and that their preferences for practicing art (once their basic needs are covered) can render public funding in the arts ineffective. This was evident when public subsidies for Dutch visual artists were introduced in the late 1990s. While the subsidies brought about a reduction in the time artists devoted to higher-paying non-art-related jobs and led to some artists devoting more hours to existing art jobs as well as some new artists entering the profession, the effect of the policy was to lower wages in the arts due to stronger competition among artists. While its goal was to alleviate the financial distress experienced by artists, in practice, the policy failed to do so.

Third, the wave of new content from amateurs and creative users in the digital age, and new forms of digital cultural participation are linked intimately to sources of “intrinsic” motivation. Next to lower (digital) production costs, altruistic behavior and rewards from “immersing” in creative processes can help explain why we see a massive amount of user-generated content (UGC) on platforms, even if only a small fraction of it has significant commercial value and generates income. Also, not all users of digital platforms will become amateur creators. Individuals seem to specialize either in using or in generating online content. Policy choices in this area are particularly hard to define because they need to balance the concerns and interests of new amateur creators, original creators and right holders, as well as society’s taste for variety – in particular with respect to “transformative” uses of works. But, again, good governance will have to do more than simply take pecuniary incentives into account.

Finally, behavioral bias and its implications for legal frameworks can also have a bearing on policy. The procedural utility and satisfaction artists derive from practicing art may have a downside – it may cause “creativity bias”. Put differently, artists may overestimate the value of their own works. This explains why some works are not traded in art markets. In the presence of such bias, the importance of right holders (other than creators) as intermediaries has been stressed, as has a proposal for the legal framework to take greater consideration of work-for-hire rules. In some jurisdictions, these rules establish the employer – rather than the employee who creates the work as part of their job – as the legal author. Work-for-hire rules may help to overcome creativity bias in areas where works are unsold or where markets fail because of these biases.

There may also be untapped sources of motivation in the legal frameworks that have been established to encourage creativity. What we need now is more discussion on the mechanisms enshrined in copyright law; a discussion that goes beyond income and income effects on creativity. While this discussion is not entirely new among legal scholars, all of the relevant legal aspects that may have a role to play have yet to be fully identified. Additional economic research is needed to acquire a better understanding of the connections among specific design aspects of copyright law, their effect on artists’ motivation at different career stages, and, ultimately, the creative activity these can generate.

Any future research, however, must take into account artists’ perspectives on why they are creative. The singer, Nick Cave, says he is creative “because I have to be”; actor Willem Dafoe notes, “I like how I feel, how I think, when I am making things” and visual artist Yoko Ono notes that she is creative “because I am what I am”. Obviously, something more than income makes these artists create.

China's commitment to strengthening IP judicial protection and creating a bright future for IP rights

By **Justice Tao Kaiyuan**, Vice President of the Supreme People's Court of the People's Republic of China

As an institutional arrangement and incentive mechanism, the intellectual property (IP) system provides a fundamental driving force for innovation and creativity. Strengthening IP protection is necessary for China to honor international rules and fulfill its international commitments. It is also indispensable for pursuing an innovation-driven development strategy, creating a business-friendly environment and building a new open economic system.

Over the past 40 years, China has established, and continued to improve, a modern IP system with Chinese characteristics. It has made remarkable progress and secured historic achievements in various areas, including legislation, enforcement, and international exchanges and cooperation. Today, strengthening the protection of IP rights is widely recognized in China as the most important element for improving rights protection and a fundamental incentive for enhancing the country's economic competitiveness.

STRENGTHENING "TOP-LEVEL DESIGN" OF IP JUDICIAL PROTECTION

In line with national conditions, China has established an IP system where judicial and administrative protection play their respective roles, with the former central to IP protection. Continued strengthening of the "top-level



Justice Tao Kaiyuan was a keynote speaker at the inaugural session of the Intellectual Property Judges Forum at WIPO's Geneva headquarters in November 2018.

design” is the bedrock on which China has built its historic achievements in IP judicial protection within a relatively short period of time. As noted by WIPO Director General Francis Gurry, in an interview with the China Global Television Network (CGTN), “there is a strategic vision and leadership from the top in China. This concerns building scientific capacity and innovation, which means new products, services or technology entering the economy and intellectual property, whose role is to protect the competitive advantage that is given by that innovation.” The Director General said that the sequencing and vision of how these elements fit together “is extraordinarily coherent in China”.

In China’s *Outline of the National Intellectual Property Strategy* issued in June 2008, “strengthening the judicial protection system” and “ensuring the leading role of judicial protection of IP rights” were identified as priorities in implementing the national IP strategy. In July 2016, the Supreme People’s Court laid down China’s fundamental policy on IP judicial protection underlining the primacy of the judiciary, strict enforcement of law, differentiated measures, and proportionality. In April 2017, the Supreme People’s Court issued the *Outline of Judicial Protection of IPR in China (2016–2020)*, which identifies targets in eight areas, including the creation of “an IP court system with a regional perspective”, better rules governing evidence and more reasonable compensation for damages. The document also introduces 15 measures, including improvement of the jurisdiction system, reform of the technical fact-finding mechanism and special research on procedural law for IP litigation.

In February 2018, another milestone was reached when the Chinese Government issued its *Opinions on Several Issues Concerning Strengthening Reform and Innovation in the Field of Intellectual Property Adjudication*, the first document on reform and innovation in the field of IP rights adjudication. The Opinions represent an important step in reforming and modernizing IP adjudication in China. They are a blue print for the foundation of a modern, authoritative, optimally resourced and highly efficient IP judicial system that will ensure that China’s IP judicial team is in a position to address emerging IP challenges in the new era.

ESTABLISHMENT AND IMPROVEMENT OF A SPECIALIZED COURT SYSTEM FOR THE JUDICIAL PROTECTION OF IP

At the end of 2014, three IP courts were set up in Beijing, Shanghai and Guangzhou to creatively explore a specialized IP adjudication system with Chinese characteristics. This development received a very positive response from the public and the international community. In August 2017, the Standing Committee of the National People’s Congress discussed the report by Mr. Zhou Qiang, Chief Justice of the People’s Republic of China and President of the Supreme People’s Court, on the progress of IP courts. The Standing Committee fully recognized the role of IP courts in supporting innovation, improving the quality and efficiency of adjudication and promoting judicial reform.

Since 2017, the Supreme People’s Court has approved the establishment of IP tribunals by intermediate people’s courts in Nanjing and 18 other cities. This enables the pooling of high-quality resources to handle patent and other highly technical cases across regions in a more professional way.

As required by the *Opinions on Several Issues Concerning Strengthening Reform and Innovation in the Field of Intellectual Property Adjudication*, the Supreme People's Court has advanced reforms to establish a national-level appeal mechanism for IP cases. On October 26, 2018, the Standing Committee of the National People's Congress adopted the *Decision on Certain Issues Concerning the Litigation Procedure of Patents and Other Intellectual Property Cases*. On January 1, 2019, the Supreme People's Court set up and inaugurated the IP Court. As a permanent agency of the Supreme People's Court, the IP Court is mandated by the *Regulations of the Supreme People's Court on Several Issues Concerning the IP Court* to handle highly technical civil and administrative IP appeal cases from across the country. These cases may involve invention patents, utility model patents, new plant varieties, integrated circuit layout designs, technical know-how, computer software and monopoly, as well as cases where the adjudication supervision procedure is applicable for effective first instance ruling over the aforementioned cases. In cases where the adjudication supervision procedure is applicable for decisions made by the IP Court, the No. 3 Civil Division (IPR Division) of the Supreme People's Court is responsible for reviewing the cases.

CONTINUED IMPROVEMENT OF THE IP LITIGATION SYSTEM

As IP rights are intangible, it is necessary to establish a corresponding set of rules governing evidence. The modern IP system is a product of the market economy. It therefore follows that compensation for IP infringement must be based on market values. It is our firm belief that IP rights create value and right holders should be entitled to adequate return for such value. In light of this, and with a view to building greater respect for IP rights, we are establishing a more rigorous system of punitive damages to curb trademark counterfeiting and trade secret misappropriation. This is an unprecedented and historic step in the transformation of China's IP landscape.

RISING NUMBER OF IP CASES

In recent years, the IP caseload of Chinese courts has grown rapidly. In 2018 alone, Chinese courts received 301,278 new IP cases in the first instance, of which 287,795 were concluded. These figures represent an increase of 41 percent and 42 percent respectively compared to those for 2017. As far as international IP cases are concerned, China has one of the shortest adjudication periods in the world. So far, multiple Chinese courts have received successive cases involving *Qualcomm Inc. v Apple Inc.* to adjudicate disputes over

“As an institutional arrangement and incentive mechanism, the intellectual property system provides a fundamental driving force for innovation and creativity.”



Photo: Courtesy of The Supreme Court of the People's Republic of China

The Supreme Court of the People's Republic of China (above) has played, and continues to play a central role, in advancing reforms to support the development of China's IP system.

patent infringements and abuse of dominant market position. Another case brought by the US firm GPNE against Apple Inc. for patent infringement is currently under review by Guangdong Provincial High People's Court. In that case the damages claimed by the plaintiff amount to RMB 897.6 million (approx. USD 132.8 million).

China is increasingly becoming the "preferred venue" for settling international IP disputes. The adjudication by a Chinese court on *Qihoo 360 and Qizhi Software v Tencent Technology and Tencent Computer System* concerning a dispute over unfair competition has been widely recognized by international counterparts. In line with the country's international treaty obligations, Chinese courts have always sought to remain unbiased in adjudicating cases involving the legitimate rights and interests of both Chinese and foreign parties. This is evident, for example, in handling the dispute over the Qiaodan Sports trademark, which in China is associated with the basketball superstar Michael Jordan. Another example is the review of the case brought by Parfums Christian Dior against the Trademark Review and Adjudication Board of the State Administration for Industry and Commerce of China, which initially rejected the company's trademark application. These cases demonstrate the Supreme

People's Court's commitment to protecting the legitimate rights and interests of foreign parties in China and to overseeing the fulfillment of international obligations by administrative organizations according to the law. Such an approach supports innovation and fair market competition.

COMMITMENT TO INTERNATIONAL EXCHANGES AND COOPERATION AMID NEW OPPORTUNITIES AND CHALLENGES

In this new era, IP development across the world faces opportunities and challenges brought by two new realities. First, a new cycle of technological revolution and industry transformation is in full swing, with an unprecedented pace of technological innovation. The fourth industrial revolution is reshaping the way in which knowledge is created, disseminated and utilized, and is posing a host of new challenges for the judicial protection of IP rights. It is therefore necessary for us to keep a close eye on the latest technological innovations and take proactive measures accordingly. Second, in recent years, there has been an increasing level of uncertainty and instability in the international arena. The rising tides of anti-globalization and trade protectionism are putting a strain on global economic and trade relations. These

dynamics will inevitably make it harder for all countries, including China, to realize their economic goals and may well have a negative impact on global innovation. Against this new background, China has always held a positive and open attitude towards the reform of multilateral trade rules. And, as reflected in the remarks of Premier Li Keqiang at the Davos Summer Forum in September 2018, China is willing to push reform forward through consultation to better meet the needs of global development and inclusive growth.

In spite of the reform and opening up in the past four decades, China remains the world's largest developing country. There has not been much change in this basic national condition. While much has been achieved and a great deal of invaluable experience has been acquired, there is still a lot more to accomplish. We are willing to share our experience and learn from others through international exchanges and cooperation. While remaining deeply rooted in China's reality, we also need to think globally. This is important in fostering the development of IP adjudication in China and beyond.

That is why the Supreme People's Court is committed to fully implementing the *Memorandum of Understanding on Judicial Exchanges and Cooperation* signed with WIPO, the world's most authoritative and influential international organization in the field of IP. In doing so, we will continue to expand areas of cooperation and actively support and deeply engage in WIPO's reform initiatives in the field of judicial protection. The Supreme People's Court welcomes WIPO's pioneering work in the area of judicial administration of IP. I am greatly honored to be a member of the WIPO Advisory Group of Judges. Organized as a collaborative effort between the Supreme People's Court and WIPO, the inaugural "Master Class on IP Adjudication" was held in August 2018 at the National Judges College in Beijing. The event, which was a great success, proved an enriching opportunity to deepen international cooperation and to further enhance judicial protection of IP rights.

In this new era, we welcome opportunities to work with WIPO, to strengthen multilateral and bilateral exchanges and cooperation with other countries, and to play a more active and constructive role in international protection of IP rights and associated rulemaking. Such engagement is an effective way to promote the modernization of global IP governance, to create a bright future for IP rights and their protection.

A closer look at specialized intellectual property courts*

by **Mr. Jacques de Werra**, Vice-Rector and Professor of Intellectual Property and Contract Law, University of Geneva, Switzerland

*This article was first published in a Special Supplement of the *WIPO Magazine* for the International Conference on Building Respect for Intellectual Property – Stimulating Innovation and Creativity in Shanghai in the People’s Republic of China in November 2016. To reuse or adapt this article, please contact the author directly at Jacques.DeWerra@unige.ch

While there is no international obligation to do so, there is a global trend to specialize or centralize the handling of certain types of intellectual property (IP) disputes. The question whether it is advantageous or necessary to establish specialized IP courts, however, is a difficult one to answer as there are both advantages and disadvantages associated with them and they are certainly not recommended in all circumstances. Any plan to create specialized IP courts requires careful analysis of the prevailing situation in the country concerned.

WHAT SPECIALIZED IP COURTS CAN DO

A specialized IP court is an independent public judicial body that can operate at national or regional levels to adjudicate certain types of disputes relating to IP rights, but may also adjudicate other types of disputes. Although IP disputes are often associated with the enforcement of IP rights against piracy and counterfeiting activities (especially in the areas of copyright and trademarks), the reality of IP disputes is far more complex. This results from, for example, differences in the types of IP rights and the legal regimes on which they are based, the diversity of legal issues that can arise as well as the different types of legal proceedings available to resolve them, namely, civil, criminal and administrative proceedings.

Although there is a marked global trend toward specialization, the types of specialized courts that are emerging are by no means uniform. Some only have jurisdiction over certain types of IP disputes, such as patent disputes, while others are restricted to particular types of legal issues, such as the validity of IP rights, or may only consider civil disputes. Some act as trial courts while others act as appellate bodies with the power to review cases on appeal and to reverse the decisions of lower courts.

ADVANTAGES OF SPECIALIZED IP COURTS

Specialized IP courts are generally believed to improve the quality of justice available to IP right holders. The court’s expertise means that disputes can be handled coherently on the basis of past experience. This is particularly important for IP disputes because



Amid a global trend to specialize or centralize the handling of certain types of IP disputes, there is no clear answer as to whether it is advantageous or necessary to establish specialized IP courts. Any plan to create specialized IP courts requires careful analyses of the prevailing situation in the country concerned.

courts are often requested to render decisions very quickly on applications for provisional measures in order to prevent or stop an infringement of IP rights.

Specialized IP courts are better equipped to keep pace with and adapt to dynamic developments in IP law. They allow for timely and cost-effective handling of proceedings and can improve the consistency of case law. They can also help to eliminate or reduce any risk of forum shopping – whereby IP owners, given the choice of court, choose the one that will favor their interests – by centralizing IP disputes before the specialized IP courts, and can further foster the development of special procedural rules that are tailored to IP disputes.

DISADVANTAGES OF SPECIALIZED IP COURTS

The cost of establishing and operating specialized IP courts can be their major disadvantage, especially for countries with limited resources and a low IP caseload. Attracting the expertise needed for the court to be effective can be expensive and may require increasing judicial wages to draw potential candidates from the private sector.

Specialized IP courts may also have a negative impact from the perspective of access to justice as litigants may be forced to bear the costs of pleading before a court which may not be easy for them to get to.

These courts are also often considered to be less independent than general courts and more vulnerable to political or economic influences. This may arise either when appointing judges or as a consequence of more informal interactions between parties and their counsel and judges.

Tunnel vision is yet another risk. Some believe that specialized IP courts may neglect the broader legal and policy framework that often surrounds IP disputes. Centralization may also inhibit the exchange of legal ideas and lead to perpetuation of errors. Problems with defining boundaries between the jurisdictional power of a specialized IP court and that of a general court also pose a potential risk.

POLICY CHOICES

The diversity of legal systems and regimes around the world means there is no single method for establishing an efficient IP court system that promotes innovation and social welfare. There is also no clear evidence that specialized IP courts are more effective than non-specialized courts in promoting innovation in all circumstances. But what is clear is that a sufficient level of experience and expertise among courts and judges can significantly improve the quality of justice surrounding IP disputes. This is particularly important because many IP disputes start with an application for preliminary injunctive relief (made by IP owners) on which the court is expected to decide in quick time. The court's expertise in handling IP disputes can also result in more efficient case management because judges are better placed

to direct and guide attorneys. Experienced judges may also issue non-binding preliminary opinions which may promote settlement between the parties.

IS A SPECIALIZED IP COURT REALLY NECESSARY?

Before working out how to establish a specialized IP court, policy-makers need to carefully weigh up the merits of doing so. If they decide that establishing such a court is the best option, then they need to carefully assess the scope of the court's jurisdiction. Will it be limited to specific types of IP disputes – such courts may be more justifiable in some areas of IP law, such as patent law – or will it extend to all types of disputes? Will the IP court have the jurisdiction to hear civil IP disputes only or will it also hear criminal disputes? It may be enough to simply centralize all IP disputes to ensure coherent development of IP law without establishing a specialized court. In any case, the process of establishing a specialized IP court must be distinct from the creation of specific rules applying to IP disputes, because the adoption and application of those rules do not necessarily require the creation of a specialized IP court.

BEST PRACTICES

The experiences of countries that have established specialized IP courts has given rise to a number of best practices which can ensure that these courts operate effectively. These include:

- Appointing judges with a representative level of expertise in the relevant areas.
- Providing judges with continuing education and training opportunities to allow them to keep abreast of the rapid evolution of IP, IP litigation and other important legal concepts and developments beyond IP law. Such training can also help control the risk of specialized IP courts developing tunnel vision.
- Establishing a system where the judgments of specialized IP courts are appealable to non-specialized courts to ensure the decisions of specialized IP courts are in line with general legal principles.

TO BE OR NOT TO BE?

Evaluating the desirability of establishing a specialized IP court in any given jurisdiction requires a transparent and objective assessment of many factors that go well beyond IP including the prevailing economic, legal and social circumstances of the country in question.

Contrary to common belief, there is no clear evidence that the existence of specialized IP courts generates benefits for IP owners,

nor that they automatically increase levels of IP protection or generate increased foreign direct investment.

The goal of creating specialized IP courts must be to ensure the availability of an efficient and equitable dispute resolution mechanism that is conducted by expert judges for the benefit of all stakeholders – IP owners, users of goods and services, and society as a whole. The decision to establish a specialized IP court cannot be based solely on the need to fight IP piracy and counterfeiting activities. In general, disputes arising from these illegal activities do not require the services or expertise of a specialized IP court.

An alternative and more appropriate option, especially for developing countries, may be to focus on developing the IP expertise of non-specialized courts, by creating specialist IP benches within regular courts. Regular courts may also call on a third party institution with IP expertise, such as a national IP office, to express its view on a particular issue (the validity of a patent, for example) in a dispute. Developing expertise in IP dispute settlement therefore does not necessarily require the establishment of a specialized IP courts.

IP expertise and knowledge may also be boosted by fostering opportunities to improve the transparency of judicial processes and by allowing the participation of third parties. This can be achieved, for example, by allowing “friends of the court (*amicus curiae*)” briefs in IP litigation cases, and by publishing the decisions rendered in IP cases in online databases. There is also much to be gained from encouraging international exchanges between judges and courts dealing with IP cases. Building and sharing expertise in this way creates opportunities for mutually enriching and stimulating exchanges. While IP issues remain largely governed by local rules, the global nature of many of them means that fostering such a dialogue is essential.

ADDITIONAL OPPORTUNITIES TO IMPROVE IP DISPUTE RESOLUTION

A careful analysis of the role and responsibilities of all actors within the national IP ecosystem can help identify additional opportunities to improve IP dispute resolution. Such an exercise necessarily involves identifying the processes by which IP rights are granted in the jurisdiction in question, bearing in mind that the need for a specialized IP court may be greater if IP rights are granted without a complete examination of their validity when they are registered. An assessment of the entire IP ecosystem is critical because the efficiency of IP dispute resolution mechanisms in any jurisdiction depends not only on the judiciary, but also on other players, especially the lawyers who plead before the courts.

An efficient IP dispute resolution ecosystem should also seek to eliminate vexatious IP infringement actions against innocent third parties. Procedural tools can be developed to help ensure that courts are not unnecessarily burdened with meritless claims and remain available to litigants entangled in non-frivolous IP disputes.

In sum, the balance of competing interests, which is at the core of the substantive IP system, should also be reflected in the mechanisms by which IP disputes are resolved. This will ensure that all interests are considered in an equitable manner. It follows that any decision to establish a specialized IP court should only be taken after careful analysis of the prevailing situation in a given jurisdiction.

Latin America's first international patented invention competition

By **Constanza Zülch** and **Francisco Carrasco**,
Communications Division, National Institute of
Industrial Property, Chile

In September 2018, with the support of the World Intellectual Property Organization (WIPO), PROSUR, a regional organization mandated to foster cooperation in the field of industrial property, launched its first Patented Invention Competition. The aim of the competition was to promote innovation and to encourage greater use of the IP system, in general, and the patent system in particular, across Latin America.

“The competition has enabled us to promote greater awareness across the region about the role that patents can play in incentivizing innovation, in improving the region’s competitiveness and in driving its economic growth,” said PROSUR’s acting President, Harry Peralta López.

“Every year, more than 50,000 patent applications are filed in Latin America. Our aim in running the competition is to encourage much greater use of the patent system and, of course, to demonstrate the region’s capacity to develop ground-breaking and commercially valuable inventions.”

ROLLING OUT THE COMPETITION

The call for applications to enter the competition was open to the 13 member countries of PROSUR (see box). Following a rigorous screening process, 23 applications – of which 11 had filed patent applications under WIPO’s Patent Cooperation Treaty – made it to the competition. Applicants were required to provide proof that their invention was covered by a patent or utility model registration that had been granted within five years prior to the date of the competition’s launch.

“The competition was developed not only to give special recognition to Latin American innovators, but also to encourage innovation and creativity, which are key elements for ensuring development throughout the region,” noted Mr. Peralta López.

The applications were evaluated by a jury of experts from the International Federation of Inventors’ Associations, the Max Planck Institute, the Inter-American Development Bank and *Marca Sur* Magazine.

THE WINNERS

The winners, announced in January 2019, hail from Argentina, Chile and Peru. Entrants for the competition included some of the best patented inventions in the region. All of the inventions that made it to the final selection were evaluated according to the following criteria: potential to generate social and economic benefits; environmental impact; the number of countries in which they were protected; and gender focus.

The competition’s top prize went to a team of researchers from Argentina’s National Agricultural Technology Institute for their work in combatting the harmful effects of rotavirus, a pathogen that kills over 550,000 children globally every year.

The judges chose the work of the winning team – Thomas Surrey, Aurelien Olichon, Silvia Sebastián Gómez, José Ángel Martínez Escribano, Andrés Wigdorovitz, Lorena Laura Garaicoeachea, Gisela Ariana Marcoppido and Gladys Viviana Parreño – because they determined it would play a crucial role in improving the well-being of children in Latin America and beyond.

The initiative took shape in 2011, when the researchers began looking for a solution to neutralize different rotavirus variants using nano-antibodies from camelid herbivores, such as llamas, alpacas, and vicuñas, which are common in Argentina. One of the team’s objectives was to make dairy products containing these antibodies to protect children under the age of five from diarrhea.

Photo: Courtesy of INTA, Argentina

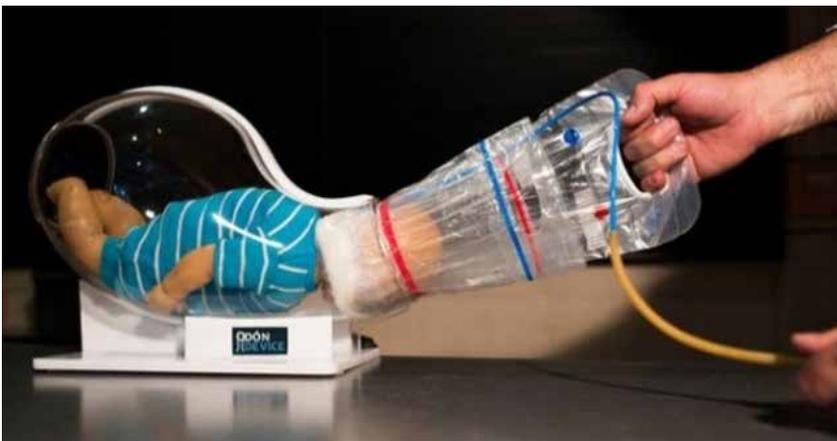


The competition's top prize went to a team of researchers from the National Agricultural Technology Institute in Argentina for their work in combatting the harmful effects of rotavirus using nano-antibodies from camelid herbivores, such as llamas and alpacas.



Photo: iStock / Getty Images Plus / © Toniflap

Photo: Courtesy of INPI, Argentina



The Odón device, invented by Argentinian mechanic Jorge Ernesto Odón, guides a plastic sleeve through the birth canal to surround the baby's head. Air is pumped into the sleeve to inflate a plastic chamber that gently grips the baby's head, allowing it to be pulled safely from the birth canal without inhibiting the baby's breathing.





Chilean researchers from the Pontifical Catholic University won joint third prize for a vaccine against the respiratory syncytial virus (RSV). The virus is the most common cause of bronchiolitis and pneumonia in children under one year.

“The invention is an important contribution to society and with this achievement, the National Agricultural Institute has earned international recognition that reaffirms the quality of its research and creates an opportunity to transfer its innovations to society,” said Juan Balbín, President of the Institute.

The team won the WIPO IP Enterprise Trophy and the opportunity for one of its members to present their work at the annual International Exhibition of Inventions in Geneva in 2019. This was an excellent opportunity for the team to showcase its work, meet with other inventors and potential investors and to expand its network.

AN INVENTION TO IMPROVE CHILDBIRTH WINS SECOND PLACE

Argentinian mechanic Jorge Ernesto Odón won second prize for his low-cost infant delivery device, which enables safer childbirth, particularly during difficult labor and delivery, without the need for medical expertise, making it an ideal option for settings where access to healthcare professionals is limited. The inventor’s ambition is for this innovative device to become a leading alternative to conventional methods of assisted delivery.

“It’s a source of pride for the country that the strength of our inventors is recognized with awards given to two Argentinian patents. Earning these awards affirms the creative capacity of Argentinians and the power of innovation and intellectual property for the economic development of our country,” said Damaso Pardo, President of INPI, Argentina’s national IP office.

CHILE AND PERU IN JOINT THIRD PLACE

Third place was shared by two inventions – one from Chile and the other from Peru. The Chilean invention, developed by researchers from the Pontifical Catholic University (UC), is a vaccine that seeks to protect children, in particular, against the respiratory syncytial virus (RSV), the most common cause of bronchiolitis and pneumonia in children under one year of age. Their invention, one of the first to treat the virus, promises to have a direct impact on children’s health.

The vaccine has passed Phase 1 trials and the researchers – Alexis Kalergis Parra, Pablo González Muñoz and Susan Bueno Ramírez – are now looking for new funding to commercialize the vaccine and continue their research.

“As UC academics and researchers, we are very proud of the international recognition that our scientific work has earned from PROSUR. It is particularly gratifying that through the work we have done at the university, Chile is one of the three countries recognized as innovative, from science and knowledge to technologies that can benefit society,” said Professor Kalergis.

With broad potential application in the automotive industry, the Peruvian invention, developed by Rodrigo Coquis Sánchez-Concha, eliminates bacteria in fossil fuels to prevent the failure of fuel injectors and pumps. Installed in fuel tanks of vehicles, the device reduces fuel consumption and carbon monoxide and smoke emissions.

“This new and innovative device comes in four versions that can be installed in motorcycles, light automobiles and tractors, as well as in the fuel tanks of mines and boats,” said the award-winning inventor, Rodrigo Coquis.

RECOGNITION FOR FEMALE INVENTORS

The first edition of the PROSUR competition included a special award exclusively for female inventors. The award distinguished those inspiring women who have contributed to the development of new knowledge through their technological innovations and who are a source of inspiration for new generations of female scientists and inventors.

The prize was awarded to the four female members of the Argentinian research team who won the first prize, namely, Lorena Laura Garaicoechea, Gisela Ariana Marcoppido, Gladys Viviana Parreño and Silvia Gómez-Sebastián.

The Secretary of Promotion, Protection and Technological Change at Argentina’s national IP office, INPI, Graciela Guzmán, applauded their achievement. “I would like to commend the female researchers of this team who earned the award for “Female Inventors” and are just some of the many female professionals and entrepreneurs who contribute to the economic development of our country on a daily basis. They remind us of the enormous responsibility we all have to continue working towards making a more equal and inclusive society and market a reality.”

All laureates received a certificate of merit from WIPO. These were awarded at separate ceremonies in Argentina, Chile and Peru in March 2019.

About PROSUR

In 2009, various countries in Latin America joined forces to set up PROSUR, an entity with a mandate to foster cooperation in the field of industrial property (e.g. patents, trademarks, designs, geographical indications) across the region. In addition to encouraging greater technical collaboration among the IP offices of its members, PROSUR plays a key role in promoting knowledge transfer and entrepreneurship in support of the region’s social and economic development.

PROSUR’s members include: Argentina, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Nicaragua, Panama, Paraguay, Peru, and Uruguay.

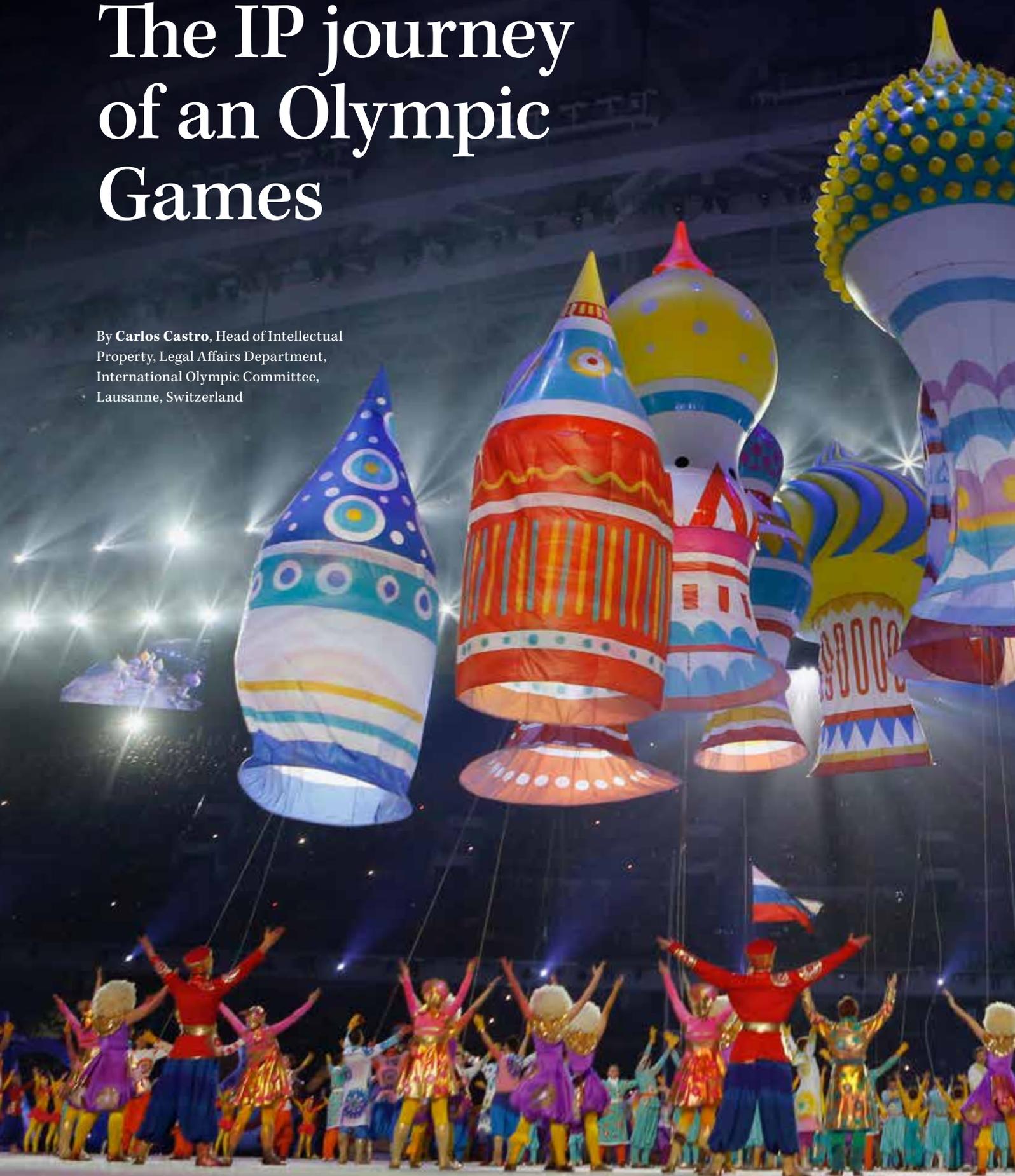
Photo: Courtesy of INDECOPI, Peru



Peruvian inventor Rodrigo Coquis Sánchez-Concha, won joint third prize for his invention which reduces fuel consumption, carbon monoxide and smoke emissions from motor vehicles.

The IP journey of an Olympic Games

By **Carlos Castro**, Head of Intellectual
Property, Legal Affairs Department,
International Olympic Committee,
Lausanne, Switzerland



The ceremonies at the Olympic Games are an extraordinary and intricately choreographed spectacle of color and music. Myriad IP-protected assets converge to create these iconic moments.



The Olympic Games are a unique global sporting event that celebrates the best of sports and the best of the host city and country. Organizing an edition of the Games involves the commitment and drive of the host city, the Organising Committees of the Olympic and Paralympic Games, athletes, National Olympic Committees, International Sports Federations, the International Olympic Committee (IOC) and its affiliated entities, and other members of the Olympic Movement.

Hosting the Games offers a host city manifold benefits and opportunities – and requires many years of careful planning. All Olympic stakeholders work together closely and for many years to make the Games a success and to ensure they leave a positive and lasting legacy.

The IOC is a not-for-profit, independent international organization that is committed to building a better world through sport. As the leader of the Olympic Movement, the IOC acts as a catalyst for collaboration between all parties of the Olympic family, from the National Olympic Committees, the International Sports Federations, the athletes and the Organising Committees, to the Olympic marketing partners, broadcast partners and United Nations (UN) agencies. The IOC shepherds success through a wide range of programs and projects. On this basis, it ensures the regular celebration of the Olympic Games, supports all affiliated member organizations of the Olympic Movement, and strongly encourages, by appropriate means, the promotion of the Olympic values.

When most people think about the Olympic Games, they wonder, “Who will be the next Usain Bolt, Yelena Isinbaeva, Michael Phelps, Yu Na Kim, Lindsey Vonn or Lin Dan?” Athletes with their sights on the next Games will be sizing up their chances of a medal at Tokyo 2020 or Beijing 2022. One of the ways in which the IOC, the host city and other stakeholders, support the athletes in their efforts to achieve exceptional performances is by ensuring that a robust IP strategy is in place to protect the IP assets associated with the Games. IP protection is crucial in ensuring that we can continue to generate revenues, which are then redistributed for the benefit of sports and athletes around the world.

THE IP JOURNEY OF THE OLYMPIC GAMES: WHERE IT BEGINS

The IP journey of each edition of the Games starts around 10 years before the Olympic flame leaves Olympia in Greece and makes its way to the host city, where it lights the Olympic Cauldron at the Opening Ceremony. At every stage of that journey, IP is created, commissioned, acquired or otherwise secured. One could say, the strategic use of IP and the rights that protect all tangible and intangible assets associated with the Games actually ensures that they happen. Let’s see how.

“Thanks to Olympic rights-holding broadcasters, the Olympic Games is the most widely viewed sports event in the world.”



Photo: © 2016 / Comité International Olympique (CIO) / JONES, Ian

Every day, the IOC distributes over USD 3.4 million to support athletes and sports organizations at all levels around the world. It could not do this without the funds generated from the strategic use of its IP assets.

THE FIRST STAGE OF THE IP JOURNEY: THE PROCESS OF SELECTING A HOST CITY

The process of selecting a host city starts when interested cities and National Olympic Committees explore and express their interest in hosting the Games. This allows the IOC to gain an understanding of the opportunities and risks associated with each city before inviting them to develop a fully detailed application.

It is common for cities to register trademarks at this early stage of their Olympic journey, well before the formal candidature process starts. For example, trademarks have already been registered for the Olympic Games in Tokyo 2020, Paris 2024, Beijing 2022 and Los Angeles 2028.

Likewise, domain names are registered within various generic top-level (gTLDs) and country-code top-level domains (ccTLDs). For instance, the candidate cities for the Olympic Winter Games in 2026 have already secured the domain names: www.stockholm-are2026.com and www.milanocortina2026.coni.it. The aim here is to preserve the necessary online ecosystem and prevent any abusive use of domain names (cybersquatting) in relation to a prospective host city.



About the IOC Session that elects a host city

The IOC Session is the general meeting of the members of the IOC. It is the supreme organ of the IOC. The Session adopts, modifies and interprets the Olympic Charter and its decisions are final. While the Session may delegate powers to the Executive Board, all important decisions are taken by the Session, which votes on proposals put forward by the Executive Board. If the Executive Board is considered the "government" of the IOC, the Session is its "parliament".

Cities that take part in the formal candidature process submit a candidature file, which includes detailed plans of how they will deliver the Games, providing information about cultural activities and relevant financial and technical information, as well as legacy plans. This exhaustive document includes:

- a list of creative literary and artistic works, together with audio-visual content eligible for copyright protection;
- relevant designs, logos, emblems or slogans that are eligible for protection as trademarks or industrial designs; and
- data relating to the proposed delivery of the Games, the compilation, curation and arrangement of which may also be eligible for copyright protection.

At this stage of the selection process, the IOC grants candidate cities access to its copyright-protected audio-visual archives (the Olympic Archives) to assist in developing new or derivative works to support their applications, and build engagement within local communities.

When the IOC Session (see box) finally elects a host city of an edition of the Olympic Games, all the IP-protected assets developed in relation to the candidatures become part of the host city's legacy to the Olympic Movement. Candidate cities also commit to transfer any knowledge acquired in hosting a Games to future host-city candidates.

THE SECOND STAGE OF THE IP JOURNEY: THE PREPARATION PROCESS

Once selected, a host city and the National Olympic Committee (NOC) of the host country sign a "host city contract" (HCC) and create the Organising Committees for the Olympic Games (OCOG), which becomes a legal entity in the host country, and is bound by the HCC. Then, a commercial plan for the Games is established on the basis of which the IOC and the International Paralympic Committee authorize the development of the OCOG's domestic commercial programs, while granting the use of their IP-protected assets to domestic sponsors. The marketing plan supports the operational planning and staging of the Games.

The Olympic marketing partners, including companies participating in the Olympic partners' worldwide sponsorship program (the Olympic Partners (TOP) programme) and the media organizations that the IOC has granted exclusive rights to broadcast and exhibit the Olympic Games, provide invaluable financial and operational support to the Olympic Games. They help to promote the Games and the host city to a global audience. Olympic marketing partners provide essential technical services and products, while supporting



TOKYO 2020



BEIJING 2022



PARIS 2024



LA 2028

Photo: Courtesy of The International Olympic Committee

The IP journey of each Olympic Games begins around 10 years before the Olympic flame enters the Olympic arena for the Opening Ceremony. The IP rights associated with the Games protect the integrity and uniqueness of each edition of the Olympic Games and their legacy.

the work and preparations of the athletes that represent the 206 national organizing committees.

In return for their support and expertise, Olympic marketing partners are granted various exclusive rights, including worldwide marketing rights, broadcasting rights, hospitality rights, supply rights and other sponsorship benefits, and licenses to use the Olympic Rings, the Olympic Archives and other IP-protected assets relating to Olympic Games, including the properties developed by the OCOG. These may include the use of emblems, mascots or composite logos.

The private funds derived from the implementation of the domestic and international commercial programs enable the Organising Committees to plan, organize, finance and stage the Games. The funds flowing from the licensing program for the production and sale of Games'-related merchandise, ticket sales, as well as the IOC's contribution, support the planning, organization, financing and staging of the Games. This IOC's contribution is complemented by funds from other IOC-affiliated entities.

The OCOG is also responsible for organizing a Cultural Olympiad, in line with the Olympic Charter's objective to encourage and support initiatives that blend sport with culture and education to promote Olympism. These activities take place in the lead up to and during the Olympic Games. They support the creation and diffusion

“IP protection is crucial in ensuring that we can continue to generate revenues, which are then redistributed for the benefit of sports and athletes around the world.”

Olympic torches are designed specifically for each edition of the Games and are protected by industrial design rights and, in some cases, copyright and patents.



Photo: Courtesy of The International Olympic Committee

of copyright-protected literary and artistic works, which demonstrate the host country's cultural identity. A variety of cultural performances – music, dance, drama – protected as related rights are also a feature of these events.

THE THIRD STAGE OF THE IP JOURNEY: HOSTING THE GAMES

The ceremony marking the lighting of the Olympic flame in Olympia signals the start of the countdown towards the Olympic Games. With Olympic torches specifically designed for each edition of the Games (protected by industrial design rights and, in some cases, copyright and patents), the flame makes its way across Greece to the host country, before finally arriving at the Olympic Stadium, where the Olympic Cauldron sits (it too is protected by IP rights) in time for the Opening Ceremony.

The ceremonies at the Olympic Games are an extraordinary and intricately choreographed spectacle, featuring an amazing explosion of color and music. These spectacular events allow the host nation to display its unique identity and cultural traditions, within the framework of certain protocols dating from the first modern Olympic Games in Athens in 1896. Myriad IP-protected assets converge to create these iconic moments. In addition, these ceremonies demonstrate the Olympic and Paralympic values, celebrate the athletes' achievements, and engender a spirit of solidarity. They take the Olympic and Paralympic Games to a different level. They also demonstrate a host country's commitment to IP insofar as they uphold the terms of the host city contract (which may also be complemented by additional IP-related agreements), by observing and respecting the third-party IP rights of all those involved in every event of the Games, as broadcast to viewers around the globe.

The IP rights associated with the Games protect the integrity and uniqueness of the Olympic Games, together with their legacy. To this end, OCOGs, host cities and NOCs take advantage of the protection afforded by IP rights, and also ensure they fulfill their IP-related obligations with respect to third parties. For example, an OCOG must ensure that all artistic works – including recorded or live music, musical compositions, arrangements, photos, audio-visual recordings and other content used in the ceremonies or other Games-related

events, including competitions such as figure skating – are cleared for use. In the same way, an OCOG must ensure that all relevant rights-holders are remunerated for the public performance of their work at Olympic venues and across broadcast networks. The OCOG provides detailed reports of the planned use of music during Olympic events. This information is distributed to the Olympic rights-holding broadcasters, so they too fulfill their corresponding obligations with their collecting societies.

Finally, the related rights that protect the assets of broadcasters allow the Olympic Games to reach homes across the globe, via television, digital and media platforms. Thanks to Olympic rights-holding broadcasters, the Olympic Games is the most widely viewed sports event in the world. Broadcasters and media organizations pay significant sums for the exclusive right to beam the Olympic Games to our homes. The related rights broadcasters enjoy are fundamentally important, as they enable them to cover the costs of broadcasting the Games and to get a return on their investment in doing so.

THE RELEVANCE OF IP

The revenues generated through the IOC's strategic use of IP rights are redistributed across the Olympic Movement to individual athletes, Organising Committees, NOCs, International Sports Federations and other sports organizations. These IP-generated funds also support sports in emerging nations and ensure the maximum number of people in the world experience the Olympic Games. The IOC achieves this through the sale of broadcasting rights, by controlling and limiting the commercialization of the Games, and by enlisting the support of Olympic marketing partners.

The IOC retains just 10 percent of these revenues to cover the operational costs of governing the Olympic Movement. It distributes the remaining 90 percent to organizations throughout the Olympic Movement, to support the staging of the Olympic Games, promote the worldwide development of sports and foster Olympic values. Every day, the IOC distributes over USD 3.4 million to support athletes and sports organizations at all levels around the world (see box). It could not do this without the funds generated from the strategic use of its IP assets.

How the IOC distributes its funds

Ninety percent of the revenues generated by the IOC are distributed to:

- Individual athletes and coaches, via the Olympic Solidarity Fund;
- The Organising Committee of each Olympic Games;
- National Olympic Committees to help support athletes at national and local levels;
- International Federations to run and promote their sports globally;
- Other sports organizations associated with the Olympic Movement to promote the development of sports worldwide;
- IOC activities, projects and programs that support the staging of the Games and promote the worldwide development of sports and the Olympic Movement, such as its various cooperation activities with the United Nations, including: "Peace through Sports;" "Social development through Sports;" the Promotion of Gender Equality in Sports; "Athletes365 Career+;" and more.

“Discovery or invention”: the case for recalibrating the Nobel Prize for Physics

By **Örjan Strandberg**, Spokesman of the Swedish National Innovators Council and Chair of the Stockholm Innovators Association, Stockholm, Sweden

Most countries in the world agree that inventions and innovations are prerequisites for every nation's industrial and societal growth and welfare. Intellectual property laws are the most important incentive for encouraging innovation and creativity. These laws recognize and reward inventors and ensure society benefits from inventions.

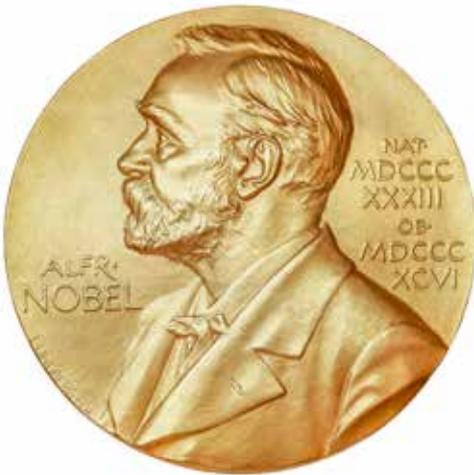
The other important motivator for invention and innovation is society's general encouragement and acknowledgement of the inventor, both politically and socially, via the media, through awards and stipends, for example.

Arguably, the most important international award for inventors should have been the Nobel Prize for Physics. However, that prize, for reasons we will explain, has, over time, come to be perceived as the world's most prestigious science prize and is no longer specifically associated with invention.

That all nations need a rich and continuous flow of skilled researchers and scientists is a given. But this should not detract from the equally important need for ingenious inventors and their inventions. History shows us that inventors are the main originators of technological, industrial and societal growth. In Sweden, for example, a report entitled, *Where did Sweden's Top 100 Innovations originate?* by the Swedish innovation researcher Dr. Christian Sandström, shows that at least 80 percent of inventions originate from outside academia.

Over the last three decades, persuasive theories have circulated among political leaders, suggesting that the scientific community can replace the inventor community. This has resulted in a measurable decline in government funding for inventions in the industrial

Photo: Alamy Stock Photo / © Akademie



Alfred Nobel was an inventor, entrepreneur, scientist and businessman with a keen interest in poetry and drama. He was known for inventing dynamite. He held 355 patents.

Inventions with a disruptive impact on society

Despite their disruptive impact on society and the global economy, none of the inventions listed below has received a Nobel prize:

- The airplane (fixed wing, jet)
- The refrigerator (mechanical/compressor)
- The television
- Polyethylene (the world's most common plastic)
- The computer
- The credit card
- The respirator
- The videotape
- The heart-lung machine
- The pacemaker
- The LCD display
- The artificial kidney
- The calculator
- E-mail
- Computer graphics
- The mobile phone (and associated networks, e.g. NMT and GSM)
- The World Wide Web
- Satellite-based navigational systems such as GPS

Arguably, most of these inventions have made “the greatest benefit to humanity”, and thereby qualify for the prize, in accordance with Alfred Nobel’s will.

countries of the world. For example, in 2019, the Swedish government will allocate an estimated EUR 1.74 billion in R&D support for universities, an additional EUR 1.04 billion for research funding institutions and just EUR 18 million or so to independent innovators and inventors.

Indeed, two years ago, having lost all government funding, Sweden’s National Inventors’ Association struggled to survive. This decline in funding is exacerbated further by the widespread misconception that only scientists working in academia are inventors.

Unfortunately, the historical importance of the world’s most prestigious award in the field of invention and science, the Nobel Prize for Physics, maintains this misconception and thereby puts a brake on the engagement of inventors in industrial development and growth and thereby, social welfare.

ALFRED NOBEL’S WILL

In setting out the basis for the Nobel Prize for Physics in his will, Alfred Nobel listed “discovery or invention” as the two intended contributions of beneficiaries of his physics prize.

Nonetheless, since its inception, approximately 80 percent of the winners of the Nobel Prize for Physics have been researchers, and only 20 percent (at most) of the laureates have been inventors.

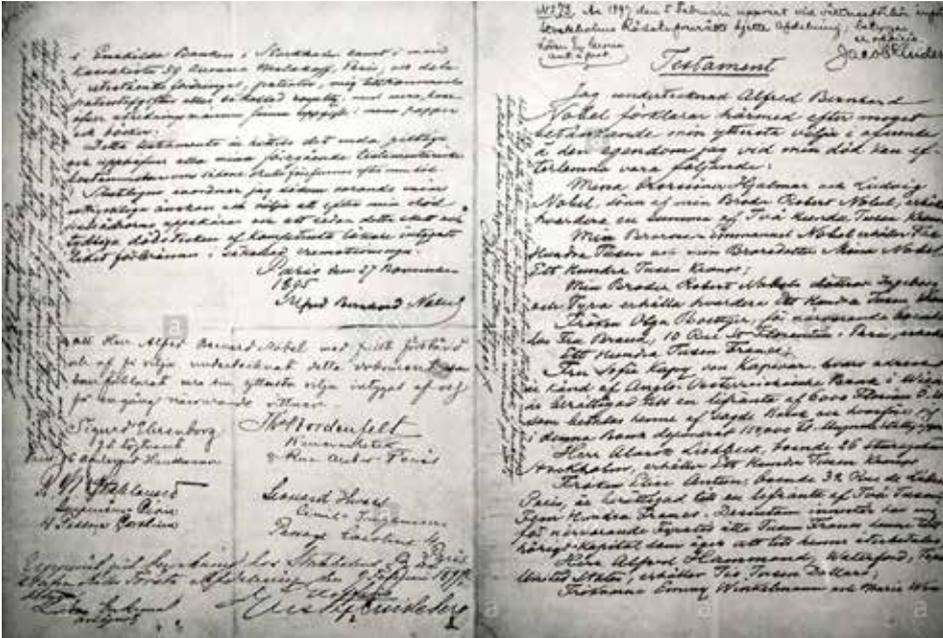
Research by Elisabeth Crawford in *The Beginnings of the Nobel Institution* and others, clearly shows that the will of Alfred Nobel, himself an inventor and an entrepreneur, never intended to favor scientists over inventors.

Documentary evidence from the 1901 Nobel Committee for Physics, which is responsible for the selection of candidates for the Physics Prize, reveals a decision that inventors who had acquired a patent or patents for their invention should not be nominated for the prize. No such condition featured in Alfred Nobel’s will.

Moreover, by decision of the trustee of the will – not by Mr. Nobel or his will – nominations for laureate candidates may only be submitted by research-related organizations and the research community.

Inventors and the organizations that represent them are not included in the selection process, despite the apparent fact that Alfred Nobel intended “inventors” to be one of the two categories to be considered for the prize.





Alfred Nobel's last will (above), signed in 1895, laid the foundations for the Nobel Prize. In his will, Mr. Nobel specified that his fortune should be divided into five equal parts for prizes in physics, chemistry, physiology or medicine, literature and peace. The prize is conferred on "those who, during the preceding year, shall have conferred the greatest benefit to humankind."

A re-examination of Mr. Nobel's will and recognition of his intention to reward inventors as well as scientific researchers seems appropriate. Under such circumstances, national inventors associations or the International Federation of Inventors' Associations (IFIA), which represents 140 inventor organizations in 100 countries, stand ready to nominate candidates for a physics award related to invention.

At a time when the world is facing daunting challenges, invention and innovation are more important than ever. In the face of these complex challenges, we need to explore all possible avenues to inspire and encourage the youth of today to become the inventors and scientists of tomorrow. Recognition of the value of invention by the Nobel Committee would go a long way in achieving this.



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