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IN THIS ISSUE

FROM THE EDITOR

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The year is well on its way. It seems that DABUS was just the beginning. The universal virtual world is in full swing and according to *IP Watchdog*, both brands and consumers are focusing on new digital offerings, such as the creation and purchase of non-fungible tokens and a host of new trademark applications for goods and services in the metaverse. There are more virtual meetings and conferences emerging . Hybrid events have become the norm and international "attendance" has become easy and affordable. Content is of high standard and technology in on-line converse platforms have developed significantly.

On the patent front, we have seen some interesting cases in the US Supreme courts which could potentially expand patent- ineligible subject matter to include certain conventional methods of using mechanical devices and some cases that may have implications in the biotech and pharma space with regard to the ability to protect chemical genuses. We will keep an eye on the US Supreme Court this year and provide an article on the subject matter in our next edition.

A reminder about the World Intellectual Property Day celebrations in April 2022. Like a few years back, the focus is on IP and youth, with the theme this year: "innovating for a better future". WIPO has invited those, 35 years and younger, to share how their innovative, energetic and creative minds can drive positive change. Please reach out to the young innovative members in your community and make the day memorable. You can find more information, and the promotion toolkit here https://www.wipo.int/ip-outreach/en/ipday/

Locally, the CIPC has launched its pilot on patent examination, and applicants have been invited to participate in the trial.

Only those who attempt the absurd can achieve the impossible. — Einstein

FROM THE PRESIDENT'S DESK

Erik van der Vyver - Von Seidels

Along with a number of other significant changes in the world, the New Year ushered in a changing of the guard to the very important role of Senior Manager: Patents and Designs at the CIPC – a position which we as practitioners generally refer to **as "the Registrar of Patents and Designs".**

Up until the end of January 2022, this position was held by the dynamic, capable and very highly regarded Dr Mavis Nyatlo, who has handed over the baton to Dr Thandanani Cwele from the 1st of February 2022. Dr Nyatlo has in turn taken on the role of Divisional Manager: Innovation Support and Protection.

Dr Cwele's IP journey started in 2016 and has gained much momentum over the past 6 years. In 2016 Dr Cwele joined CIPC as part of the first cohort to be trained as South African patent examiners, in aid of the implementation of Substantive Search and Examination (SSE) by the South African Patent Office. His duties were, however, not limited to patent examination matters, but included raising IP awareness with researchers, analysing IP data and preparing IP landscape reports for decision-making. During his training as a South African patent examiner, Dr Cwele gained extensive knowledge on a broad range of IP issues and participated in extensive training programmes under the European Patent Office, the South African Patent Examination Board (PEB) and also the World Intellectual Property Organisation.

Significant milestones in Dr Cwele's career include representing the Patents and Designs Division of the CIPC at numerous international meetings and participating in the initial discussions between the CIPC and the EPO towards developing a memorandum of understanding for the conceptualization and implementation of the Substantive Search and Examination in South Africa.

As if the list of accolades is not impressive enough, while serving on the KZN Innovation Advisory Committee, Dr Cwele obtained an LLB degree through UNISA, completed all the modules of the Patent Examination Board and fulfilled his Practical Legal Training (PLT) at the School for Legal Practice in Pretoria, equipping him with further skills that will prove very handy in his new position.

Dr Cwele holds a PhD in chemistry from the University of KwaZulu-Natal. He worked as a postdoctoral research fellow at PetroSA Synthetic Fuels Innovation Centre (PSFIC), housed at the University of the Western Cape. His research projects during his postgraduate studies focused on materials, industrial chemistry and catalysis. During his time as a postdoctoral research fellow he co-supervised a number of postgraduate students.

Dr Thandanani Cwele

We are honored to have someone with Dr Cwele's knowledge, qualifications and experience in the very important role of Registrar, especially at this pivotal time during the implementation of SEE. We wish Dr Cwele every success with his career.

USING THIS OPPORTUNITY, WE THANK DR NYATLO FOR HER INVALUABLE AND CONTINUED CONTRIBUTION TO THE SOUTH AFRICAN IP INDUSTRY, AND IN PARTICULAR IN HER ROLE AS REGISTRAR OF PATENTS AND DESIGNS OVER THE LAST COUPLE OF YEARS

Although the year is already 4 months in, I would like to use this opportunity to wish all the members of the Institute a healthy, safe, fulfilling, and prosperous 2022.

A special word of thanks to the council members, the convenors and members of the various committees, sub-committees and working groups of the SAIIPL. The work that you do is not always visible and rarely acknowledged or applauded, but every minute you spend on it is crucial in ensuring the continued success and progress of our profession, which has looked after us so well over the years – especially over the past 2 years. Finally, thank you to Dr Madelein Kleyn for her tireless work and dedication in compiling the IP Briefs® and ensuring that it reaches all of us.

Intangible assets and Transfer Pricing Principles and Consequences - The Cost-Sharing Myth by Dr.André Gorius

In the current context of a global economy largely based on the use of data and knowledge, intangible assets are major elements of sustainable value creation for companies or organizations. Therefore, the objective and reliable assessment of the economic value of these generally risky assets (such as the future contribution of R&D to enterprise value) is one of the pillars of strategic decision-making processes.

For multinational companies, transfer pricing issues relating to these intangible assets have become increasingly important over the past decade, to the point that decisions on the allocation of these assets, for a given industrial group, to one or other of its constituent legal entities (e.g. know-how, patents, trademarks, etc.) are no longer dictated solely by legal considerations, but clearly by the financial consequences, particularly in terms of corporate tax, of such decisions.

The following is the vision "seen from the trenches" that my past activity as Intellectual Assets Valorization Director, following a series of positions as R&D and Industrial Director within the Solvay Group, and my present consulting activity has provided me with.

The principles published by the OECD

In 2017, the OECD published [1] in its final version the update of an already old report, dating from 1979 [2], and completed in 2021 by a Progress Report[3].

The 2017 Guidelines report is the result of a multi-year project, known by the acronym BEPS (Base Erosion Profit Shifting), aimed at limiting tax optimization practices of locating the income of multinational companies in legal entities located in tax-advantaged countries. Often, with regard to, for example, Intellectual Property (IP), it was sufficient to designate as the owner[4] of patents, trademarks or know-how, a low-taxed legal entity P, which then charged the most heavily taxed legal entities L license royalties; the tax gain was then simply related to the tax differential P vs. L.

The operational reality was often the opposite: decision-makers (so those who took the risks), researchers and other functions involved in value creation were not located in the P entities, which were sometimes even empty shells.

BEPS has led to the publication of some simple principles aimed at putting an end to these practices, which could be to summarizes [5] as follows:

- Within a multinational enterprise, each legal entity must be considered independent of the others.

- Contracts between such legal entities must reflect this theoretical independence [6] : would two unrelated parties have signed the same contracts? If not, the contracts are not in accordance with the "Arm's Length Principle" and will be rejected by tax administrations.

[1] OECD Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations, OECD, July 2017

[2] Transfer pricing and multinational enterprises, OECD, 1979

[3] OECD/G20 Inclusive Framework on BEPS Progress report July 2020 – September 2021

[4] The distinction between Legal and Economic ownership was not on the agenda.

[5] The reality is a little more complex, but throughout my career, these principles have allowed me to always determine transfer pricing patterns that have proven to be solid.

[6] What I usually translate as "the legal world and economic reality must converge"

- A legal entity that assumes costs and risks as a participant in the value creation process must be remunerated to the extent of its participation, as if it were an independent third party (again, arm's length principle)
- Legal property and economic property are two distinct things: for example, with regard to a patent, if the patent's legal owner does not participate in the creation of value, he is paid only for his service of filing, maintenance and defense of the patent; the entity that directed and financed the research that led to the patent must be remunerated as soon as the patent generates revenues, for example by granting a licence to a third party.

The following examples will highlight what these principles imply in real operational life.

The operation of a Multi-National Enterprise (MNE) – Example of innovation[7]

Geographical location of R&D decision-makers and operational staff: I have never come across a MNE in which the entire innovation process is managed by a single legal entity.

The case by far the most frequent is that of a General Management, an R&D Director, and researchers scattered around the world for purely operational reasons, ranging from proximity to markets, historical reasons, and sometimes for mere personal convenience. Teams working on a given subject, usually organised in the form of projects, are assigned to subjects according to their skills, the geographical aspect (thus the Legal Entity aspect) being largely secondary. Therefore, in terms of principles, the result of R&D activities is the result of a pooling of resources of separate legal entities that must each be remunerated according to their respective contributions to the results: for tax administrations, the notion of "family within which we exchange gifts" simply does not exist.

Geographical location of the users of the results: this aspect is more classical : R&D results are industrialized in factories scattered (in legal entities) around the world, as are sellers and distributors. The question posed by the principles is therefore simply: do the legal entities using the R&D results pay the right price to the entities that create these results?

A wide spectrum of types of activities of R&D teams: without the organizations or the reporting mentioning it explicitly, all MNEs in fact manage many types of activities executed by R&D teams. This usually ranges from purely local activities, such as sales support or technical assistance to factories, to global activities such as the creation of new technologies that can benefit legal entities distributed around the world. It goes without saying that transfer pricing schemes (allocation of costs and revenues from R&D activities) must take this fact into account.

The distinction between legal entities is probably the most delicate and even frustrating aspect that I have had to deal with in my career as R&D Director. In a MNE, R&D is a transversal activity and the associated budget is generally global. At the management level, the allocation of costs to one team or another is a decision in which the concepts of transfer pricing are never mentioned: one decides to use the skills in a lab X in a country Y because the right skills are there. As long as the local manager manages and properly closes the budget allocated to him, no operational employee cares about the remuneration of the legal entity hosting it.

Consequently, the MNEs that best manage these aspects without creating unnecessary conflicts between operational staff are those that have set up dual financial reporting on two independent axes: the managerial dimension (containing the budget of the R&D director) and the financial axis (independently containing the remuneration of legal entities) for Global Management.

[7] Author retained the English acronym here for multinational agreements.

This system is transparent: at their level, the remuneration of legal entity Y by another X amounts, in pictorial language, to "a right pocket -left pocket zero-sum transaction ".

The Myth of Cost Contribution Agreements (CCA)

The classical theoretical situation

A simple solution used on a very large scale until recent years is to distribute R&D costs to various legal entities which, integrating them into their local cost structure, therefore benefit from the deductibility of the latter vis-à-vis corporate taxation.

What follows analyzes the consequences of this apparent co-construction of new technologies or services by R&D on a simple and widespread example.

The most common situation consists, in fact, for a given product line or value stream, in:

- A central legal entity (HQ) acting as the global headquarters of a group, which centralizes all R&D costs charged to it by various legal entities (RD_i), each hosting one or more R&D centers. This "cost buffer tank" is sometimes called the "cost-pool".
- Operational legal entities (OP_i), hosting factories and sometimes other types of establishments to which HQ re-invoices all R&D costs collected by following an allocation key[8].
- If HQ hosts factories, it retains its share of costs. Similarly, some (OP_i) operational entities, of which HQ may be a part, host research teams, and charge their costs to the "cost-pool" which then re-invoices them for their share in the total.
- The Cost Contribution Agreement (CCA) stipulates that all patents resulting from the R&D concerned are registered in the name of HQ, which grants a free license to all (OP_i) operational entities.

Figure 1 below summarizes these principles.

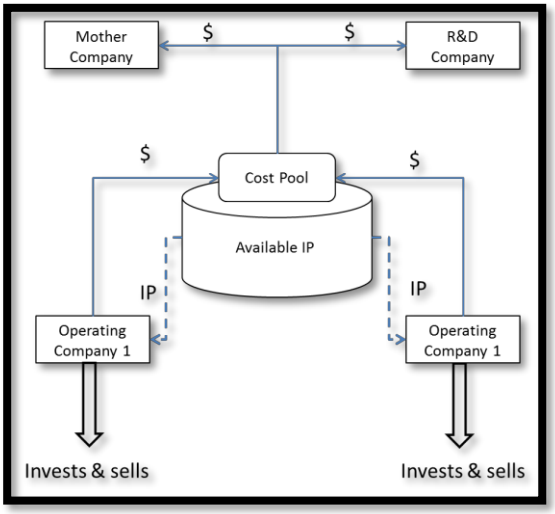

Figure 1Standard CCA Terms

After having shared the costs for several years, the R&D network, which laboratories are spread all over the world but collaborate freely, invent the concept of a new type of boiler capable of producing, thanks to very low investment amounts and operating costs even for small capacities, high-pressure steam (60 bar). Acting within the framework of the CCA, HQ's central laboratory assembles and operates a pilot boiler and demonstrates the industrial feasibility of the concept.

Within the framework of the CCA, two operational entities OP_1 and OP_2 funded the project, and are therefore free to use the results.

If we assume the following industrial situation, in which 3 legal entities are present, HQ (non-operational), OP_1 and OP_2; to simplify, let's say that OP_1 and OP_2 generate the same turnover, and therefore share the R&D costs at 50% each:

- OP_1 operates its plant with a minimum of industrial engineers, and therefore does not have any development potential other than incremental; it needs steam to heat a

8 Allocation keys are often based on turnover or, more rarely, volumes or even margins corresponding to products manufactured in hosted factories.

new reactor to increase its production capacity of a standard chemical.

- The current boiler, saturated, is not able to generate the necessary amount of steam. The above invention allows OP_1 to invest in a new complementary boiler, and to make the new reactor competitive. The new tons sold allow a very attractive return on total investment.
- For its part, OP_2 , located in another country, hosts many engineers (non-researchers) experts in energy, who know how to:
    - Generate electricity in a turbine (which OP_2 will use or resell), by transforming the high-pressure steam (60 bar) into a lower pressure steam (6 bar) still usable; the payback time of the investment is better than two years.
    - Use steam at 6 bar to heat a new reactor needed to meet market needs; after heating the reactor, the steam is condensed into hot water ("condensates") at 60°C.
    - Use condensates to preheat raw materials injected into the new reactor, and even use waste heat to heat buildings on cold days.
    -

In a nutshell, the level of knowledge initially present in OP_1 and OP_2 leads them to different technological choices and the value created by each of them by the invention that they have co-financed is thus radically different.

First conclusion: the value created under the CCA strongly depends on the ability of each contributor to use it. The allocation of costs does not reflect the allocation of the values derived from them.

If the CCA situation described exactly the operational reality, there would be no problem in principle: it is nothing more and nothing less than the joint creation of a library, in which each of the co-owners is free to draw and then adapt the results to his own needs and objectives according to his own skills. In this case, the respective share of the intangible value of the invention attributable to each of the legal entities OP_1 and OP_2 is simply deducted from the share of the R&D costs incurred (50/50 in this example). Also, the respective technologies resulting from the use of the invention by each of them belongs to each of them 100%.

But this has never been the case in the real situations I have encountered.[9]

The real situation

There is a logical and natural tendency to exchange information between legal entities of an industrial group, if only for reasons of overall cost optimization. Otherwise, what is the point of the notion of a "Group"?

This dimension is usually completely obscured in standard CCA terms. Thus, in all the cases I have met, a specific legal entity assumes a central coordinating role; most often, it is the Parent Entity of the Group, HQ. This will be the assumption used in the following.

In a Multi-National Enterprise, the headquarter entity HQ will do what is needed to optimise the value created by technologies globally and not exclusively at the boundaries of a given legal entity. For example, it may well be that the economic optimum is to initially invest in OP_1 the electricity generation technology resulting from OP_2's skills[10]. OP_2 will only invest in the use of the patent to heat its reactors.

In addition, the researchers located in HQ bring critical skills, necessary for the adaptation in OP_1 of the ideas developed by OP_2 to be done at best.

[9] To be rigorous, with one exception out of several dozen

[10] This is obvious, for example, if the electrical power market is strongly imbalanced in the country where OP1 operates, and in a state of surplus in that of OP2

Figure 2 below summarizes the actual situation

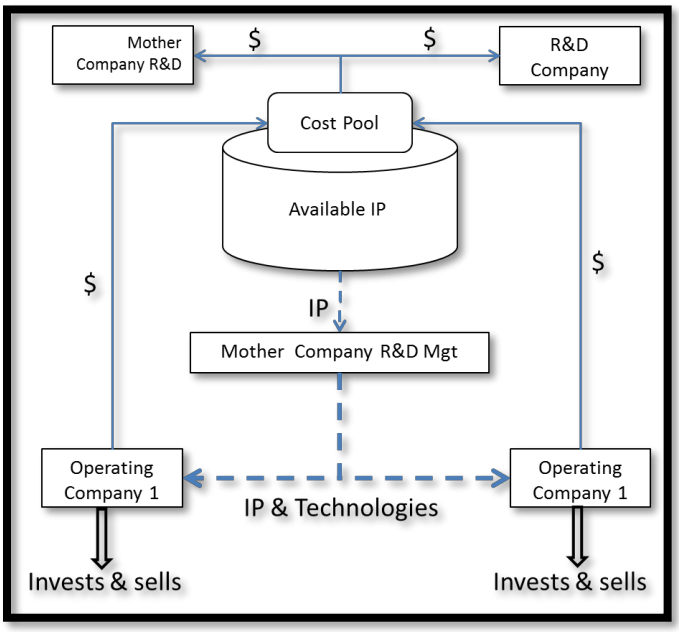

Figure 2 The actual situation

The imbalance is now clearly apparent: the CCA's terms imply that:

- OP_2 is not properly remunerated for the contribution of its industrial engineers, which costs are not included in the CCA
- Even if the costs of these engineers had entered the "cost-pool" it is a safe bet that they are much lower than the economic value created in OP_1, by several orders of magnitude
- HQ plays a special role as an intermediary and brings skills, and is not remunerated at the fair value of its contributions.

Second conclusion: CCA's terms do not adequately reflect the need to compensate each legal entity for its contributions ("functions") and risk-taking. If the legal entities HQ, OP_1 and OP_2 were really independent, the CCA would never been agreed upon as such, but would have tended to pay each actor for his functions and risk-taking; this common-sense reasoning is the basis of the OECD's "Arm's Length Principle".

A classical consequence

HQ decided to invest in OP_3, located in a fourth country, the technology developed by OP_2. OP_3 is not a participant in the CCA nut HQ decides it must enter the scheme. SO, OP_3 must pay the team "HQ + OP_1+OP_2" to enter the CCA: let's choose to charge it an entrance fee plus the payment of a royalty based on OP_3's sales. The exercise is standard for the evaluator: entrance fee + NPV of the royalties is the value of the technology provided.

The standard CCA simply asks to include this income in the "cost-pool", which amounts to assigning to each entity OP_1 and OP_2 a share of this income based on the cost allocation key (50/50 in this case). This is obviously not in line with the arm's length principle: HQ is in no way remunerated, and OP_2 is harmed.

It is of course easy to correct these errors in theory by assigning to HQ, OP_1 and OP_2 a share of this income based on an allocation key reflecting the functions and risks assumed by each party.

In summary

The OECD transfer pricing principles for intangible assets are common sense principles, and should be applied to real situations as simply and rigorously as possible. The example of the Cost Contribution Agreements explained above, shows that in most cases this type of agreement is not adapted to the reality of multinational companies. Strictly speaking, this type of agreement obeys the Arm's Length Principle only if it also incorporates the fair remuneration of **all**[11] legal entities involved in value creation processes.

Another, simpler, option, generally exists, i.e. focus on a central entity HQ (for example the parent company) the economic ownership of the technologies (in particular the R&D costs but also in particular the decision-making functions), and

[11] In the example above, S was excluded from the CCA eventhough it has a decisive role in creating value at the boundaries of the Group.

grant the user entities royalty-bearing licenses. This implies that HQ buys back from the entities participating in a CCA their share of existing and developing technologies.

It is essential, before deciding on a change in transfer pricing scheme or introducing a new one, to determine the actual contribution of each legal entity to value creation. This involves a detailed qualitative analysis of the operational aspects in the field: discussions with business, industrial, R&D, marketing and IP managers, HR, …, then field visits (factories and research centers generally).

The evaluator in charge must therefore rely on teams trained in both technological aspects (R&D and industrial), business, IP and tax, and master all these aspects himself. It is the view of the author that the correct method of creating this type of function is to use high-level technologists who have managed business aspects and train them in transfer pricing methods, not the other way around.

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André Gorius, PhD

André Gorius graduated from the Ecole Normale Supérieure (Paris, 1985), where he obtained the titles of « Docteur de Troisième Cycle » and « Professeur Agrégé » in Physics. In 1988, he obtained his PhD ("Doctorat d'Etat ès Sciences") in Chemical Engineering.

During his career in the Solvay Group since more than 30 years, he occupied the positions of R&D Director and Industrial Director in France, USA and Italy. Since 2006, he has been involved in the economic aspects of technology transfers, was Licensing Director, and created the position of Intellectual Assets Valorization Director he occupied until June 2019.

He specializes in valuation of intangible and IP assets and start-ups, in the general frames of Technology Transfers, Merge & Acquisitions, and Transfer Pricing, Litigations, etc., always leveraging his scientific and technology background to assess the underlying technology strengths and weaknesses, and the way enterprises manage these assets. He also ins involved in numerous valuations of companies. The spectrum of his activities ranges from start-ups in creation to SMEs and large multinational enterprises (>$20 Billion sales).

Dr. Gorius teaches the general concepts of economy to engineers, teaches IP Valuation, has created in 2021 the course "Valuation of Intangible Assets" in the EMLyon Business School in France. He tries to develop novel approaches of intangible assets valuation by analogy with the known theories of classical and quantum physics.

Acting since July 2019 as a consultant and CEO, he is member, among others, of the "Association d'Experts en Evaluation d'Entreprises" (Enterprise Valuation Experts) and chairs the IP Valuation Committee within LESI (Licensing Executives Society International).

PATENTS CANNOT BE BLAMED FOR INEQUITABLE ACCESS TO COVID 19 VACCINES

By: Raildo Duarte, Hasan Irfan Khan, Alejandro Luna, Ramadan Amin, Charul Yadav, and Ulrich Storz

In view of the inequitable distribution of COVID-19 vaccines, several initiatives have been discussed to waive respective patent rights. This article provides a fact-based multinational study on patent rights protecting BioNTech-Pfizer's vaccine BNT162b2. We conclude that although there actually is a vaccine shortage in many countries, patents cannot be blamed as the scapegoat for said situation.

The COVID 19 pandemic has been unique in many aspects. The speed of it's spreading over the globe, the death toll it causes, and the impact it has on the global economy are unrivalled in modern history, at least when the so-called Spanish flu is counted out.
At the same time, science has never witnessed such a quick development of potent vaccines. The first COVID 19 cases were reported in Wuhan, China on 31. December 2019. On 12. January 2020, Chinese researchers uploaded the SARS CoV 2 genome to Genbank (NCBI Reference Sequence: NC_045512.2).

On 30. January 2020, the Director-General of the World Health Organization (WHO) declared the outbreak of COVID 19 to be a Public Health Emergency of International Concern, and on 11. March 2020 the WHO characterized it as a pandemic.

Ever since COVID 19 vaccines became a realistic option, part of the public discussion was about a fair and sufficient distribution of the vaccine. Because COVID 19 is a global pandemic, the WHO has initiated the COVAX programme, with the goal to accelerate the development and manufacture of COVID 19 vaccines, and to guarantee fair and equitable access for every country in the world.

In October 2020, South Africa and India have petitioned the World Trade Organization (WTO) to support their attempt to suspend patent protection for COVID 19 related drugs and technologies. NGOs like Doctors Without Borders have supported this initiative, *inter alia* with a social media campaign. On 10. December 2020, the WTO, which is the UN division that administrates trade rules among its 164 member nations, discussed the proposal at its Council for Trade-Related Aspects of Intellectual Property Rights (TRIPS) meeting.

In May 2021, a revised proposal was submitted in which the focus shifted to "health products and technologies" for prevention, treatment or containment of COVID 19. In the same month, the new US administration under president Biden offered conditional support, yet only for "vaccines", while Germany and some other European countries keep opposing the initiative.

There can be no doubt that a fast and equitable distribution of COVID 19 vaccines is the only key to overcome this pandemic. Nothing is gained if the northern hemisphere achieves a sufficiently high vaccination status, and eventually herd immunity, but the southern hemisphere lags behind.

With the rise of new variants with assumed higher infectivity, the call for patent waivers was raised again by members of the European Parliament.[i]

It may be a bit short sighted to blame patents for the current disparities. Different authors have made it clear that (i) insufficient know how transfer and (ii) supply chain problems, combined with (iii) lack of production capacities, are the true reason for this situation. At least with regard to the first two reasons, northern hemisphere economies have indeed a strong responsibility, and also the WHO has adressed this issue by launching, in May 2020, the COVID-19 Technology Access Pool (C-TAP), which was initated to *"facilitate timely, equitable and affordable access of COVID-19 health products*."

Patent applications are usually published 18 months after filing. As COVID 19 is such a young disease, patents which have specifically been filed to protect the actual vaccines have just been published, but are not granted yet – so can hardly be blamed for keeping vaccine manufacturers in less developed countries out of the field.

However, background technologies may have been developed earlier, so that respective patent applications are already available for public inspection. Yet, the idea that, in order to be enabled to make a given vaccine, one would just need access to what is written in a patent, is quite naive. Patents merely disclose key features, or even only individual building blocks, of a complex vaccine, and can hence not serve as a blueprint for their manufacture.

The authors present in this paper the investigative study of the patent situation for the first COVID 19 vaccine that went through full marketing authorisation - BNT162b2 by BioNTech/Pfizer and analyse whether the patent situation has an impact on the most important non-western vaccine-producing countries, e.g. Brazil (BR), Egypt (EG), India (IN), Mexico (MX), Pakistan (PK) and South Africa (ZA). Table 1 provides an overview of the major vaccine producing companies in these countries, and manufacturing agreements they have concluded[ii].

Country	*BR*	*EG*	*IN*	*MX*	*PK*	*ZA*
Key vaccine facilities	Fiocruz Instituto Uniao Chim	Minapharm	Many (with Serum Institute the biggest)	Neolpharma, Birmex	AMSON	Biovac Aspen Pharma
Manufacturing agreements	Fiocruz: ChAdOx1 Uniao: Sputnik V	Sputnik V	Serum Inst.: ChAdOx1 Many: Sputnik V Biological E: *Ad26.COV2.S* Serum Inst.: NVX-CoV2373 Praha vaccines: NVX-CoV2373	Birmex: Sputnik V	n/a	Biovac: BNT162b2 Aspen Pharma: *Ad26.COV2.S*

BR: Brazil; EG: Egypt; IN: India; MX: Mexico; PK: Pakistan; ZA: South Africa
NVX-CoV2373: recombinant spike vaccine by Novavax; *Ad26.COV2.S*: vector vaccine by Jansen; ChAdOx1: vector vaccine by AstraZeneca; Sputnik V: vector vaccine by Gamaleya Inst.

Table 1 Major Vaccine-Producing Companies in Selected Emerging Countries and Their Manufacturing Agreements

Technical characteristics of BNT162b2

BNT162b2 is well described in literature and is an mRNA vaccine having the following technical characteristics:

BNT162b2 uses lipid nanoparticles for delivery. The latter comprise, 4 different types of lipids, namely, next to 1,2-Distearoyl-sn-glycero-3-phosphocholine (DSPC) and cholesterol, which are both known already for quite some time, a cationic lipid called ALC-0315 ((4-Hydroxybutyl)azandiyl]bis (hexan-6,1-diyl)bis(2-hexyldecanoate) and and a pegylated lipid called ALC-0159 (2-[(Polyethylenglycol)-2000]-N,N-ditetradecylacetamide).

While ALC-0159 mainly stabilizes the nanoparticle shell, along with cholesterol and colfosceril stearate, ALC-0315 has a special role. Normally, both lipids and mRNAs are negatively charged, they repel each other. ALC-0315 is a functionally cationic lipid at pH 7 or higher. The electrostatic interaction between negative mRNA and positive support nanoparticle formation. In

total, the molar lipid ratios are 46.3:9.4:42.7:1.6 (ALC-0315/DSPC/cholesterol/ALC-0159).

The mRNA

BNT162b2's mRNA encodes for a variant of the SARS CoV2 spike protein that has two substitutions (K986P and V987P, dubbed the 2P mutant). The substitutions avoid the conformation shift that the spike protein undergoes upon binding to the hist cells ACE receptor, and hence arrest the protein in its prefusion configuration,[iii] which results in an increased immune response. The principle was tested by an NIH group for different *Coronaviridae*, and a conserved motif was identified in which the 2P substitution is to be affected – interestingly, it turned out that said motif is identical in SARS CoV- 1 and SARS CoV-2.[iv]

Chemical modification of mRNA

The mRNA used in BNT162b2 comprises N-1 Methyl Pseudouridine ("m1Ψ") instead of regular uridine.[v] The latter activates toll like receptors and hence triggers an immune response against foreign mRNA – which is unwanted in cases where mRNA is the therapeutic entity. The use of m1Ψ effectively suppresses such adverse response. Note that CureVac applies a different strategy to avid adverse anti uridin eresposnes, by using a G/C enriched codon that avoids uridine whereever possible.[vi]

Further ingredients

The injectable formulation of BNT162b2 further comprises a buffer combination (0.01 mg potassium dihydrogen phosphate and 0.07 mg disodium hydrogen phosphate dihydrate), and other excipients (0.01 mg potassium chloride, 0.36 mg sodium chloride and 6 mg sucrose).

Patent applications protecting COVID 19 mRNA vaccines *per se*

The genome of SARS CoV-2 was made publicly available on 12 January 2020, the earliest possible date for which the publication of a patent application directed at a COVID 19 vaccine per se could be expected was 12 July 2021.[vii]

Based on these technical considerations, a series of 3rd party PCT patent applications that cover the respective technologies were identified.

These applications are shown in Table 2.

Patents and patent applications have a territorial (and sometimes, like in Europe, a super-territorial, yet regionally confined) effect only. Hence, in order to block a domestic industry from producing a vaccine, the respective patent applications must at least have pending national counterparts in the respective jurisdictions.

The process of entering the PCT national phases, which lead to the pending national counterparts, requires that the respective patent applicant actively initiates such national phases.

If the applicant decides not to enter national phase in a given country, the patent application will not take any legal effect therein.

Because internet-based patent databases like INPADOC provide only insufficient coverage for some of the countries of interest, we obtained respective information directly at the respective patent offices.
It should not be left unnoted that some of the

patent applications shown in Table 2 – or, more precisely, individual national phases thereof - are subject to legal disputes. However these disputes do not affect 3rd party's freedom to operate in the above mentioned countries of interest.

using the respective technologies.

As regards patent applications protecting COVID 19 mRNA vaccines *per se*, we identified three patent families, assigend to Modnera, CureVac and BioNTech. Moderna missed the above key date derived from the earlier work perfomred by the NIH – labelled SEQ ID NO: 29.

CureVac came slightly later and filed its priority application on February 2, 2020, while BioNTec filed on April 22, 2020. It is not really surprising that all

PCT No	*Earliest priority date*	*Assignee*	*Related subject matter*	*Tech no.*	*BR*	*EG*	*MX*	*PK*	*IN*	*ZA*
WO2007024708	Aug. 23, 2005	University of Pennsylvania	mRNA comprising m1Ψ for stability and reduced immunogenicity	3	n/a	n/a	n/a	n/a	n/a	n/a
WO2018081318	Oct. 25, 2016	Dartmouth College *et al.*	Corona spike protein prefusion mutant ("2P")	2	n/a	n/a	n/a	n/a	n/a	n/a
WO2017075531	Oct. 28, 2015	Acuitas Therapeutics	BNT162b2 uses ALC-0315 (=compound 3 in table 1) as cationic lipid component	1	n/a	n/a	n/a	n/a	n/a	n/a
WO2018081480	Oct. 26, 2016	Acuitas Therapeutics	LNP formulation with 40–50 mol% percent of a cationic lipid plus a neutral lipid, a steroid and a polymer conjugated lipid	1	n/a	n/a	n/a	n/a	n/a	n/a
WO2013143683	Mar. 26, 2012	BioNTech	charge ratio in LNP	1	pending (1120140225621)	n/a	granted (377244)	n/a	granted (371045)	n/a
WO2020200472 WO2020201383	Apr. 5, 2019	BioNTech	LNP formulation with NaCl and Sucrose	4	n/a	n/a	n/a	n/a	n/a	registered (2020/01675)

BR: Brazil; EG: Egypt; MX: Mexico; PK: Pakistan; IN: India; ZA: South Africa; n/a: no national counterpart

Table 2 Third-Party International Patent Applications Protecting COVID-19 mRNA Vaccines

As Table 2 illustrates, for most of the key features of BNT162b2 encompassed by international patent applications, no pending national counterparts exist in the countries of interest. Hence, patent owners have simply no legal means to block the respective domestic industries from

by less than 3 weeks, as it filed a priority application on 28 January 2020, i.e. 16 days after the SARS CoV 2 genome was published. The application essentially comprises the spike protein sequence as translated from the published SARS CoV 2 genome, plus the 2P mutant that could be

three application cover similar subject matter, with all of them claiming the exact same mRNA sequence, encoding for the 1273 aa long spike protein comprising the K986P and V987P substitutions.

All three these patent families are still in the PCT phase, and no national

counterparts in have been filed and the examination and eventual grant of these patent application may still take anything between 2 and 5 years.

It needs to be noted that Moderna has already a corresponding US application pending (US2021228707A1) that received notice of allowance on August 27, 2021 with the following independent claim:

A messenger ribonucleic acid (mRNA) comprising an open reading frame (ORF) that comprises a nucleotide sequence having at least 80% identity to the nucleotide sequence of SEQ ID NO: 28 and encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 29.

Because Moderna, CureVac and BioNTech use mRNA encoding for the exact same spike protein including the 2P substitution, there is a likelihood that even in view of the degeneracy of the genetic code, said patent claim covers also BNT162b2.

Hence, it will not be surprising if this case gives rise to legal disputes. In fact, tensions between NIH and Moderna have already been reported, because NIH claims it has contributed to yet not been named as coapplicant.[viii]

It should be noted that a granted US patent has no blocking effect in any country outside of the United States.

Further, an opinion issued by the European Patent Office (EPO) exists that was provided on behalf of the World Inteellectual Property Organisazion (WIPO), which administrates international patent applications. In said opinion, the subject matter of the claims of Moderna‘s International patent application is deemed to lack inventive step, in view of the published SARS CoV 2 genome and the prepublication of the 2P substiution motif by NIH.[ix] In national phases, most patent offices refer to such opinion, meaning that Moderna‘s national phase filings will experience considerable headwind.

Conclusion

Patent applications not filed in a particular country do not have to be waived. Patents cannot be blamed for the fact that in the countries discussed herein, the domestic industry has not yet started to develop and/or manufacture BNT162b2m or a similar mRNA-based vaccine.

This finding does of course not deliver a complete absolution for vaccine manufactures of the northern hemisphere. As discussed already, what is needed is (i) an increased know how transfer not only for developing, manufacturing and approving the vaccine *per se*, but also, where necessary, for the upscaling of production capacities, (ii) the lifting of all export bans regarding vaccine ingredients as well as vials etc., and (iii) financial aid, too

The fact that in particular the new US administration seems to support the patent waiver initiative leaves a bitter aftertaste, in view of the fact that the US had a *de facto* export ban in place not only for COVID 19 vaccines but also for seemingly trivial components as syringes and needles.[x]

Interestingly, the WHO in its above-mentioned C-TAP initiative stated that one reason why it decided to advance immediately the know how transfer of mRNA vaccines would be that “many technical features thereof are free of Intellectual Property

Rights in many countries of the world".[xi]

In particular in the mRNA technologies, we are all reaping the harvest of innovations that were and brought to fruition with venture capital funding by investors – who see patent protection as an insurance to have at least a chance to recupe the resources they have advanced.

One should not be distracted by the fact that some vaccines, including BNT162b2, have been developed in record speed, and feature so far unseen efficacy.

First, BNT162b2 is the result of 20 years of continuous development of mRNA vaccines. The idea to use mRNA for vaccination was for the first time tested, and described by Ingmar Hoerr, who is the founder of Curevac, in 2000.[xii]
Second, even in modern times, vaccine development is far from being a safe bet, yet continues to be a risky business, as exemplified by the disappointing results of CureVac's CVnCoV,[xiii] Sanofi's VAT00008[xiv] or Merck's V590 and V591.[xv] These failures resulted in considerable financial losses for the respective companies and their shareholders.

Abolishing the prospect of receiving exclusivity, for a limited amount of time, in return for taking such risk would severely discourage innovation – and this is the last thing we need in these times.

As reported recently,[xvi] Pfizer and BioNTech announced that they signed a letter of intent with the Biovac Institute in South Africa's Cape Town to transfer technology, install equipment, and develop manufacturing capability, to produce BNT162b2. When fully ramped up, vaccine production is said to exceed 100 million doses, to be distributed exclusively within African countries. The raw material for the vaccines will be imported from Europe and the first doses will be produced in 2022.
While this may come too late for so many, it should be noted that India's government has in March 2021 suspended exports of ChAdOx1, which India's Serum Institute has licensed in from AstraZeneca, to African countries under the global vaccine distribution initiative COVAX. The ban is due to the catastrophic increase of COVID 19 cases in India,[xvii] so as to secure sufficient supplies for the Indian population, and is therfore, somehow understandable, yes has already been blamed as „vaccine nationalism".[xviii]

However, the ban leaves many African countries without the long-awaited vaccines, and patents are hardly to be blamed for the resulting shortage – despite of respective allegations raised by the Indian government in its October 2020 WTO petition.

Dr Ulrich Storz

Ulrich Storz received his PhD from the University of Münster in 2002 with a thesis in neurobiology. He is a German patent attorney, and joined the list of professional representatives before the EPO in 2006. Dr. Storz's main areas of practice are managing and enforcing patents and patent applications as well as drafting FTO analyses and opinions. He also provides advice on strategic patent issues, notably in life sciences and specifically in the field of therapeutic antibodies. He is regularly involved in major antibody opposition cases before the EPO. He has significant expertise in gene editing technologies including CRISPR, TALEN und ZFN, and also works in the field of CAR T cells, stem cell technologies, plant biosciences and enzymes.

[i] https://www.annacavazzini.eu/impftstoff-patente-jetzt-freigeben-weltweiten-zugang-zu-corona-impfungen-sicherstellen/

[ii] Source https://www.knowledgeportalia.org/covid19-vaccine-manufacturing, retrieved on 4 Aug 2021

[iii] Cai Y, Zhang J, Xiao T, Peng H, Sterling SM, Walsh RM Jr, Rawson S, Rits-Volloch S, Chen B. Distinct conformational states of SARS-CoV-2 spike protein. Science. 2020 Jul 21

[iv] Storz U, Moderna's vaccine patent family under the magnifying glass – submitted with Recent Patents in Biotechnology.

[v] Karikó K, Buckstein M, Ni H, Weissman D. Suppression of RNA recognition by Toll-like receptors: the impact of nucleoside modification and the evolutionary origin of RNA. Immunity. 2005 Aug;23(2):165-75. doi: 10.1016/j.immuni.2005.06.008. PMID: 16111635

[vi] Storz U. The patent maze of COVID 19 vaccines. Expert Opin Ther Pat. 2021 Jun 17. doi:10.1080/13543776.2021.1945581. Epub ahead of print. PMID: 34139951.

[vii] With one exception: Gamaleya Institute, who has developed the Sputnik V vector vaccine, have filed international patent application WO2021002776A1, which despite the priority date of 23 April 2020, has been prematurely published, i.e., already on 07 January 2021.

[viii] Storz U, Moderna's vaccine patent family under the magnifying glass – submitted with Recent Patents in Biotechnology

[ix] idem and 14

[x] Williams A, Stacey K, Is there a ban on Covid vaccine exports in the US? Financial Times May 1 2021, Retrieved 15 July 2021

[xi] Friede M, Long R, Call for expression of interest to: Contribute to the establishment of a COVID-19 mRNA vaccine technology transfer hub. 16 April 2021. https://www.who.int/news-room/articles-detail/call-for-expression-of-interest-to-contribute-to-the-establishment-of-a-covid-19-mrna-vaccine-technology-transfer-hub Retrieved Jul 3, 2021

[xii] Hoerr I, Obst R, Rammensee HG, Jung G. In vivo application of RNA leads to induction of specific cytotoxic T lymphocytes and antibodies. Eur J Immunol. 2000 Jan;30(1):1-7 ** (the first article to describe mRNA for use as a vaccine)

[xiii] Burger L (June 17, 2021) CureVac crashes after COVID-19 vaccine underwhelms, Reuters, Retrieved 1 July 2021.

[xiv] *Taylor NP (11 December 2020). Weak clinical data force Sanofi, GSK to delay COVID-19 vaccine. Fierce Biotech*. Retrieved 1 July 2021.

[xv] *Taylor NP (25 January 2021). Merck cans both its COVID-19 vaccines due to weak clinical data. Fierce Biotech.* Retrieved 1 July 2021.

[xvi] McKenzie D, Ravindran J (21 July 2021) Pfizer-BioNTech to start producing Covid-19 vaccines in South Africa in 2022. CNN, retrieved 23 July 2021

[xvii] Hollingsworth J (26 may 2021) The world's biggest vaccine maker is stalling on exports. That's a problem for the planet's most vulnerable. CNN, retrieved 23 July 2021

[xviii] Niladri Chatterjee, Zaad Mahmood & Eleonor Marcussen (2021) Politics of Vaccine Nationalism in India: Global and Domestic Implications, Forum for Development Studies, 48:2, 357-369

Polo – the end game…

By *Gaelyn Scott*

Gaelyn is an Executive at ENSafrica. She heads up the Intellectual Property (IP) department. She specialises in strategic brand management and the enforcement of IP rights, both locally and internationally, with extensive experience in Africa.

In 2020 the attention-grabbing case, *LA Group (Pty) Ltd v Stable Brands (Pty) Ltd and The Registrar of Trade Marks* in which Stable Brands successfully applied for the cancellation of over 40 trade mark registrations of LA Group (Pty) Ltd. The trademarks in question all contained the word Polo and/or a device of a polo player. The registrations covered a range of classes: 6, 9 14, 16, 18, 20, 24, 25, 26, 27, 28, 35, 41, 42 and 43. The grounds for cancellation included:

- Lack of distinctiveness.
- Registration without a genuine intention to use/continuous non-use for five years or more.
- Likelihood of confusion or deception arising from the manner in which the trademarks had been used.

Inevitably, the case was taken on appeal. The Supreme Court of Appeal has handed down its judgment and this runs to 111 pages. There are two judgments, but in this article, we focus on the majority judgment handed down by Judge Schippers.

Lack of distinctiveness: section 24 read with section 10(2)(*a*)

The trademark proprietor, LA Group, had submitted evidence of very significant use of its trademarks since 1976. The judge was impressed by the fact that there had been "custom-designed and manufactured Polo shirts for former President Nelson Mandela", as well as a shirt that was used to host a bid for the Olympic Games in 2004. The judge described the publicity as "immeasurable…marketing gold." There was also evidence of a sponsorship of the South African rugby team during the 1999 Rugby World Cup. The judge said that "virtually the entire country followed the Rugby World Cup in 1999 and the majority of people would have identified the Polo trademarks with the appellant's goods."

The judge concluded that "there has been intensive, widespread, long-standing and continuous of the appellant's Polo and Polo Pony & Player device trademarks since 1976. … (they) have become firmly established as indicators of origin for more than 40 years."

The judge continued in saying that LA Group "has established that the Polo (word) trademark has become distinctive as a trademark source of its goods, irrespective of the dictionary meaning of the word 'polo'."

Registration without a genuine intention to use/non-use for five years – section 27(1)(a) and (b)
The judge held that certain registrations had been registered without a "bona fide intention to trade commercially in the goods for which the mark is registered." These had been correctly cancelled by the first court, but the bulk of the registrations were secure.
The judge further held that there were a few registrations where there had been no genuine use for at least five years, in other words where there had been no proof of "use for commercial purposes… (use) for the purpose of establishing, creating or promoting trade in the goods to which the mark is attached." These registrations had been correctly cancelled by the first court, but the bulk of the registrations were secure.
The judge made the point that the appellant had tried to avoid proving use of each trademark by contending that "all its different trademarks formed a "unitary brand" and that each individual trademark registration was protected as part of the brand." This approach, he said, was "impermissible."

Trademarks likely to deceive as a result of manner of use: section 24 read with 10(13)
This deals with the issue of a trademark being likely to cause deception or confusion as a result of the manner in which it has been used. This claim related to the fact that LA Group had entered into a co-existence agreement with a third party, Ralph Lauren, in terms of which Ralph Lauren was allowed to use and register in South Africa the Polo mark in respect of cosmetics in class 3.
But, said the judge, this did not fall within the prohibition, which is aimed at the use of the trademark in question in a deceptive or confusing manner, and it is this use that must lead to the likelihood of deception or confusion. "10(3) operates only when the deception or confusion has been caused by the use which has been made of the mark by the proprietor."

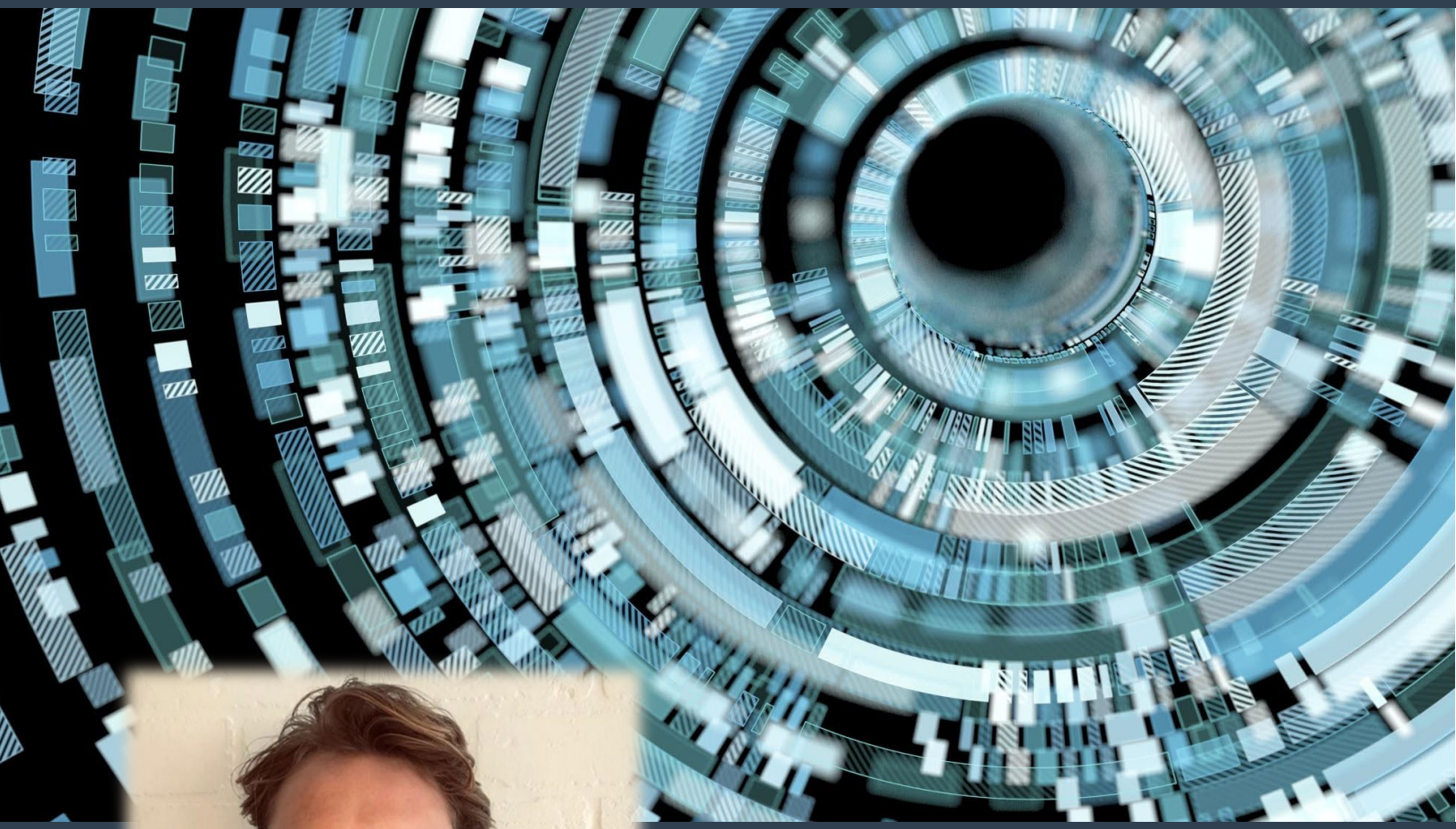
This long quote is interesting…*"Trade mark co-existence, a situation in which two different enterprises use a similar trade mark to market a product without interfering with each other's businesses, is neither novel nor unique… the effect of their agreement is to give the appellant free rein in the field of clothing and similar items, whilst leaving Ralph Lauren to import and sell its brand of cosmetics and skincare products… consumers who buy items of clothing in South Africa bearing the Polo mark… are buying goods of the appellant… it matters not that they think that they are buying from a well-known US fashion house… the badge of origin function of a trade mark is fulfilled provided that all items bearing that badge come from the same source…. The same applies to consumers buying cosmetics or perfume bearing the Ralph Lauren trademarks."*

A long saga has come to an end….

The judge found that Stable Brands had failed to "establish that 46 of the appellant's trademarks – the lifeblood of its business – were liable to be removed from the register."

ARTIFICIAL INTELLIGENCE AS A SERVICE

The automation of complex intelligent systems



By James Faure

James is a Master of Engineering Student at Stellenbosch University that focuses his research on artificial intelligence systems.

The 4th industrial revolution is the age of computing, with its growth largely fueled by digital technology. Cloud-computing is a particular technology that has allowed technological advancements to accelerate.

Alongside software as a service (SaaS) and platform as a service (PaaS), infrastructure as a service (IaaS) is one of the core service models of cloud computing.

Cloud computing

Most modern software architectures rely on cloud computing as their source of computational power. Manvi and Shyam (Manvi and Shyam, 2021) define cloud computing as "a space over network infrastructure where computing resources such as hardware, storage, databases, networks, operating systems, and even entire software applications are instantly available, on-demand."

Let's assume you want to develop a mobile app. For the app to function, it must be deployed onto a server that provides computation. Servers process user requests using CPU and memory. There are two options for deployment of the app. The first option is to purchase a server. Not only does a server require a large capital investment, but it also comes with limitations on computation and memory. If your app runs out of CPU or memory, it will not be able to accept additional user requests or store anymore data. The alternative solution is cloud computing, where one can essentially rent space on a public server. This mean that you will only pay for the computation that you use, and there are no limitations to the amount that you can have access to. Cloud computing is also great for data storage. Files are stored in the memory of the server and can then be accessed from remote locations or processed as part of an application.

The term "*everything as a service*" refers to software of any type that can be accessed across a network because it relies on cloud computing. The software is rebuilt and available off the shelf, meaning that it is reconfigured to fit the user's system. Software as a service (SaaS), infrastructure as a service (IaaS) and platform as a service (PaaS) are popular solutions in the cloud community. SaaS end user spending exceeded $145 billion in 2021, with 2022 expected to reach $172 billion[1] (Statista, 2021). The entire cloud computing market, fuelled by everything as a service, is growing at compounded annual growth rate of 16.3%[2] (Markets and Markets, 2021). The market is expected to grow from $445.3 billion in 2021 to $ 947.3 billion in 2026.

So, what is IaaS, PaaS, and SaaS? IaaS gives the user the most flexibility over the underlying infrastructure of the cloud. Users can provision for network usage, storage, and processing, among other resources. The user does not have physical control over the servers, but rather is able to make computational decisions over features such

[1] https://www.statista.com/statistics/505243/worldwide-software-as-a-service-revenue/
[2] https://www.marketsandmarkets.com/Market-Reports/cloud-computing-market-234.html#:~:text=cloud%20computing%20market%3F-,The%20global%20cloud%20computing%20market%20size%20is%20expected%20to%20grow,16.3%25%20during%20the%20forecast%20period

as storage type or operating systems. PaaS allows users to deploy applications onto the cloud service by utilizing programming languages, libraries, services, and tools supported by the provider. The user has less control over the infrastructure, where the solution is more geared towards ease of deployment. Finally, SaaS has the least control over the infrastructure, where a user to buys access to the functionality of an application. The underlying hardware and software are irrelevant to the user.

Cloud computing has been around for over 20 years and is now the most popular method of software application deployment. The biggest players in the game are Amazon (AWS), Microsoft (Azure) and Google (GCP). In 2021, it was reported that AWS had 33% market share, Aure had 21% market share and the GCP had 10% market share[3] (Statista, 2022).

Artificial Intelligence

The everything as a service era now has a new dimension that has been made possible by the invention of Artificial Intelligence, machine learning as a service (MLaaS) and artificial intelligence as a service (AIaaS). MLaaS is more suited to smaller datasets where high computations are not necessary, whereas AIaaS is used on larger datasets the required deep learning techniques to learn complex representations of data. Machine learning is an algorithmic way of learning distributions data to make predictions on novel data.
For example, machine learning algorithms are used to predicted whether someone will fault their insurance claims or not, where deep learning is used to diagnose cancers by observing an X-ray. The focus of this essay is the deep learning aspect to Artificial Intelligence.

What is deep learning? Deep learning is "a form of machine learning that enables computers to learn from experience and understand the world in terms of a hierarchy of concepts" (Goodfellow *et al.*, 2016). The hierarchy of concepts refers to breaking down complicated concepts into simpler ones, which are represented by a processing layer in the network. With each processing layer referring to a simple concept, multiple processing layers can build on each other to ultimately define the complex concept. A deep neural network is made up of many multiple processing layers, hence making it "deep". The multiple processing layers allow the deep learning models to learn different representations of data. The most successful applications of deep learning are in speech recognition, natural language processing and computer vision.

A computer vision is a good example. Human vision is an incredibly important aspect in the success of the human race. In ancient times, humans relied on vision to assess dangers and navigate difficult terrains. Vision has given us the ability to see the beauties of the world and diagnose sick patients. With importance placed on vision, humans invented imaging. We now use imaging across are variety of different domains, such as healthcare, agriculture, and surveillance, among others. Computer vision is a deep learning method of classifying objects in images.

Just as SaaS, PaaS, and IaaS evolved from the successes of cloud computing, AIaaS is beginning to become more prominent. It is

[3] https://www.statista.com/chart/18819/worldwide-market-share-of-leading-cloud-infrastructure-service-providers/

important to understand the difference between AIPaas and AIaaS. AIPaaS would be an end-to-end solution or piece of software that data scientists use to solve specific problems, where the results of the implementation can be used away from the tool too. Users pay-per-use or pay-per-service to use the tool.

AIaaS is when a data scientist uses a tool continually provide a service for a customer. AIaaS would be used by a consultant who is doing business with a domain expert for an extended period of time. Data scientists are expensive and quickly becoming scarce as demand for them increases. AIaaS allows a data scientist to be able to manage multiple clients at once, as the tool removes all the heavy lifting. In addition, the client does not have to pay for a full-time data scientist, making solving the problem more affordable.

AIaaS will allow data scientists to work with domain experts in solving complex problems using AI. The components in the application are integrated in a way that data scientists use an interface to process the dataset and train the models[4]. Once trained and evaluated, the models can be automatically deployed into a SaaS application. The SaaS application allows the domain experts to make predictions in real-time on new data. The data scientist then has access to a monitoring dashboard that can be used to monitor the performance of the models. When AI is a service, it is not replacing anyone, but rather being used to assist professions in daily tasks.

AIaaS is still at the beginning of its technology life cycle. The global AI as a service market size is expected to grow at a CAGR of 56.7% from 2018 to 2025, from $2,4 billion in 2017 to $77 billion in 2025 (Patil, 2018) [5]. Patent activity in this area is evident and will increase significantly as the technology evolves and challenges faced by patent offices around the world gearing for the new norm is continuing[6].

Impact on Africa

Different industries in Africa, such as healthcare, agriculture, security and surveillance, wildlife conservation, to mention but a few, are faced with challenges that require large investments from governments or private sector into infrastructure and salaries. AI gives Africa a chance of addressing this through data scientists that can work with medical professionals to develop computer vision diagnostics technologies; with game farms to count animals and spot poachers from drones; chatbots, deployed via SMS, can provide treatment recommendations to people in rural areas. All of these technologies can be made more accessible and affordable by using AIaaS.

As an example, deep learning can be applied to dentistry. In public hospitals across South Africa, thousands of people are left without diagnostics on their X-rays. This is largely due to the lack of qualified radiologists in public hospitals. People queue for hours and

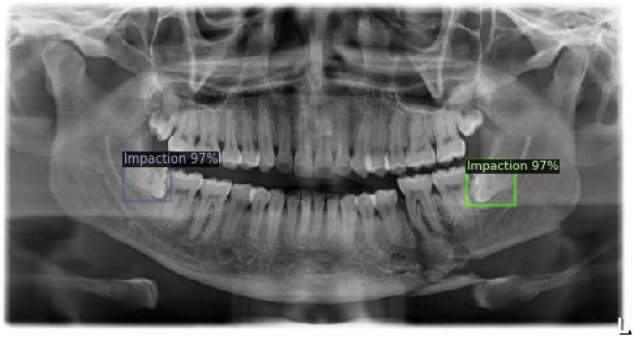
[4] See for example US20170201595A1 - Provisioning iaas services - Google Patents

[5] https://www.alliedmarketresearch.com/artificial-intelligence-as-a-service-aiaas-market

[6] See for example Can SaaS, I., White, G. and Coffin, J., 2022. *Can SaaS, PaaS, IaaS be patented?*. [online] Ask Patents. Available at: <https://patents.stackexchange.com/questions/3754/can-saas-paas-iaas-be-patented> [Accessed 31 March 2022].

more than often leave without any treatment.

Deep learning object detection models are trained to predict tooth anomalies and diseases. The models are then deployed using cloud computing to provide scalable diagnostics in real-time. The radiographer uploads the X-ray to a program that runs the deep learning models. The prediction results are compiled into a diagnostic report for the clinic doctor. The models essentially fill the gap that is left by the radiologist. Patients are then able to be screened for treatment at the time of diagnostics, instead of waiting a while for the X-rays to be analyzed.



Whether it be analyzing X-rays for fatal diseases or observing drone footage to spot poachers on wildlife reserves, computer vision and AI has the capability of making an impact in Africa. The trick is to make it simplistic enough for data scientists to build systems at scale.

From the Juta Law Reports

The following judgments were reported November 2021 – March 2022

Copyright — Copyright Act 98 of 1978 — Constitutionality — Delay in insertion of s 190 (via Copyright Amendment Bill of 19 March 2018) to cater for persons with visual and print disabilities — Applicant seeking — Applicant seeking orders expediting process of ending violation of rights of blind and visually and print disabled persons — Court ordering that Act to be read as incorporating s 190 — Declaration of invalidity suspended for 24 months to afford Parliament opportunity to remedy defect. *Blind SA v Minister of Trade, Industry and Competition Minister of International Relations and Cooperation* Guateng Division Pretoria case NO 14996/21, 2022 JDR 0195 (G), Mbongwe J, 7 December 2021, 10 pages

Patent — Claim types — Swiss form claims — Whether permissible in South African law — Swiss form claims devised in United Kingdom to overcome limitations on second medical use claims so as to overcome problem where known substance was found on subsequent occasion to be useful as a novel method of medical treatment, eg 'the use of substance A in the manufacture of a medicament to treat disease B' — Court ruling on facts that, while there might be debate on whether Swiss form compatible with Patents Act 58 of 1978, applicant had prima facie right to protection of its claim regardless of the fact that it is in the Swiss form — Matter one of those where patent in respect of dosage regimen in form of Swiss claim not objectionable under Act — Interim interdict granted. *Bayer Intellectual Property GMBH and Others v Dr Reddy's Laboratories (Pty) Ltd* Commissioner of Patents case No 2007/06238-5, 2022 JDR 0071 (CP), Keightley J, 15 December 2021, 20 pages

Trademark — Infringement — DANCESPORT in respect of professional dance (applicant) and amateur dance (respondent) — Public would be confused in thinking that use of the word DANCESPORT by respondent also relating to or coming from applicant — Might unclear to public which dance community it's actually dealing with — Respondent's mark infringing on registered mark of applicant — Application for interdict granted — Trade Marks Act 194 of 1993, s 34(1). *South African Dance Foundation v Phiri* Gauteng Division Pretoria case No 53311/2013, 2022 JDR 0297, Matshitse AJ, 25 January 2022, 6 pages

Trademark — Registrability — Confusing similarity to existing mark — Competing TAKIS marks, one in meats class (TAKIS biltong) and one in breads class (TAKIS FUEGO) — Overall impression, particularly visual impact, of marks gauged — FUEGO element of mark not sufficiently distinguishing — Logos also visually deceptively similar — In addition, marks similar on conceptual level — Court ordering cancellation of TAKIS FUEGO mark — Trade Marks Act, s 10 (various subsections), s 24(1). *Takis Biltong (Pty) Ltd v Grupo Bimbo SAB de CV* Gauteng Division Pretoria case No A393/2018, 2022 JDR 0303, Davis J, 10 December 2021, 16 pages

Trademark — Registrability — Confusing similarity to existing mark — SALTICRAX (appellant's existing mark) versus SNACKCRAX (mark sought to be registered by respondent), in respect of salt-flavoured biscuits — Whether appellant's CRAX element sufficiently distinguishing — No deception or confusion shown — While SALTICRAX well-known in the Republic, no evidence of detriment or unfair advantage to mark by use of SNACKCRAX mark — Respondent's application also not in bad faith — Registrar directed to register respondent's SNACKCRAX mark — Trade Marks Act, s 10 (various subsections). *National Brands Limited v Cape Cookies CC and Another* Gauteng Division Pretoria P case No 24206/17, 2022 JDR 0241 (GP), Le Roux AJ, 20 December 2021, 41 pages

Unlawful competition — Interdict — Applicants seeking interdict restraining former employees from competing against it by abusing confidential information and soliciting employees to take up employment with respondents — Whether applicants made out case for final interdictory relief to restrain breach of confidence — Court finding that no continuing wrongful conduct or reasonable apprehension thereof established on papers — Refusing to refer factual disputes to oral evidence — Final interdict refused. *Africa Parts Group Holdings (Pty) Ltd and Others v Titan Auto Parts (Pty) Ltd* Gauteng Local Division, Johannesburg case No 20/39009, 2022 JDR 0144 (GJ), Hassim AJ, 17 January 2022, 21 pages

Unlawful competition — Passing-off — What amounts to — A expressly or representing, either expressly or impliedly that goods or services marketed by it emanate from B or that there is association between such goods or services and B's business — TRINIYTHOUSE (appellant) and TRINITY COLLEGE SA (first respondent) in respect of educational establishments — Since appellant having established reputation in TRINITY HOUSE mark, which was confusingly similar to TRINITY COLLEGE SA, first respondent indicted from using latter name and directed to change name to one not incorporating mark TRINITY. *Independent Institute of Education (Pty) Ltd v Trinity College SA (Pty) Ltd and Another*, Gauteng Division Pretoria case No A84/2019, 2022 JDR 0307 (GP), RG Tolmay J (Mabuse and Bagwa JJ concurring), 4 August 2021, 17 pages

By Nico Vermaak

PETER RATTRAY – A notional reasonable man

CLIFTON GREY

"PETER" RATTRAY

3.2.1924 – 1.2.2022

Peter joined D M Kisch and Co in January 1960

It was with great sadness that we learnt of Peter Rattray's passing on 1 February 2022, just two days short of what would have been his 98th birthday celebration.

This account of some aspects of Peter's full life is to a large extent a reproduction of a profile penned by his colleague and partner at the time, A C "Adrian" Couzyn, and published in THE SOUTH AFRICAN INSTITUTE OF PATENT AGENTS NEWSLETTER NO 11 in September 1978. It has now been supplemented with recollections and additional information by JT "Dux" Truter, Johan "Lampies" Lamprecht and Nico Vermaak.

Clifton Grey Rattray has been called Peter for as long as anyone can remember. His daughter Julia once asked him how he came to be known as Peter. He just shrugged his shoulders and said he did not know and that he was just always known as Peter. He was born in New Zealand at Whyhi near Hamilton on the North Island. He came to South Africa as a toddler after the death of his father and was brought up in Johannesburg on the farm of his grandfather William Grey Rattray who purchased the farm Klipfontein before the Anglo-Boer War.

His grandfather renamed the farm Blairgowrie after his birthplace in Scotland.

The farm was bisected by the Braamfontein Spruit and had as its main feature the still existing Rattray's Weir which his grandfather built with dressed stone close to the residence. The resulting large lake in the Braamfontein Spruit was a popular picnic place with rowing boats where the people of Johannesburg enjoyed pleasant days in the country.

The lake is now all but completely silted up and covered with reed beds but is still popular amongst bird spotters. The suburbs Blairgowrie, Craighall and Hyde Park were developed on Rattray's original farms but were initially not very popular because it was too far out of town. What a place for a young boy to develop the curiosity that Peter always displayed.

Peter spent the first ten years of his school life at Jeppe Preparatory and High Schools at a time when they were generally recognised as among the premier sporting nurseries in the country. It was at this time that Peter generated a love of sport that has lived with him throughout his life as well as an indefatigable attitude to life which nothing could ever shake.

In 1939 he went up to the Thames Nautical Training College and matriculated there in mid-1941, after the Battle of Britain had been won.

He immediately joined the Merchant Navy as a midshipman, ultimately became a Navigation Officer in the Union Castle Line and spent the rest of the war years in convoys criss-crossing the globe. On one of these occasions, in August 1942, and during Operation Pedestal Peter's ship, the Rochester Castle, was torpedoed twelve hours steaming time from Malta. The ship managed to limp into Valetta harbour and since that time there has been very little that has been known to worry Peter. Certainly, I have never known a tight spot to put him into any sort of consternation.

Peter's eldest grandson Andrew Rattray recalls watching the World at War TV episode on Operation Pedestal as a boy and the tears rolling down his grandfather's face as he relived the horrendous sea battle in which only five of fourteen ships made it to port.

At the end of the war Peter returned to South Africa to start the process of building a career, and between the years 1945 to 1950 he achieved two degrees, those of Mechanical and Electrical Engineering, at the University of the Witwatersrand. After a two-year spell on the mines where he picked up a smattering of a mixture between Zulu and Fanagolo to bolster his bar room command of Spanish picked up in the dubious night spots of Beunos Aires, he joined Spoor and Fisher in December 1952 and obtained his LLB in 1956 after qualifying as a Patent Agent in 1955. Peter remembered his years with Spoor and Fisher with pleasure and spoke of his principal, Len Fisher, as a great patent attorney and a great humanitarian. Peter was himself these things.

In January 1960 Peter joined D M Kisch and Co. where he became the senior partner when Peter Kisch retired. There can be little doubt that he has been immensely beneficial to his firm, perhaps the most important achievement in this context being his driving leadership and enthusiasm which ultimately resulted in the firm converting to the status of Patent Attorneys. This took some doing. DM Kisch & Co was at the time a firm of Patent Agents with Peter as the only Patent Attorney who was also an attorney. He managed to persuade his partners in the agency firm, Dux Truter, and Adrian Couzyn, to attend night classes at Wits towards obtaining their law degrees with the view of also being admitted as attorneys. They implemented the most unusual arrangement with the assistance of the Transvaal Law Society's leading figure Monty Knoll. Peter established a law firm with himself as sole member alongside the agency firm DM Kisch & Co. As a law firm he was able to register Dux and Adrian as his articled clerks while they, and Dennis Greyvensteyn, continued to be his partners in the agency firm. Once Dux and Adrian were admitted as attorneys the firm was converted into a firm of Patent Attorneys but retained the name DM Kisch & Co. In about 1976 the firm became an incorporated practice and changed its name to DM Kisch Inc, under which it still practices.

In the early sixties Peter was elected to the Council of the Institute of Patent Agents and after serving the customary apprenticeship as Administrative Officer he was made our tenth President in 1970, a post which he filled with distinction for two years.

Peter's knowledge of South African affairs during the period of the Boer War was equal to that of an historian and his home was filled with trophies gathered on the battlefield. So keen was his interest in this regard that he obtained a B.A. degree from the University of South Africa with history as one of his majors. He has driven himself without mercy in the academic field, finding time in the late sixties and early seventies to obtain a Diploma in chemistry from the Wits Technicon in order to better serve his clients. One of his lecturers was a young Johan Lamprecht ("Lampies") whom he inspired to the extent that

Johan joined DM Kisch & Co as Peter's clerk, studied law part time, and eventually became his partner as a patent attorney and a dear friend for life. Lampies was the last of his partners to visit Peter at Swellendam shortly before his passing.

Lampies says he never saw Peter losing his temper which is something that not many clerks can say about their principals. He also recalls that when he had to bring him problems, which to him appeared insurmountable, Peter's advice would be to stop worrying as "these things tend to sort themselves out in the end." From that position he would then calmly look for and find the solution for the problem.

In 1978 Peter obtained an LLM degree from the University of South Africa (UNISA) for his thesis entitled "**Rights of employers in the inventions of their employees**". At the time of this study the firm engaged a young librarianship graduate who was studying towards his LLB as a part time librarian, namely Derek Momberg. Peter made effective use of Derek's services to find material for his thesis. When Derek completed his articles at a major general law firm Peter brought him back to the Kisch fold. In 1986, close to his retirement from practice, Peter obtained an LLD degree from UNISA for his thesis entitled "**Extension of the term of a patent".**

As a golfer he was nothing less than a past Captain of the Wits first team, and many first-class cricketers would recall the "death rattle" at the hands of his left arm seamers.

It was on the Wanderers Cricket Grounds that Peter lost his romantic stumps to a beautiful young radiographer Gillian Guittard. She was at the time an unknown spectator who enthusiastically cheered Peter on when he hit one six after the other in a dream innings.
They married in 1954 and raised three talented children. Julie became a photojournalist after studying languages and law, David was an entomologist and game ranger who became famous for developing the tourist centre at Fugitive Drift and his knowledge of the Anglo-Zulu wars, and Martin's works as an architectural designer and artist are well known particularly in the Plettenburg Bay area.

When the children were off their hands and Peter working and studying nonstop Gillian did not succumb to an empty nest syndrome. She followed Peter's suite by obtaining a degree in Social Work when she was well into her forties and stared working as a social worker. In addition, she stared publishing books recording their lives and beautifully illustrated with her own artwork. "The Springing of the Year" (1980), "To Everything its Season" (1986), "A Cape Country Chronicle" (1992), and "A Cape Country Garden" (1997) are all books worth owning. Throughout these accounts one finds Peter's influence and interest in historic places and beautiful things.
Gillian's books record their adventures first in Zululand and later at The Crags near Plettenburg Bay.

In the early 1960's Peter's path crossed with that of George Buntting who resided on the farm Fugitives Drift and who was at the time regarded as the foremost authority on the history of the Anglo-Zulu wars. Peter was so interested in the history and so taken in by the natural beauty of the area that he bought three adjoining properties West Kirby1 & 2 and Petroscar, and later Fugitives Drift was also included. Peter's son David developed the property into a world class tourist attraction with battle-ground tours and luxury accommodation in a beautiful setting.

David was widely recognised as the expert on Zulu history. How sad it was that the son whom Peter loved so much was brutally murdered on the place he so loved on 26 January 2007. The Fugitives Drift lodge is now run by Peter's second grandson who like his father is a knowledgeable guide of the battlefields.

In 1980 Peter and Gillian decided to relocate to the Plettenberg Bay area where they had decided to build a retirement home at The Crags. The development named Fairview became much more and is now run as a luxury boutique hotel by their oldest grandson Andrew. Most of that Quite some of the development was designed by their son Martin who sadly also predeceased his parents on 13 January 2018.

Figure 1 Peter Rattray in his 90s Credit Swellendam Heritage Association

In 2019 the family was living in Swellendam when Peter lost his beloved Gillian on 25 June 2019.

Both at The Crags and at Swellendam they were active members of the community. Peter even ventured into local politics and for that purpose did what his "boertjie" partners thought would be impossible: he learnt to speak Afrikaans. Of course, they joined the local Heritage Societies and Peter became a bowls player with great enthusiasm.

It was as a lawyer that he was most in his element and eminent counsel has nicknamed him the "notional reasonable man". With this none of his former partners would disagree.

His ashes were scattered from the same cliff at Fugitives Drift where he had the sad task of scattering those of his son David.