

<b>Institution:</b> City, University of London		
<b>Unit of Assessment:</b> 18: Law		
<b>Title of case study:</b> Galvanising Latin American Business Incubators		
<b>Period when the underpinning research was undertaken:</b> Jan 2018 – May 2020		
<b>Details of staff conducting the underpinning research from the submitting unit:</b>		
<b>Name(s):</b> Dr Enrico Bonadio Dr Luke McDonagh	<b>Role(s) (e.g. job title):</b> Reader in IP Law Senior Lecturer in IP Law	<b>Period(s) employed by submitting HEI:</b> 2011 – present 2015 - 2020
<b>Period when the claimed impact occurred:</b> May 2018 – Dec 2020		
<b>Is this case study continued from a case study submitted in 2014?</b> N		
<b>1. Summary of the impact</b> (indicative maximum 100 words)		
<p>Comparative research of the legal framework regulating business incubators at UK and Latin American universities conducted by Drs Bonadio and McDonagh led to: (1) Significant update of policies, procedures and good practices governing business incubators of Mexico and Cuba's top universities – the National Autonomous University of Mexico (UNAM) and the University of Havana (UH). There has already been a measurable increase in the number and viability of enterprises incubated at UNAM since they incorporated research findings into their policy in 2018 (2) Change in public policy in Cuba. New national legislation based on the research findings resulted in construction of new science parks at universities in Havana and Santa Clara.</p>		
<b>2. Underpinning research</b> (indicative maximum 500 words)		
<p>Drs Bonadio and McDonagh's research into the strengths and weaknesses of intellectual property policies (IPPs) commenced in January 2018 during their participation in a major European research project. The INBOTS project, involving 24 universities from across Europe, determined the state of the global market for humanoid robots and smart prosthetics. Initial phases of the research involved searching company databases in Europe (CORDIS; 40,000 projects), the US (FEDREP which includes over 260,000 projects) and worldwide (Crunchbase; more than 700,000) to identify (a) where robotics/prosthetics companies were registered and (b) to what extent they interacted with university researchers.</p> <p>Drs Bonadio and McDonagh's primary contribution to INBOTS was to analyse responses to a survey concerning which IP barriers or incentives robotics companies had found most important. By May 2018 three insights – published in an INBOTS report [3.1] – emerged from the database analysis and survey responses:</p> <ol style="list-style-type: none"> <li>1) Of a representative sample of some 60 robotics companies selected from the database, 85% were small or medium enterprises (SMEs).</li> <li>2) Support provided by universities and business incubators to these SMEs was essential: almost 90% of survey respondents cited collaboration with research centres as integral to their success, and over 60% indicated university research of central importance.</li> <li>3) Of the 30 or so humanoid robot companies in this sample, none were based in Spanish America.</li> </ol> <p>These findings spurred two complementary pieces of research by Drs Bonadio and McDonagh. The first comprised a comprehensive review of three types of intellectual property that respondents identified as of greatest utility to their businesses (patents, designs and trademarks). By reviewing more than 50 documents including key patent treaties, EU laws and European patent related decisions, the article (published online in February 2019 [3.2]) set out the limits of current European legal frameworks on SMEs.</p>		

The second piece stemming from the INBOTS collaboration involved an in-depth study of the interface between universities and SMEs in Mexico. It investigates the extent to which the absence of robotics SMEs in Latin America derived from a breakdown between university innovators and start-up companies. Comparative analysis was undertaken between leading UK and Mexican universities. Drs Bonadio and McDonagh worked in collaboration with Dr Ana Betancourt, an intellectual property law specialist at UNAM, between May 2018 and May 2020. In the UK, ten Russell Group universities' IPPs were analysed. In Mexico, where few published IPPs could be discovered, national and regional legal frameworks were reviewed.

Going beyond a summary of the key common features of major UK university IPPs and Mexican law governing university innovators, the work set out clear guidelines to inform future IPPs. The key output (published as a journal article in May 2020 [3.3]) highlights the principal insights of Drs Bonadio and McDonagh's combined research efforts in Jan 2018-May 2020:

(1) All ten UK IPPs analysed stated clearly who owns IP produced within the incubator. They all set out the positions of the researcher and university with respect to a selection of potential issues e.g. licensing agreements, royalty payments. While Mexican law covers similar issues, a lack of codified university policies makes it near impossible for entrepreneurs in university business incubators to determine their legal position without seeking expert legal advice.

2) All ten UK universities exhibited a positive culture surrounding their start-up activities. This attitude was underpinned by strong financial incentives for university innovators, including royalty payments of up to 90% of net revenue in some cases. While Mexican university incubators receive funding and can retain up to 50% of the revenue generated from successfully commercialised research, the legal and policy framework was not incentivising. Terms relating to remuneration are often absent or discouraging. By (i) highlighting the absence of comprehensive/incentivising IPPs for and (ii) setting out best practice for creating them, Drs Bonadio and McDonagh's research has underpinned both changes in policy and practice at UNAM and the University of Havana (UH). It also underpinned new national legislation in Cuba to create and incentivise new business incubators at Cuban universities.

### 3. References to the research (indicative maximum of six references)

3.1 Research Report: *INBOTS White Paper: Interactive Robotics Market Analyses and Support for SMEs*. Commissioned on 1 January 2018 and published 9 July 2019 by the 25 member INBOTS consortium on their web pages. The report is listed under the *Public Deliverables* section of the INBOTS website: <http://inbots.eu/publications/public-documents/> Accessed 04.12.2020.

Evidence of the quality of this research output:

- The report is a key deliverable of a EUR 3,000,000 EU funded project.
- Report comprises contributions from all 25 European university partners; each contributor reviewed the final draft before publication.
- Contains detailed analysis of database, survey and interview data across 80 pages.

3.2 Journal Article: Bonadio, McDonagh, Arvidsson (a City research student) *Intellectual Aspects of Robotics*, *European Journal of Risk Regulation* 4 (December 2018). Available online: <http://dx.doi.org/10.2139/ssrn.3329014> Accessed 04.12.2020.

Evidence of the quality of this research output:

- Peer-reviewed journal article.
- Analysis of more than 50 documents including treaties, statutes and case law of the EU, US and UK.

3.3 Journal Article: McDonagh, Bonadio & Betancourt, *Social Innovation and University Intellectual Property: Insights from the UK and Mexico*, *European Intellectual Property Review*, 42(5) (May 2020). Available online at: [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3614430](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3614430) Accessed 04.12.2020.

Evidence of the quality of this article:

- Peer-reviewed journal article.
- 33 pages comprising analysis of 10 UK university IP policies, 2 Mexican IP policy case studies and a review of Mexican IP law.

Research led directly to invitations to run workshops at top universities in Mexico and Cuba. In the case of UNAM, the invitation was renewed the following year to help oversee progress implementing insights from this research.

#### 4. Details of the impact (indicative maximum 750 words)

Drs Bonadio and McDonagh presented their research on the legal framework governing university business incubators at workshops at UNAM and UH in May of 2018 and 2019 respectively. Both events, and ongoing engagement with key stakeholders, led directly both to wholesale reviews of existing IPPs at these universities, and to the preparation of new IP legislation for business incubators by the Cuban Government.

UNAM is a multi-campus university, spread across five campuses within Mexico City and a further eight elsewhere in Mexico. Business incubators and innovation laboratories across these locations (23 in total) are regulated by a central technology transfer office in Mexico City, InnovaUNAM. All 23 of the subsidiary offices were reached by the change to InnovaUNAM's IPP. At UH, the technology transfer office – the Oficina de Transferencia de Resultados de Investigación (OTRI) – and its incubator inCUBA oversee both IP protection (e.g. patent applications) and student entrepreneurship competitions across UH's 16 faculties. At both InnovaUNAM and OTRI the research findings were acted upon immediately. Ongoing contact with OTRI's Vice-Rector for Research and Postgraduate Studies confirms that a new IPP, based on model IP policies as set out in the underpinning research, was in place in less than a year after the 2019 workshop [5.1]. In UNAM a new policy was published in March 2019 [5.2].

InnovaUNAM policy-makers have benefitted from the underpinning research's policy recommendations, shown by a comparison of the revised policy with the document it replaced [5.3]. The new policy is considerably more comprehensive, consisting of eight pages compared with the original two-page document. Of the fifteen subsections, three new titles directly address the research recommendations: "Conflicts of Interest", "Property Rights and Licensing Royalties" and "Participation of Inventors and Authors in the Income Derived from IP Rights". Each section provides considerably more clarity and detail on the legal position of inventors. For example, the 2016 policy mentioned royalties twice and only provided direction to regulations elsewhere. The 2019 version discusses royalties eight times, explicitly stating that inventors will be entitled to a percentage of revenue from sales of their inventions.

The largest group to benefit directly from the underpinning research's impact on InnovaUNAM were the incubator's small businesses. As the revised policy incentivises commercial innovation on campus, more companies have passed through the incubator since 2018. Data published in InnovaUNAM's Business Directory, an online repository of former start-ups from 2010 to 2020 [5.4], shows the extent of these changes. Although this data covers only two years after the implementation of the research findings, there is already evidence of an increase in incubator success during this time (e.g. from an average rate of 1.3 to 2 per year in Food and Drinks sector companies). The public engagement of these companies can be gleaned from their Facebook pages. Of the 27 Art and Design start-ups indicated in the Business Directory, two of the four incubated since 2018 were the 2<sup>nd</sup> and 4<sup>th</sup> most successful by number of followers. This is supported by reports of enhanced performance from individual company directors. In the case of

Laidetec, an InnovaUNAM company specialising in service robots, Dr Betancourt confirms that expert advice from Drs Bonadio and McDonagh during 2018 led directly to the company director participating in a private investment funding event – a first for Laidetec and InnovaUNAM [5.5]. The impact of Drs Bonadio and McDonagh’s conclusions concerning incentivising innovation using university incubators reached Cuba’s Intellectual Property Office – Oficina Cubana de la Propiedad Industrial (OCPI) – in May 2019, when members of the OCPI attended the UH workshop [9]. In addition to reaching the Minister of Science, Technology and the Environment via this event (the official empowered to table IP legislation and the head of OCPI), a second of the 30 members of the Cabinet of Cuba was reached directly at a follow up event in June attended by OTRI staff [5.7]. This dissemination led, in November 2019, to another policy change: the Cabinet of Cuba’s directive *Decreto 363* which mandated the creation of science parks on Cuban university campuses [5.8]. While many actors played a role in promoting this legislation, the key players are OCPI (who draft the bill) and the Science Minister, who presents it to the Cabinet for approval. Although D323 permitted the formation of so-called Innovation Units, there was no provision for these to be situated in universities. By specifically targeting universities as the sites for future business incubators D363 brings significant economic and social benefits to at least three constituencies associated with university campuses: university innovators are empowered to receive royalties; universities benefit for an income tax free period of five years after creation; and communities in which the parks are situated have also been enriched (creation of new science parks in Havana and Santa Clara [5.10]). Oral and written testimonies from UH academics indicate the impact of the underpinning research (UH’s UNESCO Chair in Biomaterials describes their research as “extremely important” in triggering this policy change [5.9]).

#### 5. Sources to corroborate the impact (indicative maximum of 10 references)

5.1 A letter from UH’s Vice-Rector for Research and Postgraduate Studies explains that OTRI implemented changes suggested by Drs Bonadio, McDonagh and Betancourt’s research into their revised IPP (please find letter attached).

5.2 The updated UNAM policy is published as *Lineamientos de Transferencia de Tecnología* (Guidelines for the Transfer of Technology) on InnovaUNAM’s front page: <https://innova.unam.mx/> Accessed 04.12.2020.

5.3 The two page statement of InnovaUNAM’s IP policy in 2016 can be found in edition 4790 of UNAM’s campus newspaper *Gaceta UNAM*. This edition can be downloaded here: <http://www.acervo.gaceta.unam.mx/index.php/gum10/issue/view/5003/showToc/> Accessed 04.12.2020.

5.4 The link to InnovaUNAM’s Business Directory – which includes details of over 100 start-ups successfully incubated since 2010 – is posted on their web pages: <https://innova.unam.mx/innova/index.php/directorio-de-incubandos/> Accessed 04.12.2020.

5.5 Dr Betancourt, who worked with Laidetec to build a business case based on the underpinning research, details the success of this work in her letter of support (attached).

5.6 A summary of the workshop, including a list of participants, can be found on the *UH News* pages: <http://www.uh.cu/noticia/taller-de-patentes-ucl-uh> Accessed 04.12.2020

5.7 The event, which concerned cooperation between universities and government in developing regional economies, is reported in *UH News*: <http://www.uh.cu/noticia/alianza-universidad-gobierno-en-los-marcos-de-la-plataforma-articulada-para-el-desarrollo> Accessed 04.12.2020.

5.8 *Decreto 363* is published on OCPI’s legislation pages, but is more conveniently accessed in the official gazette of the Cuban government: <https://www.gacetaoficial.gob.cu/es/decreto-363-de-2019-de-consejo-de-ministros> Accessed 04.12.2020.

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5.9 An informal letter of support from UH's UNESCO Chair in Biomaterials – himself an inventor and beneficiary of the updated IPP – which can be made available on request.

5.10 The new science parks have received wide media coverage in the Cuban press. Reports of construction can be found in both the state-run press (e.g. Agencia Cubana de Noticias' December 2020 article <http://www.acn.cu/economia/73859-se-aspira-en-2021-a-la-consolidacion-del-parque-cientifico-tecnologico-de-la-habana>) and on popular anti-establishment news sites (e.g. Cuba Debate <http://www.cubadebate.cu/etiqueta/parque-cientifico-tecnologico/>). Accessed 04.12.2020.