INNOVATION & INTELLECTUAL PROPERTY
COLLABORATIVE DYNAMICS IN AFRICA
Editors: Jeremy de Beer, Chris Armstrong, Chidi Oguamanam & Tobias Schonwetter

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Collaborative Dynamics in Africa

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JEREMY DE BEER, CHRIS ARMSTRONG,
CHIDI OGUAMANAM AND TOBIAS SCHONWETTER

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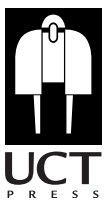

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Preface

This book is among the key outputs of the Open African Innovation Research and Training (Open A.I.R.) Project. Based on case study research in nine African countries, the book examines the recent history and current on-the-ground realities of innovation and intellectual property (IP) in African settings. In doing so, the book reveals complex collaborative dynamics across a range of different countries, sectors and socio-economic contexts, and generates recommendations for how innovation and IP can be married with social and economic development objectives in African settings. This book's sister report, *Knowledge and Innovation in Africa: Scenarios for the Future,* situates the current realities covered in this book within a much longer historical trajectory and multiple potential futures.

Conceived in 2009, established in 2010 and launched in 2011, Open A.I.R. is a pan-African and globally interconnected research and training network, which was established to:

- raise IP awareness in African settings and facilitate critical policy engagement;
- empower a networked, epistemic IP community in Africa;
- identify IP-related innovation bottlenecks and modes of open collaboration; and
- interrogate IP-related innovation metrics, capital and power structures.

Open A.I.R. is financially supported by Canada's International Development Research Centre (IDRC) and Germany's Federal Ministry for Economic Cooperation and Development (BMZ), and collaborates with numerous other organisations and individuals – all of whom are recognised in the Acknowledgements' pages of this book. In addition to the aforementioned case study and foresight research, the Open A.I.R. network engages in a wide range of training, capacity building, outreach and policy engagement activities – both on the African continent and in settings outside the continent where matters of African innovation and IP are engaged. These engagements target external stakeholders capable of changing policies and practices, including:

- innovators, creators and entrepreneurs – individuals and companies;
- business groups such as chambers of commerce and industry associations;
- national, regional and international law-makers and policy-makers;
- issue leaders, such as politicians, judges, professors and practitioners;
- scientific and cultural research and development funding bodies;

- university researchers, administrators and technology transfer officials;
- rights-holders and collective rights management organisations; and
- representatives of indigenous and local communities.

Open A.I.R. is motivated by a vision in which innovation and creativity in Africa are sustainable, properly valued, collaborative, widely accessible and result in benefits that are distributed throughout society. Based on this vision, the network's mission is to better understand how innovation and IP processes work in African settings, how knowledge and technology currently protected by IP can be mobilised, and how IP systems can be harnessed or adapted in a manner that fosters openness-oriented collaborative innovation resulting in just distribution of new knowledge and technology.

This book and the *Scenarios* volume are two parts of a much broader attempt, by Open A.I.R. and other initiatives, to facilitate, in the medium to long term, the emergence of new, pragmatic means of valuing and facilitating innovation and creativity in Africa. Contextually appropriate metrics sensitive to the monitoring of meaningful changes in behaviour around innovation and creativity could be instrumental for promoting African grassroots entrepreneurship, broad-based business development, and a vibrant private sector built on small and medium-sized enterprises (SMEs) with a sustained ability to innovate. And the opportunities for innovation-driven SMEs could also benefit from policy-maker adoption of appropriate metrics when designing the policy and regulatory frameworks necessary to ensure predictable innovation environments for stakeholders.

Open A.I.R.'s core funders, IDRC and BMZ, have provided a framework for Open A.I.R.'s objectives. Open A.I.R. fits within the IDRC's Science and Innovation programme, which supports research and policy engagement in relation to how science, technology and innovation (STI) can be engines of socio-economic development. Within this programme, the Information and Networks (I&N) initiative, which funds the Open A.I.R. Project, aims to better understand the linkages among innovation, creativity, networked collaborations (often enabled via information and communication technologies [ICTs]), and determinants of openness – including IP rights. The IDRC also supported the precursor network to Open A.I.R., the African Copyright and Access to Knowledge (ACA2K) Project, which ran from 2007 to 2011 and generated the nucleus of the expert network now driving Open A.I.R.

BMZ supports Open A.I.R. via Germany's Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), under the GIZ commons@ip – Harnessing the Knowledge Commons for Open Innovation initiative**.** The commons@ip initiative focuses on how IP rights interact with open innovation, the knowledge commons, open licences and collaborative innovation. It is part of the BMZ-

mandated Train for Trade programme, which aims at strengthening the private sector and its constituent bodies in the Southern African Development Community (SADC) region through training and capacity building in export promotion, quality control and promotion of open innovation – as well as through promotion of local and regional economic development and trade.

Open A.I.R.'s training and capacity building components include:

- building the network's capacity – through online platforms, network-wide workshops, research methodology support, scenario-building meetings and thematic seminars;
- awarding Open A.I.R. Fellowships to emerging IP scholars and potential leaders – from Tanzania, Kenya, Uganda, Ethiopia, Cameroon, Nigeria and Egypt;
- exchanging knowledge through Africa-wide and South–South knowledge networking at seminars, workshops and conferences;
- growing awareness among African creators, innovators, entrepreneurs and policy-makers of openness-oriented approaches to innovation and IP matters in Africa; and
- teaching at African tertiary educational institutions, including development of a replicable, open course curriculum on IP law and development.

Because of the immense geographic size of the African continent, and unique logistical challenges of African intra-continental travel, ICTs have been instrumental in empowering the research network's "community of practice". Open A.I.R. has an offline presence in 14 African countries and in multiple countries outside the continent. Online, the network includes hundreds of individuals and institutions throughout Africa and from all corners of the globe, linked via a suite of online networking and social-media tools. The Open A.I.R. community of practice advances a culture of multidirectional exchange among African innovative and creative communities and external actors – with a view to sustainably empowering local communities and SMEs. Network members promote cross-fertilisation of ideas via original thinking and partnerships with national and international institutions, scholars, funding agencies, civil society organisations and other willing partners. Those wishing to join the community can visit http://www.openair.org.za/join.

Acknowledgements

True to its emphasis on "collaborative dynamics", this book is the product of the collective energy of dozens of people and institutions in many countries, all of whom work within the Open African Innovation Research and Training (Open A.I.R.) network. Open A.I.R. currently has core network members and institutions in 14 African countries, spanning North Africa (Egypt, Tunisia), West Africa (Senegal, Ghana, Nigeria, Cameroon), East Africa (Ethiopia, Uganda, Kenya, Tanzania) and southern Africa (Malawi, Mozambique, Botswana and South Africa). Other network members and institutions are in Canada, the United States, the United Kingdom, Germany and France. These members are, in turn, linked – via online and offline interactions – to a broader Open A.I.R. network of hundreds of individuals and institutions, including people and entities in Brazil, India, Malaysia, Australia, Switzerland and the Netherlands. The network receives generous financial support from Canada's International Development Research Centre (IDRC) and Germany's Federal Ministry for Economic Cooperation and Development (BMZ).

Each of the editors and authors of this volume is part of, and collaboratively exchanges knowledge and expertise with, this large network, and we the editors, and each of the contributors, are profiled in "About the Editors" and "About the Contributors" sections of this book and on the Open A.I.R. website's Team page, http://www.openair.org.za/content/open-air-team. On this Team page, one can also find the names and contact details of Open A.I.R. Fellows and other network members and institutions. The network is also accessible via its social media platforms, featured at http://www.openair.org.za/join

Open A.I.R.'s administrative hub is the IP Unit in the University of Cape Town Faculty of Law, where Project Manager Nan Warner and Administrator Phyllis Webb are the key operational drivers. Warner and Webb receive management support from two of the editors of this book (and the co-Principal Investigators of the Open A.I.R. Project), UCT IP Unit Director Tobias Schonwetter and Jeremy de Beer of the University of Ottawa Faculty of Law. Also supporting project management are Julie Nadler-Visser of UCT's Research Contracts and IP Services (RCIPS) unit, members of the UCT Finance Department and Faculty of Law Finance Department, and another editor of this book: Chris Armstrong of the LINK Centre at the University of the Witwatersrand (Wits) in Johannesburg.

Network strategic guidance is provided by a Steering Committee composed of De Beer, Schonwetter, Warner, Chidi Oguamanam (another of this book's

editors) of the University of Ottawa Faculty of Law, Nagla Rizk of The American University in Cairo (AUC), Sisule Musungu of IQsensato in Nairobi, Khaled Fourati of the IDRC office in Cairo, and Balthas Seibold of Germany's Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) in Bonn. Further strategic support from the IDRC is, or has been, provided by Naser Faruqui, Simon Carter, Laurent Elder, Fernando Perini, Matthew Smith, Heloise Emdon and Phet Sayo; Karim Badran and Rose-Marie Ndiaye Pereira on financial matters; and Michelle Hibler and Nola Haddadian on publications. GIZ's involvement is focused on the capacity-building components of the network, which are carried out in collaboration with the GIZ's commons@ip – Harnessing the Knowledge Commons for Open Innovation initiative. At GIZ, in addition to support from the aforementioned Steering Committee member Balthas Seibold, who advises on matters of international knowledge cooperation and networking, support has also come from Petra Hagemann, Christine de Barros Said, Ursula van Look, Marina Neuendorff, Margrit Brockhaus and the Working Group of German Development Organisations on Promoting Innovation Systems. At UCT, as well as those already mentioned, key supporters and collaborators have been the Dean of Law, PJ Schwikkard, Lee-Ann Tong in the Faculty of Law, and, in the IP Unit, the Unit's founder Julian Kinderlerer, its Deputy Director Caroline Ncube and its Senior Research Fellow Bernard Maister. At the University of Ottawa, in addition to those already mentioned, support has been provided by the Dean of the Faculty of Law, Common Law Section, Nathalie Des Rosiers, and Former Dean Bruce Feldthusen.

For this book, key network participants were the team of JD candidates in the University of Ottawa Faculty of Law – Lukas Frey, Will Sapp, Phil Holdsworth, Maya Boorah, Kristen Holman and Saara Punjani – who provided long hours of diligent editorial assistance. In addition, because the research case studies presented in this book all required collection of data from human subjects – via interviews and/or focus group discussions and/or written surveys – this book would not have been possible without the cooperation of dozens of respondents across the countries of study. For reasons of confidentiality, most survey and interview respondents are not named in this book, but we are sincerely grateful for their contributions. Also contributing to the research outlined in this book was Donna Podems of OtherWISE in Cape Town, who advised on research methodologies and supported a methodology workshop for several of the authors featured in this volume, in addition to her support of Open A.I.R.'s monitoring and evaluation (M&E) framework. At this book's publisher, UCT Press, the key drivers have been Publisher Sandy Shepherd and Project Manager Glenda Younge. The cover design for this volume is by Elsabe Gelderblom of Farm Design in Cape Town, who does all of Open A.I.R.'s design work for its website, social media tools, PR materials,

Briefing Notes and the network's other substantial publication output, the Open A.I.R. *Scenarios* compendium – which is available in hard-copy, and on the Open A.I.R. website, as a separate published output and companion to this book.

Network headquarters at the UCT IP Unit serves as Open A.I.R.'s Southern Africa Hub, coordinated by Project Manager Warner. There are also four other Hubs: the North Africa Hub at the Access to Knowledge for Development Center (A2K4D) of the School of Business at The American University in Cairo (AUC), coordinated by Nagham El Houssamy under the direction of Nagla Rizk; the West Africa Hub at the Nigerian Institute of Advanced Legal Studies (NIALS) in Lagos, coordinated by Helen Chuma-Okoro under the direction of Adebambo Adewopo; the East Africa Hub at the Centre for IP and IT Law (CIPIT) of Strathmore University, Nairobi, coordinated by CIPIT Director Isaac Rutenberg; and the Canada Hub at the University of Ottawa Faculty of Law, coordinated by De Beer and Oguamanam. Contact can be made with these Hubs and Hub Coordinators via the aforementioned Open A.I.R. website Team page.

Also integral to the success of the network are its nine Fellows, each of whom has spent time at the UCT IP Unit in Cape Town. The Fellows have contributed to Open A.I.R.'s case study and foresight research, to outreach and training work, and to building the network. The nine Fellows are: Esther Ngom of the Ngo Nyemeck law firm in Yaoundé; Seble Baraki of the Justice and Legal System Research Institute (JLSRI) in Addis Ababa; Moses Mulumba of the Centre for Health, Human Rights and Development (CEHURD) in Kampala; Douglas Gichuki of CIPIT in Nairobi; Milton Lore of Bridgeworks Africa in Nairobi; Eliamani Laltaika of the Tanzania Intellectual Property Rights Network (TIP-Net) in Dar es Salaam; Alexandra Mogyoros, a student in the Faculty of Law at the University of Ottawa; West Africa Hub Coordinator Helen Chuma-Okoro of NIALS in Lagos; and North Africa Hub Coordinator Nagham El Houssamy of A2K4D in Cairo.

Other collaborating institutions are the Program on Information Justice and Intellectual Property (PIJIP) at the Washington College of Law at American University in Washington, DC; the Centre for Technology and Society (CTS) in Brazil; the Centre for Internet and Society (CIS) in India; and the Open Society Foundations, where Open A.I.R.'s key partner is Vera Franz. The Open A.I.R. network has also benefited from interaction with staff at the World Intellectual Property Organisation (WIPO) headquarters in Geneva. In London, Shirin Elahi of Scenarios Architecture is the driver of Open A.I.R. foresight research work, as featured in the aforementioned *Scenarios* compendium that provides an important forward-looking complement to the current picture offered by this volume. Jo Higgs of Go Trolley Films in Cape Town did post-production on the videos available on the Open A.I.R. YouTube channel – videos which show how the network came into being and how the research was conceptualised.

All the people and institutions mentioned here have in one way or another played a role, by collaborating within the Open A.I.R. network, in the conceptualisation, planning, data collection, data analysis, writing, editing, design and production processes that resulted in successful research and the completion of this book. It is hoped that this volume's free availability online, under a Creative Commons (CC) licence, will ensure that the book's collaborative dynamics do not end here at the moment of publication, and continue long into the future in the work of the still-growing Open A.I.R. community.

Jeremy de Beer, Chris Armstrong, Chidi Oguamanam, Tobias Schonwetter
September 2013

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Acronyms and Abbreviations

A2K	access to knowledge
A2K4D	Access to Knowledge for Development Center (The American University in Cairo, Egypt)
AAU	Addis Ababa University
ABS	access and benefit-sharing
ACA2K	African Copyright and Access to Knowledge Project
ACP	African, Caribbean and Pacific Group of States
ACTS	African Centre for Technology Studies (Kenya)
ADPP	Ajuda de Desenvolvimento de Povo para Povo (Mozambique)
AERC	African Economic Research Consortium
AFTE	Association for the Freedom of Thought and Expression (Egypt)
AGOA	African Growth and Opportunity Act
AIM	Agência de Informação de Moçambique
AmCham	American Chamber of Commerce (Egypt)
ARC	Aquaculture Research Centre (Egypt)
ARIPO	African Regional Intellectual Property Organisation
ASSAf	Academy of Sciences of South Africa
ASTII	African Science, Technology and Innovation Indicators
ATO	alternative trading organisation
ATPC	African Trade Policy Centre
ATPS	African Technology Policy Studies Network
AU	African Union
AUC	The American University in Cairo
B-BBEE Act	Broad-Based Black Economic Empowerment Act 53 of 2003 (South Africa)
BCP	bio-cultural community protocol
BIH	Botswana Innovation Hub
BMZ	Federal Ministry for Economic Cooperation and Development (Germany)
BoI	Bank of Industry (Nigeria)
BOTEC	Botswana Technology Centre
BPR	business process re-engineering
CAA	Cocoa Abrabopa Association (Ghana)
CARICOM	Caribbean Community
CBD	Convention on Biological Diversity
CBN	Central Bank of Nigeria

CC	Creative Commons
CCIA	Computer and Communications Industry Association
CEDAT	College of Engineering, Design, Art and Technology (Makerere University, Uganda)
CEHURD	Centre for Health, Human Rights and Development (Uganda)
CEPIL	Centre for Public Interest Law (Ghana)
CIGI	Centre for International Governance Innovation
CIPC	Companies and Intellectual Property Commission (South Africa)
CIPIT	Centre for IP and IT Law (Strathmore University, Kenya)
CIPO	Canadian Intellectual Property Office
CIPR	Commission on Intellectual Property Rights (UK)
CMO	collective management organisation
COCOBOD	Ghana Cocoa Board
CPD	Centre for Policy Dialogue (Nigeria)
CRTT	Centre for Research in Transportation Technologies (Makerere University, Uganda)
CSIR	Council of Scientific and Industrial Research (India)
CTEA	Copyright Term Extension Act (US)
CVCP	Committee of Vice-Chancellors and Principals (UK)
DACST	Department of Arts, Culture, Science and Technology (South Africa)
DEST	Department of Education, Science and Training (Australia)
DFID	Department for International Development (UK)
DHET	Department of Higher Education and Training (South Africa)
DNS	domain name system
DRC	Democratic Republic of Congo
DRM	digital rights management
DRST	Department of Research, Science and Technology (Botswana)
DST	Department of Science and Technology (South Africa)
DTI	Department of Trade and Industry (South Africa)
EAEP	East African Educational Publishers (Kenya)
EC	European Commission
ECBP	Engineering Capacity Building Program (Ethiopia)
ECOWAS	Economic Community of West African States
ECX	Ethiopia Commodity Exchange
EEAA	Egyptian Environmental Affairs Agency
EIPO	Ethiopian Intellectual Property Office
EIPRL	Egyptian Intellectual Property Rights Law
EPA	Environmental Protection Authority (Ethiopia)
EPO	European Patent Office
EST	environmentally sound technology

EU	European Union
EUEI	EU Energy Initiative
Eurostat	Statistical Office of the European Communities
FAO	UN Food and Agriculture Organisation
FCN	Friendship, Commerce and Navigation (Kenya)
FDI	foreign direct investment
FDRE	Federal Democratic Republic of Ethiopia
FDSE	Free Day Secondary Education (Kenya)
FES	Friedrich Ebert Stiftung (Germany)
FLO	Fairtrade Labelling Organisations International
FOSS	free and open source software
FPE	Free Primary Education (Kenya)
FTA	free trade agreement
GDP	gross domestic product
GEM	Global Entrepreneurship Monitor
GERD	gross expenditure on research and development
GI	geographical indication
GIPC	Global Intellectual Property Center
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (Germany)
GM	genetically modified
GOAN	Ghana Organic Agriculture Network
GOK	Government of Kenya
GR	genetic resources
GTZ	German Technical Cooperation
HSRC	Human Sciences Research Council (South Africa)
ICANN	Internet Corporation for Assigned Names and Numbers
ICIDSS	International Creativity and Innovation Development Support Services (Ethiopia)
ICJ	International Commission of Jurists
ICLS	International Conference of Labour Statisticians
ICPSK	Institute of Chartered Public Secretaries of Kenya
ICT	information and communication technology
ICT4D	ICT for development
ICTSD	International Centre for Trade and Sustainable Development
IDC	Industrial Development Corporation (South Africa)
IDLO	International Development Law Organisation
IDRC	International Development Research Centre (Canada)
IDS	Institute of Development Studies (Kenya)
IE	informal economy

IFC	International Finance Corporation
IICA	Inter-American Institute for Cooperation on Agriculture
IIDMM	Institute of Infectious Disease and Molecular Medicine (South Africa)
IIED	International Institute for Environment and Development
IIPA	International Intellectual Property Alliance
IISD	International Institute for Sustainable Development
ILC	indigenous and local community
ILO	International Labour Organisation
INAO	Institut national des appellations d'origine (France)
IP	intellectual property
IPA	Industrial Property Act (Botswana)
IPC	International Patent Classification
IPI	Industrial Property Institute (Mozambique)
IPR-PFRD Act	Intellectual Property Rights from Publicly Financed Research and Development Act (South Africa)
IRB	Institutional Review Board (Botswana)
IRENA	International Renewable Energy Agency
ISAS	integrated seawater agriculture system
ISCTEM	Instituto Superior de Ciências e Tecnologia de Moçambique
ISI	Institute for Scientific Information
ISO	International Organisation for Standardisation
ISP	Information Society Project (Yale University, US)
ITC	International Trade Centre
JBEDC	Japan Bio-Energy Development Corporation
JITAP	Joint Integrated Technical Assistance Programme
JLSRI	Justice and Legal System Research Institute (Ethiopia)
K2C Biosphere	Kruger to Canyons Biosphere (South Africa)
KE	knowledge economy
KECOBO	Kenya Copyright Board
KENFAA	Kenya Nonfiction and Academic Authors' Association
KES	Kenyan Shilling
KHA	Kenya Historical Association
KICD	Kenya Institute of Curriculum Development
KIPI	Kenya Industrial Property Institute
KIPPRA	Kenya Institute for Public Policy Research and Analysis
KNAS	Kenya National Academy of Sciences
KOLA	Kenya Oral Literature Association
KTO	knowledge transfer office
LBC	Licensed Buying Company (Ghana)
LDC	least developed country

LE	Egyptian Pound
LINK Centre	Learning Information Networking Knowledge Centre (Wits University, South Africa)
LSK	Law Society of Kenya
MAN	Manufacturers Association of Nigeria
MANCAP	Mandatory Conformity Assessment Programme (Nigeria)
MCH	Maasai Cultural Heritage Organisation (Kenya)
MCST	Ministry of Communications, Science and Technology (Botswana)
MCT	Ministério da Ciência e Tecnologia (Mozambique)
MDCA	Malindi District Cultural Association (Kenya)
MDG	Millennium Development Goal
MEA	Multilateral Environmental Agreement
MIST	Ministry of Infrastructure, Science and Technology (Botswana)
MIT	Massachusetts Institute of Technology
MOA	Ministry of Agriculture (Ethiopia)
MOE	Ministry of Education (Ethiopia)
MOFA	Ministry of Food and Agriculture (Ghana)
MoFED	Ministry of Finance and Economic Development (Ethiopia)
MOST	Ministry of Science and Technology (Ethiopia)
MoU	memorandum of understanding
MRC	Medical Research Council (South Africa)
Natoil	Natural Oil Company (Egypt)
NACI	National Advisory Council on Innovation (South Africa)
NCC	Nigerian Copyright Commission
NDA	non-disclosure agreement
NEP	National Enquiry Point (Botswana)
NEPAD	New Partnership for Africa's Development
NESC	National Economic and Social Council (Kenya)
NESTI	National Experts on Science and Technology Indicators
NIALS	Nigerian Institute of Advanced Legal Studies
NRF	National Research Foundation (South Africa)
NGO	non-governmental organisation
NIALS	Nigerian Institute of Advanced Legal Studies
NIPMO	National Intellectual Property Management Office (South Africa)
NIS	national innovation system
NMIMS	Narsee Monjee Institute of Management Studies (India)
NPR	National Public Radio (US)
NPSB	National Policy and Strategy on Biofuels (Mozambique)
NRC	National Research Centre (Egypt)

NREA	New and Renewable Energy Authority (Egypt)
NWLR	Nigerian Weekly Law Report
OA	open access
OAPI	Organisation africaine de la propriété intellectuelle
OCEES	Oxford Centre for the Environment, Ethics and Society
OCFCU	Oromia Coffee Farmers Cooperative Union (Ethiopia)
ODEL	open, distance and electronic learning
ODI	Overseas Development Institute (UK)
OECD	Organisation for Economic Co-operation and Development
OER	open educational resource
Open A.I.R.	Open African Innovation Research and Training Project
ORD	Office of Research and Development (Botswana)
PBIP	place-based intellectual property
PCT	Patent Cooperation Treaty
Petromoc	Petróleos de Mozambique
PIIPA	Public Interest Intellectual Property Advisors (US)
PIJIP	Program on Information Justice and Intellectual Property (American University, US)
PPS	probability proportional to size
PRO	public research organisation
ProBEC	Programme for Basic Energy and Conservation in Southern Africa
R&D	research and development
RCIPS	Research Contracts and IP Services unit (UCT, South Africa)
RIPCO (B)	Rural Industrial Promotion Company (Botswana)
RMI	rights management information
SADC	Southern African Development Community
SARUA	Southern African Regional Universities Association
SCE	Society for Critical Exchange (Kenya)
SID	Society for International Development (Kenya)
SINER-GI	Strengthening International Research on Geographical Indications
SME	small and medium enterprise
SMIEIS	Small and Medium Industries Equity Investments Scheme (Nigeria)
SMME	small, micro and medium enterprise
SNA	social network analysis
SON	Standards Organisation of Nigeria
SPS	sanitary and phytosanitary measures
STCI	Science and Technology Capacity Index
STEP	Science Technology and Economic Policy (US)
STI	science, technology and innovation
STS	Society for Technology Studies (Ethiopia)

SVKM	Shri Vile Parle Kalamani Mandal (India)
TBT	technical barriers to trade
TCE	traditional cultural expression
TGE	Transitional Government of Ethiopia
THE	Times Higher Education (UK)
THRIP	Technology and Human Resources Programme (South Africa)
TIA	Technology Innovation Agency (South Africa)
TIP-Net	Tanzania Intellectual Property Rights Network
TISC	Technology and Innovation Support Center
TK	traditional knowledge
TKDL	Traditional Knowledge Digital Library (India)
TPMs	technological protection measures
TRIPS	Agreement on Trade-Related Aspects of Intellectual Property Rights
TTO	technology transfer office
TVET	Technical and Vocational Education and Training (Ethiopia)
UB	University of Botswana
UCC	Universal Copyright Convention
UCITA	Uniform Computer Information Transactions Act (US)
UCT	University of Cape Town (South Africa)
UEM	Eduardo Mondlane University (Mozambique)
UGT	Uganda Gatsby Trust
UK	United Kingdom
UM	utility model
UNCST	Uganda National Council for Science and Technology
UNCTAD	UN Commission on Trade and Development
UNDESA	UN Department of Economic and Social Affairs
UNDP	UN Development Programme
UNECA	UN Economic Commission for Africa
UNEP	UN Environment Programme
UNESCAP	UN Economic and Social Commission for Asia and the Pacific
UNESCO	UN Educational, Scientific and Cultural Organisation
UNFCCC	UN Framework Convention on Climate Change
UNICAMP	University of Campinas (Brazil)
UNIDO	UN Industrial Development Organisation
Unilag	University of Lagos
US	United States
USAID	US Agency for International Development
USPTO	US Patent and Trademark Office
WAK	Writers Association of Kenya
WATH	West Africa Trade Hub

WBCSD	World Business Council for Sustainable Development
WCT	WIPO Copyright Treaty
WEF	World Economic Forum
WEP	World Employment Programme
WHO	World Health Organisation
WIPO	World Intellectual Property Organisation
Wits	University of the Witwatersrand (South Africa)
WPIS	WIPO Patent Information Service
WPPT	WIPO Performances and Phonograms Treaty
WTO	World Trade Organisation
ZAR	South African Rand

Chapter 10

African Patent Offices Not Fit for Purpose

Ikechi Mgbeoji

Abstract

This chapter outlines the findings from research into the capacities of African patent offices. The research, which surveyed and interviewed patent stakeholders from 44 African countries, found that most of the national patent offices were ill-equipped to discharge their two main functions: examining patent applications and collating patent information so that it can be made publicly available for public and inventor follow-on use. It was found that there was a dearth of substantive examination, and record-keeping and public access to records were poor. The research generated the conclusion that the weaknesses of African patent offices have the potential to hamper technology transfer and domestic industrialisation on the continent, and that there is a compelling need to re-examine the operational capacities of these offices.

1. Research question and context

Patents are public documents, issued to inventors by individual states, certifying that the named inventor has been granted a limited monopoly to exclude other persons from working, selling or using an identified invention without the consent or permission of the inventor or her/his assignees or successors-in-title during the life span of the patent. The regime of patents is built on the theoretical assumption that, in exchange for a limited monopoly over a fixed period, an inventor discloses the knowledge embodied in an invention to the state in trust for the public. Key to this assumption is that society has a system in place in which experts in the respective fields to which the inventions pertain have the capacity to:

- Evaluate the merits of the claimed invention in terms of the well-established criteria for patentability, namely: novelty, ingenuity, industrial applicability and compatibility with accepted subject-matter classification (Mueller and Chisum, 2008).

- Collate patent applications and systematically organise the documents in such a manner that: they can be used as a reference body of knowledge both for the purposes of assessing whether subsequent patent applications have not been pre-empted by information in the public domain and to increase the general stock of knowledge in the public domain; and they can be made accessible to interested stakeholders for the purposes of spurring innovation.

The central question of the research study described in this chapter was whether patent systems in African states have the capacity to perform the two aforementioned functions. This question has its foundation in what is the *raison d'être* of the patent system: the system's need to facilitate exchange of valuable information between inventors and society. The bargain or contract between a patentee and society operates on the theoretical premise that, in exchange for a limited monopoly on use of an invention for 20 years, society has access to the ingenious information embodied in that invention. This research sought to find out whether this theory is supported by the reality of patent offices in Africa, i.e. do patent offices in the continent function as they should?

Roles of patent offices

A patent office functions as a gatekeeper: it keeps out dubious applications whilst accrediting meritorious ones. A central element of a patent office's gatekeeping process is ensuring that patents are not granted for inventions that have been anticipated by pre-existing knowledge (technically referred to as "prior art") (see Atal and Bar, 2010; Dolak and Goldman, 2001; Wainwright, 1999). Towards this end, it is reasonable to assume that a patent office must commit itself to a search process, i.e. the office must be geared towards granting patent rights commensurate with innovation and not clutter the public domain with dubious patent grants (Kesan and Banik, 2000; Lichtman *et al.*, 2000). As well as a commitment to granting only meritorious patents, a credible patent office must have the personnel, equipment and capacity to evaluate the substantive merits or lack thereof in each application for patent (Lerner, 2005). Substantial personnel and expertise are needed because the scope of the search must of necessity be global, and not restricted to a state's jurisdiction (Bagley, 2003). It is widely recognised that the patent offices of many states grant overly broad patents because they have insufficient knowledge of the relevant prior art, especially in high technology areas. Second, beyond the primary function of accrediting meritorious applications, a patent office must have the capacity to reliably and accessibly store the patent information for society to draw from to enrich the public domain and advance the wellbeing of society.

Implicit in the foregoing is the assumption that the institutions and mechanisms by which patent applications are examined for compliance and, at the same time, collated and disseminated for public use, are crucial institutions and mechanisms for a nation's developmental goals. Among the objectives potentially served (or undermined) by national patent offices are: development of science and technology; facilitation of transfer of technology; creation of a significant publicly available database of innovative information; and development of a local cadre of scientists and technologists. This brings us back to the central research question addressed by the study outlined in this chapter: do the patent offices of African states perform their necessary functions; i.e. are they "fit for purpose"? The next section (Section 2) outlines the research conducted. Section 3 outlines and analyses the findings from the study, and Section 4 offers some conclusions.

2. The research

The research question (as outlined above) was derived from the observation, made by many patent agents and scholars familiar with patent law regimes in Africa, that, across the continent, there tends to be a gap between national statutory provisions on patents and the actual practices in patent offices. My practical, personal experiences made this observation compelling. Some years ago, I was instructed by a US-based client to file an application in Nigeria for patent protection of an invention. In the course of submitting the application, mistakes were made: a few pages were omitted. However, the patent was nonetheless issued. When I subsequently applied for a correction of the mistakes arising from the missing pages of the description and claims, the official response from the Patent Office in the Nigerian capital city, Abuja, was that the original application could not be traced and that a brand-new application should be resubmitted. The resubmitted application was then approved, without reference to the earlier application.

The implications of this experience with the Abuja Patent Office were clear: the original application had not been examined for correctness and compliance with the statutory requirements for patentability; and the patent office seemed not to have a facility for storage and retrieval of documents. The gatekeeping role of the patent office was, thus, practically nonexistent. In effect, the Abuja Patent Office seemed clearly to be unfit for purpose, and was serving primarily as a clerical outpost more interested in collecting fees than in facilitating the disclosure of useful information to society (Lemley, 2001; Lemley and Sampat, 2012). Decisions to allow or reject patents seemed to be based not on the merits of the applications but on the basis of the ability to make payment of prescribed government fees. The seeming absence of capacity for storage and retrieval of vital patent

documents in the Abuja Patent Office clearly undermined its ability to serve as a collator and disseminator of patent information for societal (including follow-on inventor) use. I came to wonder whether the situation in Abuja was reflective of a widespread state of affairs in the African continent. This research study emerged as an effort to test the situation across several African states.

The study was primarily conducted through a questionnaire administered (via email and phone) to key patent stakeholders in more than 40 countries, with the stakeholders including: experienced patent lawyers, administrators in patent offices, users of patent offices and selected inventors. Survey responses were received from 44 countries (see Appendix for listing of the countries and the number of respondents in each country). The study also generated data via site visits to patent offices and exploratory interviews with some of the stakeholders who responded to the survey. The research also required doctrinal analysis of legal texts in each country, to determine which countries' statutes provide for domestic examination of patent applications (this data is provided in the Appendix).

The research was tightly focused on understanding the degree to which national patent offices were delivering on their statutory mandates. The survey and interviews were thus limited to questions of whether the patent offices were conducting substantive examination of both domestic and international patent filings, and whether the offices were collating the patent information and making it accessible to the public. (A potential weakness of the research was that not all patent offices in African states were surveyed – largely as a result of the unwillingness or inability of stakeholders to respond to the questionnaires either by way of emails or phone calls. There were eight countries from which responses were not received: Botswana, Comoros, Democratic Republic of Congo (DRC), Djibouti, Mauritania, Niger, São Tomé and Principe, and Swaziland. However, responses were received from the vast majority of the countries of Africa (44 out of 55), as well as the two African regional bodies dealing with patents, the African Regional Intellectual Property Organisation (ARIPO) and the Organisation africaine de la propriété intellectuelle (OAPI). Many Anglophone African states are members of ARIPO, headquartered in the Zimbabwean capital, Harare, while many Francophone African states are organised under OAPI, based in Yaoundé, Cameroon. The research also sought evidence of influence from the international, Geneva-based patent examination regime aligned to the Patent Cooperation Treaty (PCT). The two key questions posed by the survey questionnaire and in interviews were as follows:

- Does your country's patent law provide for examination of patent applications?
- Does your country have patent examiners employed for the examination of patent applications?

Respondents were also asked to provide information about:

- whether their country was a member of an African regional IP organisation (i.e. ARIPO or OAPI) and whether membership in that organisation was helping to support the patent examination process in their country;
- whether their country was a member of the PCT, and if so, whether patent examinations conducted by the PCT in Geneva were final and binding on their country's national patent office; and
- the extent of public, online access to national patent filings.

3. The findings

The research findings revealed a patchwork of approaches to the issue of patent law administration in the African states from which responses were received. Most of the approaches were found to be based on colonial antecedents, while only a few reflected modest improvements on the *status quo* since the colonial era. In the vast majority of the states surveyed, most patent applications filed were drafted by foreign patent lawyers, examined at the PCT Office in Geneva, and mailed to African capital cities simply for filing. In only a few countries was there found to be some domestic infrastructure and capacity for examination of patents, via national patent offices or via the regional patent organisation ARIPO. The vast majority of states surveyed continued to rely on foreign examination for domestic registration of patents – in spite of statutory provisions, in the vast majority of the countries surveyed, for local inspection of patent applications (see Appendix).

The research also found a near-total lack of capacity to electronically store and disseminate patents filings for the use of follow-on innovators and other stakeholders. Thus, in the majority of the countries surveyed, regardless of whether the national patent office examined patent applications, the patent office was not equipped to readily disseminate patent filings to interested stakeholders, i.e. the technical and scientific information contained in patent applications was not publicly available. It was also found that membership in the aforementioned regional IP bodies ARIPO and OAPI was not substantially ameliorating the infrastructural deficiencies in the administration of patent law in most of the countries surveyed. It was also found that two of Africa's leading economies, South Africa and Nigeria, did not require local patent examination, and that most of the stakeholders surveyed, including many of the IP lawyers, were not concerned about the issue. The education and training of IP lawyers in Africa does not seem to be instilling a desire to rethink or change the *status quo* with regard to patent filing on the continent.

More encouraging was the discovery of a sense of professionalism, however frail, in some national patent offices. Kenya, for example, was found to have a professional cadre of patent examiners responsible for conducting examination in respect of national patent applications. However, the number of examiners is limited, and in most cases the Kenya Industrial Property Institute (KIPI) opts for the use of international search authorities when determining prior art. It was also found that both Morocco and Mauritius have examiners, but only two or three at any one time. Also potentially positive was the finding that many of the African states surveyed have, through membership of World Trade Organisation (WTO) and World Intellectual Property Organisation (WIPO), begun to update and modernise their patent laws.

It was found that the existence of regional groupings ARIPO (see Sayre, 2012) and OAPI had improved the patent examination situation only slightly. These bodies have teams (albeit skeletal) of patent examiners, and for ARIPO's 17 Member States, ARIPO headquarters in Harare is empowered, under the Harare Protocol, to receive and process patent and industrial design applications on Member States' behalf. Evidence was also found that ARIPO, unlike most of the national patent offices surveyed, conducts substantive patent examination (actively evaluating novelty, inventive step and industrial applicability), with the examinations done by ARIPO examiners drawn from Member States. However, it is well to bear in mind that ARIPO patents do not have region-wide effect, and a substantive complicating factor for the ARIPO examiners is that the 17 Member States of ARIPO do not have the same patent laws. (There are some general similarities, but also peculiarities, across the pieces of patent legislation in the Member States.) While studies have found that ARIPO examiners are well trained, this has to be placed in the context of the *mélange* of patent laws which the examiners have to see patent applications through (Thambisetty, 2009). As Sayre (2012) observes,

> […] patent applications allowed by ARIPO may be declined by national patent offices if, for example, [they pertain] to subject matter excluded from patent eligibility by national law (e.g., in the realm of biological organisms). (2012)

Also important to note is that the vast majority of patent applications filed with ARIPO in Harare emanate from US and European pharmaceutical companies (see Drahos [2010] for the economic implications of this trend, which was not the focus of this research). Another notable reality in respect of ARIPO, observed by Sayre (2012), is that virtually all the applications filed at ARIPO are drafted by foreign patent agents, suggesting a near-total absence of African patent agents skilled in the drafting of patent claims and applications. In the words of Sayre,

> […] many African nations have at least a couple or a few strong technological universities and research institutions that are generating new technologies targeted to local needs and challenges, though a dearth of skilled patent agents across Africa has hampered the patenting activity of those institutions. Via annual patent-drafting workshops across Africa, however, we are working to gradually […] build that capacity, as more and more workshop graduates find opportunities to begin drafting and filing patent applications in their home countries. (2012)

In this author's view, it could well be that the dearth of patent agents in Africa is not so much a result of a shortage of training workshops but rather a function of the weak patent examination regimes in most of the continent – weak regimes which mitigate against active indigenous participation in patenting processes.

4. Conclusions

It seems clear from the research findings that the patent systems of many African states lack the safeguards and quality control mechanisms necessary to ensure that only inventions that meet the requisite threshold are conferred with patent protection. In addition, there is clearly a lack, in many African countries, of the infrastructure needed to ensure that the information contained in patent applications is collated and made electronically available to members of the public, researchers and technology-oriented industries. In general, the research findings suggest that a large number of African states are at present serving as dumping grounds for patents, with little examination of the merits of patent applications and little public access to the contents of the patent filings (contrary to the provisions and spirit of national patent laws).

Rigorous examination of patent applications requires governments to devote substantial resources to the objective. According to Lemley (2001), because the overwhelming majority of patents are never argued or licensed (i.e. asserted against a competitor), it is arguably financially efficient for a country to make detailed validity determinations in respect of *only* the few argued and licensed cases rather than in all patent examinations generally (many of which "will never be heard from again" [Lemley, 2001]). This raises the question: are African states perhaps being "rationally ignorant" of the objective validity of patents? That is, it may well be that it is too costly for African patent offices to discover all the necessary facts.

However, the phenomenon of poor record-keeping reveals that there is more than rational ignorance at play in African patent offices' lack of delivery on their statutory obligations, because poor record-keeping goes entirely against the

disclosure objectives of patent frameworks (Ghosh and Kesan, 2004). Further, the argument for rational ignorance is undermined by the reality that a rational national patent regime would be concerned with assessing both the costs and benefits of the patent system on all actors, as opposed to just (in the case of non-examination of applications) the apparent fiscal and operational efficiencies sought by a patent office.

Where patent offices do not provide substantive examination of applications, they encourage foreign patent applicants to seek to overwhelm weak patent offices with dubious applications, in the (entirely reasonable) hope that dubious applications will slip through and be granted juridical validity. Such occurrences would be a deep disservice to the nation concerned. Some scholars have suggested that the patent system could be improved by structuring an incentivised payment system for patent examiners (Burke and Reitzig, 2007; Geller, 2003). A simplified example would be to use court rulings as a measure of performance, i.e. a patent examiner could be sanctioned if a patent application which he/she approved via examination (or had another role in the processing of) is later invalidated in court. However, certain practical issues reduce the usefulness of this kind of recommendation, e.g.:

- the rare occurrence of patent disputes and a strong tendency to settle out of court;
- long delays, in patent disputes, between patent issuance and final court judgments;
- other technical grounds for patent invalidations not connected to the performance of examiners; and
- complex sources of prior art in multicultural and multilingual African settings, making accurate examination or search extremely difficult.

A recommendation that cannot be argued against, however, is that there is a need for better training of legal counsel and judges in IP matters in Africa. A high-quality patent system is impossible to achieve with poor-quality lawyers and inexperienced judges; ineffective examination protocols assist to infiltrate the public domain with harmful and oppressive monopolies (Katznelson, 2010). Patent law requires a heterogeneous national administrative regime, with the patent office in the central but not solitary role (Farrell and Merges, 2004). However, there seems to be, in the countries surveyed, a palpable lack of appreciation for patent administration within a multi-institutional context. Multiple sectors of government need to take a deep and critical interest in the context and operations of a country's patent office.

As stated at the beginning of this chapter, patent offices are meant to engage in two key activities:

- consistently assessing initial applications and granting of patents only to those applications that meet the necessary criteria; and
- ensuring that the database of patents is reliable and accessible to the public.

The evidence from this research suggests that quality of delivery on both of these services is, at present, deplorable in many African states. Of particular concern is the potential impact of these faulty African national patent regimes in relation to transfer of emerging technologies. (See Chapters 11 and 12 of this volume on patenting matters in relation to clean energy technology in Mozambique and Egypt, respectively.) Economic arguments for patent protection are founded on the need to incentivise research and development (R&D), disclosure of technological knowledge and facilitation of technology transfer. Such arguments collapse in the context of societies lacking the capacities to capture and disseminate technological knowledge. Technology contributes to social welfare, and if there is no effective transfer of technological knowledge via the patent system, the *raison d'être* for the patent system evaporates.

At present, African patent offices seem to be operating on what Drahos calls a "trust me" mantra (Drahos, 2008). Such trust, to the extent that it exists, would clearly be misplaced in the case of many of the national contexts surveyed in this study. African national policy-makers need to pay much more attention to what is happening in their patent offices. Transnational companies, the biggest users of the patent system, are happy to have a world in which, at a moment of their choosing, they can obtain high-value patents at a low cost. To such firms, Africa is at present a highway, with no speed limits, on which applications are rushed to patent offices. Business actors encourage the speeding up of the work of patent offices, and reductions in the cost and quality of the application processes (Geller, 2003; Jensen *et al.,* 2005).

There is therefore a clear need to, *inter alia*, utilise the teeming number of African science graduates to fill some of the gaps in the examination modalities. There is also an urgent need to improve the information technology facilities at African patent offices. Much of the scientific information contained in African patent applications is at present not electronically available to stakeholders. The result is that market monopolies are being granted to foreign and domestic patent-holders in exchange for nothing in terms of transfer or dissemination of crucial innovative knowledge. Patent offices are supposed to facilitate interactions between manufacturers, inventors and broader society. The offices are sustained not just by inventors but also by society, and therefore they owe a duty to society. When patent offices give short shrift to examination of applications, and fail to collate and publicly disseminate the patent application information they possess, they have clearly taken sides with the inventor.

Appendix 10.1: Survey data

Countries surveyed, number of respondents (email, phone), and national statutory provision ("Yes/No") for domestic patent inspection

Country	Number of respondents via email	Number of respondents via phone	Existence of national statutory provision for local inspection of patent applications?
1. Algeria	3	1	Yes
2. Angola	2		Yes
3. Benin	5		Yes
4. Burkina Faso	2		No
5. Burundi	2		Yes
6. Cameroon	3		Yes
7. Cape Verde	3		No
8. Central African Republic	2		No
9. Chad	4	2	Yes
10. Côte d'Ivoire	4	1	Yes
11. Egypt	3	2	Yes
12. Equatorial Guinea	3		Yes
13. Eritrea	1		Yes
14. Ethiopia		1	Yes
15. Gabon	1		Yes
16. Gambia	4	1	Yes
17. Ghana	3	3	Yes
18. Guinea	2		No
19. Guinea-Bissau	1	1	No

20. Kenya	4		Yes
21. Lesotho	1		No
22. Liberia	3	2	Yes
23. Libya	5	2	Yes
24. Madagascar	4	2	Yes
25. Malawi	4		Yes
26. Mali	1		Yes
27. Mauritius	3	1	Yes
28. Morocco	4	1	Yes
29. Mozambique	3		Yes
30. Namibia	3		Yes
31. Nigeria	3		Yes
32. Republic of Congo	3		Yes
33. Rwanda	5		Yes
34. Senegal	3		Yes
35. Seychelles	3		Yes
36. Sierra Leone	3		Yes
37. South Africa	2		Yes
38. Sudan	3		No
39. Tanzania	3		Yes
40. Togo	2		Yes
41. Tunisia	3	1	Yes
42. Uganda	4		Yes
43. Zambia	6		Yes
44. Zimbabwe	6		Yes

No responses were received from eight countries: Botswana, Comoros, Democratic Republic of Congo (DRC), Djibouti, Mauritania, Niger, São Tomé and Principe and Swaziland.

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