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2014

Innovation, Intellectual Property and Development Narratives in Africa

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Available at: <https://works.bepress.com/jeremydebeer/15/>

Chapter 1

Innovation, Intellectual Property and Development Narratives in Africa

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1. Context

Human development, including not just economic growth but also the capability for longer, healthier and more fulfilling lives, depends on innovation and creativity. While various economic, technological, social and other factors influence innovative and creative activity, intellectual property (IP) rights – copyrights, patents, trademarks, trade secrets and other appropriation mechanisms – play an increasingly important role. How IP rights help or hinder innovation and creativity in different contexts in Africa is the subject of this book.

The chapters that follow canvass aspects of the current reality of IP in nine different countries from the four main regions of the African continent. The chapters contain contextual analyses as well as on-the-ground case studies based on empirical, qualitative and quantitative research – and cut across diverse socio-economic contexts and legal systems, and a spectrum of formal, informal and traditional sectors. Examined as a whole, the evidence in this book helps build understanding of the ways in which the dual goals of protecting IP *and* preserving access to knowledge can be balanced. The book also provides indications of the roles that are being, and can be, played by collaborative and openness-oriented dynamics in relation to innovation, creativity and IP. A better understanding of the nuances and dynamics of IP is essential to creating policy frameworks and management practices that balance IP protection and access in such a way that African regions, nations and communities can harness IP as a tool to facilitate collaborative networking within diverse systems of innovation and creativity.

The proliferation and polarisation of opinion

Influential actors – multinational companies, developed-country governments, international organisations, academics, civil society groups – promote opposing

views on how IP protection interacts with innovation and creativity. One view is that IP protection is inevitably and necessarily an incentive for innovation and creativity. The opposing view is that IP protection is not required to facilitate innovation and creativity and, rather, is an impediment to the free and open exchanges of technology, culture and knowledge that form the core of innovative and creative modalities. These polarised views persist because, in fact, little is really known about how IP environments do or could influence innovation and creativity as a means to development. A recent, wide-ranging review (Hassan *et al.*, 2010) of the growing but still “surprisingly scarce” literature on IP and developing countries uncovered little consensus and even less clear evidence on the key questions facing IP policy-makers (2010, p. xiv). It follows that policy-makers who seek to encourage creators and innovators tend to struggle to develop appropriate IP systems. Bottlenecks and systemic inefficiencies occur as law-makers and policy-makers make hazy efforts, based on insufficient information, to calibrate national IP environments in support of innovation and creativity.

Overzealous IP protection regimes may indeed raise the costs of future innovations and may, therefore, discourage potential innovators and creators who cannot afford high up-front investments. Also, over-protection of IP may result in innovators and creators being unable to organise collaborative relationships in strategically optimal ways. On the other hand, under-protection of outputs may indeed be an investment disincentive for a significant proportion of potential innovators and creators, and may therefore be a threat to development.

Despite the lack of consensus about the influence of IP on innovation and creativity for development, some new narratives seem to be emerging. For most of the 20th century, the orthodox assumption was that IP protection is good for development. The wisdom was that if some protection is good, more is even better. The origins and spread of such narratives are explained especially clearly in the literature on the history of the World Trade Organisation’s (WTO’s) Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) and in the leading work on the international political economy of IP more generally (e.g. Drahos and Braithwaite, 2002; May, 2010; May and Sell, 2005; Sell, 2003).

From the 1994 passage of TRIPS onwards, political and economic pressures to increase IP protection succeeded in raising both IP protection standards and awareness of IP in developing countries. But the protectionist pressures led to backlashes against IP systems that were seen as insensitive to local contexts. This was especially true where IP protection impacted other public policy priorities, especially on matters of health, education and cultural participation. The work of scholars such as Barbosa *et al.* (2007), Boyle (1997, 2003, 2004), Chon (2006), Okediji (1996, 2000) and others was influential in that context. Such scholarship contributed indirectly to reform initiatives undertaken by international

organisations including the WTO, the World Health Organisation (WHO) and the World Intellectual Property Organisation (WIPO). A “development agenda”, or indeed a suite of related agendas, emerged as a new paradigm focused on recalibrating international IP law and policy (De Beer, 2009; Deere, 2009; Gervais, 2007; May, 2007; Meléndez-Ortiz and Roffe, 2009; Netanel, 2008; Yu, 2009). Moreover, an *ad hoc* movement of civil society advocates and scholarly researchers came together under the framework of “A2K” (access to knowledge), a civil society coalescence which fundamentally reframed the terms of global IP debates (De Beer and Bannerman, 2013; Kapczynski, 2008; Kapczynski and Krikorian, 2010). An illustration (as this book was being finalised in mid-2013) of the continuing momentum of the A2K movement was the outcome of the WIPO Diplomatic Conference of June 2013 in Marrakesh, at which more than 50 countries signed the Marrakesh Treaty to Facilitate Access to Published Works for Persons Who Are Blind, Visually Impaired, or Otherwise Print Disabled (Marrakesh Treaty, 2013).

A number of important recent works demonstrate the integration of development principles and A2K perspectives into mainstream analyses of IP (e.g. Wong and Dufield, 2011). Several scholars emphasise the complex, dynamic and multi-level nature not just of IP rules, but also of the broader governance of knowledge (e.g. Burlamaqui *et al.*, 2012; Chon, 2011; Oguamanam, 2011). The complexity of the scholarly endeavour has led to contrasting disciplinary perspectives and subtly different framings of IP issues. For example, some works characterise the basic problem as protecting “poor people’s knowledge” (Finger and Schuler, 2004); others promote the recognition of “indigenous people’s innovation” (Drahos and Frankel, 2012). A particularly important theme is the human impact of IP policy, i.e. the impact on individual fulfillment and well-being (Sunder, 2012).

Despite this rapidly growing global body of work, there is still little research examining systemic IP governance or knowledge governance in Africa. More than two decades ago, Juma and Ojwang (1989) urged African countries to examine their IP policies and “introduce laws that reflect the imperatives of national sovereignty” (1989, p. 3). Since then, there have been valuable in-depth examinations of particular issues, such as textiles and traditional knowledge (Boateng, 2011), or access to learning materials (Armstrong *et al.*, 2010; De Beer, 2013). In addition, some researchers have conducted regional analyses of A2K – in North Africa, for example (Shaver and Rizk, 2010) – and sub-Saharan African perspectives on IP and economic development have been put forward (e.g. Blackeney and Megistie, 2011), along with analyses of topics such as neo-colonialism and IP (e.g. Rahmatian, 2009) and African IP organisations (Kongolo, 2000). African-based researchers Pistorius, Harms and Visser have done strong work on the intersections among development and aspects of IP such as copyright (Pistorius, 2007)

and international legal and political IP paradigms (Harms, 2012; Visser, 2007). But many gaps in our understanding of IP and development, especially development in African settings, remain.

Particular blind spots relate to the dynamic and contextual roles of IP in different kinds of African innovation and creation modalities, particularly collaborative and openness-oriented modalities. The researchers who contributed to this book responded to an open public call to investigate matters that would help answer the following question: *How can existing or potential IP systems be harnessed to appropriately value and facilitate innovation and creativity for open development in Africa?* This framing provoked a range of connected questions. Practically, how do African innovators or creators exploit, adapt to, or work around, IP environments? Conceptually, are exclusive IP rights compatible with collaborative, openness-oriented innovation and creativity in Africa, and with inclusive development more generally? What are the on-the-ground interplays between openness and protection in relation to IP in African innovative and creative settings? At a more systemic level, to what extent, and how, have policy-makers in Africa attempted to calibrate IP frameworks in such a way that they can maximise innovative and creative potential? Current research addressing these important questions, as presented in the available literature and translated into practice, remains scarce and often appears to reflect rhetorical polarisation more than objective investigation. This volume seeks to begin to fill that research gap, by presenting findings from studies which explored the role of IP in innovation and creativity within collaboration- and *openness*-based conceptions of development in the African context. In other words, the book is *not* about innovation systems or creative industries in general; it is about the roles that IP rights do, and could, play *within* such systems and industries, specifically *in* Africa, specifically in relation to collaborative, openness-oriented dynamics.

Emphasising Africa

Questions about IP law, policy and practice may appear to be most suitably addressed globally, not least because several multilateral instruments, such as TRIPS, strive to introduce uniform minimum standards of IP protection around the world. This book, however, takes the view that examination of the global setting is insufficient, because regional, national and sub-national characteristics and perspectives must be taken into account and examined. As the research presented in this book reveals, examination of IP environments at African regional, national and local settings has much to offer.

At the outset, it must be emphasised that Africa is an enormous and diverse continent, not a single country. Therefore this book's exploration of the role of

IP in systems of innovation and creativity in African settings seeks to avoid perpetuation of stereotypes of African homogeneity. This book also emerges from an awareness that, in the context of humanity's continual strivings for innovation and creativity, African nations and communities have typically been assigned least-performing status. Africa's contributions have tended to be positioned as confined to the ancient world or the prehistoric era, sometimes via dubiously benevolent attempts to acknowledge the continent's role as the starting place (the "cradle", no less) of humankind. Africa has also tended to be subjected to depictions as a "dark" continent, a disease and affliction hotspot dominated by poverty. Juxtaposing the concept of "modern" innovation with the word "African" has, for much of the past few centuries, been positioned (particularly in the "developed" world) as a contradiction in terms. African knowledge has typically been cast as "traditional", which, as Dutfield (2002, p. 22) points out, implies the opposite of innovative or creative. While there is some very recent evidence of less pejorative media narratives emerging in relation to African innovation (see *The Economist*, 2013), most countries on the continent are still seen as having a long way to go if they wish to become hotbeds of 21st-century innovation.

There are various interrelated, IP-connected reasons that might explain the power of narratives suggesting that creativity and innovation in most parts of Africa appear to fall short of innovative and creative activity in other regions, particularly developed-world regions. This book investigates two possible reasons in particular: first, that African creativity and innovation are not properly valued by prevalent IP systems and assumptions; and second, that African creativity and innovation are being constrained by sub-optimal IP-related policies and practices. Using a range of research methods, the chapters in this book investigate both possibilities: that prevalent IP modalities might be (1) *undervaluing* African innovation and creativity, and/or (2) *undermining* African innovation and creativity. It must be made clear in this introductory chapter, however, that in exploring the possibilities just mentioned, the research outlined in this book was premised on certain assumptions, chiefly that current IP modalities can and do contribute to facilitation of innovation and creativity in some African settings, but that at the same time, the facilitative role of IP modalities in African settings can be improved.

Undervaluing African innovation and creativity?

It would appear that IP-related measurement tools for contributions to innovation do not sufficiently consider how innovation and creativity actually happen on the ground in African settings. It cannot be doubted that, amongst the rank of African and African diaspora intelligentsia, dating back millennia and certainly from pre-colonial times, there is no lack of epochal innovative and creative accomplishments

in virtually all categories of human endeavour. And Africa remains a continent whose diverse natural and human resources are clearly integral to humanity's collective quest for innovative solutions to pressing problems. The issue is, therefore, not whether there is African innovation, but rather whether Africa's real and potential contributions to innovation are properly identified or valued by IP.

It seems likely that certain formal, or informal, or mixed formal–informal, modes of innovation and creativity in Africa cannot be fully or properly accounted for through the Western-oriented prism of patents, copyrights, trademarks and other formal IP outputs. Many measurements used in developed countries, and exported to developing countries, betray apparent misunderstandings of the nuances of IP law, policy and practice, e.g. through blind citation of statistics regarding “patenting by population” or “share of world patents” or “cross-border trade-marks” (e.g. Conference Board of Canada, 2010). Such measurements inevitably influence decision-makers, often through mainstream media coverage. For example, a 2010 media headline proclaimed “Southern Africa: Region Failing to Innovate, Says Study”, and cited a study by the UN Educational, Scientific and Cultural Organisation (UNESCO) that concluded as follows: “Countries in southern Africa are producing so few scientific publications and patents that the region's social and economic progress is threatened” (Campbell, 2010, citing UNESCO, 2010). That Africa needs more patents is currently a key message being conveyed to African national policy-makers, who are, in turn, naturally tempted to seek to bolster their nations' statistical ranking via patent-centric policies, laws and regulations – even if the effects of such policy-making may well be counterproductive in the long term.

Simply citing numbers of patents issued is at best an incomplete attempt to measure innovation, and is at worst inappropriate, especially when in some cases these very patents could be clogging innovation systems with bottlenecks that impede collaboration. Some scholars in the developed world are now writing about such problems (Bessen and Meurer, 2008; Jaffe and Lerner, 2006), and influential bodies such as the Organisation for Economic Co-operation and Development (OECD) are beginning to recognise that sole reliance on such measurements of innovation is inadequate (OECD, 2010). Arguably, conventional IP metrics are especially improper for validation or empowerment of African innovators and creators at the “base of the pyramid”, i.e. the most marginalised (yet often most resilient) segments of society.

But while the developed world seems to be advancing towards more sophisticated measurement and understanding of IP's actual roles in innovation and creativity, there is evidence – e.g. the UNESCO study referred to above – to suggest that African policy-makers continue to be offered relatively stale, globalist, protection- and harmonisation-centric IP narratives containing insufficient counterbalancing

via references to nationally or locally contextualised IP realities and imperatives. This is despite decades-old pleas to look beyond patents for appropriate knowledge-governance frameworks:

Patent protection *per se* is too narrow to account for most of the innovative activity going on in the region. A new regime of intellectual property protection should be introduced to cover traditional technologies, intermediate innovations, inventions and other products of innovative activity. It should take into account the national development needs, regional co-operation, and international competitiveness (Juma and Ojwang, 1989, p. 2).

Undermining African innovation and creativity?

The still-dominant paradigm of IP protection, globally and in Africa, promotes IP as a “power tool” to facilitate economic growth (Idris, 2003), i.e. growth through private sector monopolies that temporarily limit competition and thereby provide financial incentives to invest human and financial resources into innovative and creative endeavours. It seems clear that IP does, to some extent, have a positive role to play in incentivising innovation and creativity. But it also seems clear that too little consideration is given, in the dominant discourses of IP training, education and capacity building finding their way to Africa, to the potential socio-economic externalities of the existing system (De Beer and Oguamanam, 2010). Moreover, the focus of most existing research on IP and innovation is on *formal* sectors of the economy, with little effort made to date to understand IP’s interactions with *informal* modes of innovation and creativity (informal modes which are particularly prevalent in developing-world settings).

If IP-related decisions are made based on narrow understandings of the true nature and value of IP in varying contexts, then human resources, venture capital and other factors influencing creativity and innovation might be misdirected in contexts (e.g. the African contexts that are the focus of this book) that do not conform to the tidy assumptions generated by narrow perspectives. There is a view, shared by the editors of this volume, that better understanding of the nuances of IP law, policy and practice in myriad settings (including, for the purposes of this book, African settings) can help policy-makers and practitioners more effectively harness the potential of what has come to be known as the “knowledge commons” (see Hess and Ostrom, 2006). According to the knowledge commons idea, knowledge is shared by groups of people and governed by dynamic mixes of formal and informal norms of ownership and control – by ownership and control systems that are sometimes closed, sometimes open, and often a combination of both.

Accordingly, the research studies detailed in this book sought to give proper due to dynamic fusions of formality and informality in relation to IP and

innovation. In addition, the studies sought to examine whether greater attention should and could be paid to potential leveraging of existing IP systems, or refinement of existing IP systems, in ways suited to more participatory, collaborative, democratic and just models of innovation and creativity, i.e. leveraging or refinement of IP systems in ways suited to enablement of openness-oriented modalities for development, modalities that some have come to call “open development” – a notion covered in this chapter’s next subsection, on openness.

The concept of openness

At present, it would seem that IP is, for the most part, not conceptualised in an openness-oriented way in Africa. Central to this book is the question of whether conceptualisations giving primacy to openness-based collaboration can help bridge the polarisation in IP discourse. This subsection explains how openness may be situated in respect of IP policy and practice, and the relationships between open IP models and openness more generally (as applied, for example, to notions of open development).

Open development

Open development is a relatively new concept that has only just begun to be investigated, let alone defined. Potential confusion around the concept stems from the elusiveness of agreement about what *openness* is. Whether a system can be considered open or not depends on a variety of factors including, significantly, the degree to which people are free, or even empowered, to universally access a system and to participate, collaborate and share within that system (Smith *et al.*, 2011). Early brainstorming around the idea of open development has centred around principles of collaboration, participation and inclusiveness in the political, legal, economic, social, cultural, technological and other institutions (broadly conceived) that shape people’s lives.¹ Examples of open development applied in practice might include open government, open communications networks, open access to content, open-sourced research, open product development and commons-based peer production (Benkler, 2006; Wunsch-Vincent *et al.*, 2007). Similar principles can be found in discussions using the label “inclusive development”, both generally (IDRC, 2011) and in the specific context of innovation (OECD, 2012).

1 One such brainstorming event was the IDRC Open Development Workshop in Ottawa, Canada (6–7 May 2010); more information about the workshop as well links to 21 paper abstracts are available at: www.idrc.ca/en/ev-140364-201-1-DO_TOPIC.html [accessed 12 April 2013].

Proponents of the value of open or inclusive development paradigms tend to gravitate towards calls for increasing democratic engagement, and they tend to emphasise the distributive implications of the benefits that accrue, from such modes of development, to the most marginalised segments of society. It can even be argued that openness breeds more openness, so that it is a game-changing force for unlocking innovation and creativity. That said, the potential downsides of openness should not be overlooked, including, in the realm of IP protection, the risk of misappropriation and, perhaps, challenges faced in seeking to find financial incentives for innovative and creative activity. The potential advantages and disadvantages make it necessary to consider appropriate degrees of openness that balance benefits with costs. Such balancing tends to be a constantly dynamic process, which further complicates a possible definition of openness in the context of developmental processes. Another challenge in arriving at a clear understanding of open development and related openness-focused concepts is the paradox that one person's freedom often requires another's constraint. Despite these conceptual and definitional challenges – and also to a great extent because of them – this book seeks to help build a better understanding of what the concept of open development might look like in one particular set of contexts: African contexts involving elements of IP, innovation and creativity.

Collaborative innovation and creativity

The term “innovation” has in recent years become a buzz word among government policy-makers, the private sector, civil society and academics. However, its meaning is not self-explanatory. The rich literature on innovation and its connections to entrepreneurship and formal and informal economic systems is canvassed in the De Beer *et al.* Chapter 2 of this book. In this introductory chapter, it will thus suffice to foreshadow the deeper analysis in Chapter 2 by providing an initial definition of innovation, making a rough distinction between the twin notions of innovation and creativity, and drawing some generalised connections among IP, innovation, creativity and openness.

A useful definition of innovation is contained in a handbook known as the *Oslo Manual*, a joint publication of the Organisation for Economic Co-operation and Development (OECD) and Eurostat (OECD and Eurostat, 2005). The *Manual*, now in its 3rd edition, provides guidelines for researchers and statisticians collecting and interpreting data regarding indicators of technological innovation in countries around the world. According to the *Manual*, an innovation can take the form of a new technological product (or service offering), a new production process, a new marketing method or a new organisational practice. Significantly improved products/services, processes, methods and practices also qualify as

new, according to the *Oslo Manual*. But to be an innovation, the new product/service, process, method or practice must be implemented, not merely abstract. Implementation usually refers to market availability, with the market understood broadly so that public sector social innovations may be included.

In this chapter, and in this book as a whole, there is frequent reference made to “innovation and creativity” as twin ideas. This is because this volume seeks to be inclusive of a wide range of innovation and creative practices potentially relevant to IP modalities, and some branches of conventional IP privilege the notion of innovation while others privilege creativity. Reference in this book to innovation and creativity as twin notions should *not*, however, be mistaken as implying that the two are equivalent. As outlined above with reference to the *Oslo Manual*, for something to be called an “innovation” it typically requires implementation via market availability (with the market broadly defined). “Creativity”, on the other hand, does not, in the understanding adopted by the editors of this book, necessarily imply implementation via market provision. In many cases, an instance of creativity may be but one link in the chain leading towards a market-available innovation; in other cases, an instance of creativity may remain as non-market-implemented, and thus not, strictly speaking, an innovation according to the *Oslo Manual* definition adopted by this volume.

In the context of IP law and policy, the term “innovation” is most often used during discussions of patents, while creativity is more typically mentioned alongside copyrights. This discourse results from the mistaken belief that patents are the most (or only) relevant IP right with respect to science and technology, while copyrights are the most (or only) important right in cultural industries. The emerging reality is that patents, trade secrets, copyrights, trademarks and other forms of IP protection are relevant across sectors, and that most industries are impacted by all of these issues (as explained in further detail below). Thus, among the reasons why this chapter typically mentions the concepts of innovation and creativity in conjunction with each other is our desire to move away, to the extent possible, from the tendency to bifurcate between patent-centric innovation analyses and copyright-centric creativity analyses.

Several important concepts emerge from the scholarly literature related to IP environments and collaboration- and openness-oriented innovation and creativity (or what we call, in this chapter, collaborative innovation and creativity). First, collaborative innovation and creativity need to be situated within the more general literature on innovation systems. One of the founders of the concept of innovation systems, Lundvall, has argued that research on formal aspects of innovation is evolving well, even in the developing world, including Africa (Lundvall *et al.*, 2009; see also Oyelaran-Oyeyinka and McCormick, 2007). However, to bridge innovation systems research and development studies, one of Lundvall’s

suggestions is to study the intersections among formal and informal dimensions of innovation (e.g. between patent statistics and social networks) (Lundvall *et al.*, 2009; Oyelaran-Oyeyinka and McCormick, 2007). The emerging conceptualisations of collaborative innovation and creativity seem to present opportunities for examination of formal–informal innovation intersections (Esalimba and New, 2009), and some of the chapters in this book (particularly Chapters 2 and 3) take up the challenge.

Current thinking about collaborative innovation and creativity can be unpacked into two relatively discrete components, which are very often conflated or misunderstood: *macro-level* IP public policies, and *micro-level* IP management practices. For example, when Chesbrough (2003) uses the term “open innovation”, it refers to the strategic exploitation of IP rights by private firms in ways that are, in fact, sometimes open and sometimes closed. Such a conception seems to reflect only one part of the picture of innovation’s role in development. The work of Chesbrough, and others such as Tapscott and Williams (2006) and Shirky (2008), has focused on the self-structuring behaviours of individuals and firms, albeit in the context of collective action. Communities built around initiatives like the Creative Commons, or the free and open source software (FOSS) movement, are likewise concerned mostly about organising actors within the respective communities. The work of researchers such as Lemos on the topic of “open business” also demonstrates how specific industries or parts of an industry can be developed using social rather than strict legal norms to govern expectations around content production, distribution and revenue-sharing (Lemos and Castro, 2008). In this subset of research, the adjective “open” as applied to innovation, creativity or business models is used in a variety of different and sometimes incompatible ways across disciplinary boundaries.

Moreover, even if a uniform understanding of the term *open* existed, it seems clear that while openness principles (however defined) work well in relation to IP in some sectors (such as software, content publishing, music distribution in some genres, health care, agriculture), they are more difficult to apply in other contexts (such as biotechnology research and development [R&D]) (see Adelman, 2005; Boadi and Bokanga, 2007; Boettinger and Burk, 2004; Clark *et al.*, 2000; Connett-Porceddu, 2004; Feldman, 2004; Halewood and Nnadozie, 2008; Hope, 2008; Kuchma, 2010; Nolan-Stevaux, 2007; Octaviani, 2008). Which sectors are most amenable to openness around IP, and why? There are very few studies that investigate multiple sectors simultaneously to determine which strategies might be viable on a larger scale or to draw other broad lessons (see Gastrow [2009] for one example of a multiple-sector study). This knowledge gap is a potential impediment to effective design and implementation of IP management policies and practices seeking to harness openness dynamics.

Another apparent gap in our understanding of the relationships between openness and IP is caused by the fact that, in both the scholarly and practical contexts, the potential public policy consequences of private orderings are usually discussed implicitly rather than explicitly. At the same time, research focused on high-level legal and policy issues – e.g. examination of whether building openness into IP policy will result in greater opportunity for developing countries to transform into equitable and sustainable knowledge societies – tends to fail to appreciate the practical implications of those public policies on private actors. That is, attention tends to be directed at either one or the other of these components of openness (private ordering or public policies) in relation to innovation and creativity, rarely making sufficient connections. It is hoped that this book's research findings and analysis offer some useful connections, or at least the beginnings of useful connections, between the actions of private and public sector actors in relation to IP, openness and collaboration.

2. The research

Analytical framework

The research framework for this book is pragmatic. Chapter authors approached their research on the basis of actual or likely practices of innovators and creators of valuable intangible assets. The researchers were at the same time asked to juxtapose these practices with the overarching legal, economic and policy systems governing people's behaviours, particularly behaviours in relation to IP, in the countries of study. While the point of departure for the research was the existing legal system of IP protection, a meaningful analysis of the ramifications of IP laws necessitated due consideration of disciplines other than law, such as political science, economics, business, engineering, philosophy and sociology. The multi-disciplinary constitution of the network of researchers who contributed chapters to this book duly reflects this approach.

It also needs to be stressed that many of the research studies covered in this book sought to approach IP, innovation and creativity from the perspectives of relatively vulnerable and marginalised collectives of people. The data and analyses presented in this volume are grounded in the need, in the African settings researched, for more equal and just distribution of the benefits of socio-economic development.

Methods

As explained in the Preface, the Open African Innovation Research and Training Project (Open A.I.R.) (www.openair.org.za), of which this book is part, adopted

a two-phase approach to researching the role of IP rights in relation to collaborative innovation and creativity with developmental intent: (1) the case studies, described in Chapters 3 to 15 in this book, seeking to reflect the *status quo* and develop some recommendations for the near future; and (2) scenario-building exercises seeking to understand what the intersection of IP, innovation, creativity and Africa's socio-economic development could look like two decades in the future. The second-phase findings, the scenarios, are documented in separate publications from this book, because the foresight work was geared towards strategic thinking and planning for the future. This book, meanwhile, offers the fruits of the first research phase, the case studies of the present.

The particular case studies in this book sought to lay the groundwork needed for new ways of identifying and valuing innovation and creativity in Africa. The case study method helps to humanise otherwise abstract information and yields understanding into complex systems of interacting variables. Case studies were thus chosen by the Open A.I.R. network as the necessary empirical tool for counteracting the formalistic tendencies of predominant IP measurements and analyses. The case study researchers adopted a range of methods. However, notwithstanding the Open A.I.R. network's interdisciplinary framework, IP is a decidedly legal construct, making legally focused desk research, including statutory analysis, an important part of most of the studies. Most of the researchers analysed a range of materials on the legal and policy contexts for their studies, including international treaties, national policies, statutes and regulations, and scholarly articles. The researchers also consulted a range of non-legal, non-policy sources, in order to generate coherent socio-cultural and economic contexts for their studies. While two of the chapters contain statistical analyses and quantitative data collected through surveys (Chapter 15 on Botswana's publicly funded researchers, and Chapter 8 on production and consumption of Egyptian independent music), most drew primarily on qualitative data from interviews, focus group discussions and qualitative written questionnaires. Such methods are not often used in legally oriented research (especially not regarding IP law), but are common in other areas of the social sciences. As will become clear to the reader, the qualitative data gathered were rich and facilitated author insights into a range of conceptual and practical elements, problems and solutions – insights which almost certainly could not have been generated via desk research alone.

Thematic research areas

The research featured in this book examined a diverse but interconnected range of phenomena in the following thematic areas related to IP: (1) informal appropriation, (2) trademarks and geographical indications, (3) traditional knowledge,

(4) copyrights, (5) patents and (6) publicly funded research. Collectively, these six interconnecting research foci, as brought together in this volume, offer insights into the extent to which IP systems are being, or could be, harnessed in African contexts to enable successful collaborative peer-production and distribution of knowledge-related goods and services.

Many previous and ongoing research projects have done, or are doing, valuable work by looking at particular topics within the framework of IP and development. For instance, there is much value in the work considering copyright's influence on access to learning materials, or strategies to increase access to patented knowledge, or the role of international organisations in local IP systems design. But analysing these issues in silos risks missing the bigger picture. Moreover, segregating topics such as patents, copyrights and trademarks into separate projects ignores the practical reality of how IP is managed on the ground. Any innovator, creator, entrepreneur or supporting policy-maker can attest to the fact that the key, overarching, real-world issue is how valuable intangible resources *of any sort* are protected, managed and mobilised. Whether the legal regime of patents or trademarks or copyrights is the particular tool being utilised in an effort to perform the desired management or mobilisation is of secondary importance to ultimate objectives. Many of the stakeholders affected by IP rights in any particular setting will often be unaware of the technical distinctions among branches of IP. A holistic approach was therefore necessary to achieve the objectives of the Open A.I.R. research programme that generated the content of this book.

Take just one of many possible practical examples: collaborative models of R&D in the biofuel sector. In some respects, this is clearly a patent-related issue. To the extent that patents may pose a problem for the development or deployment of innovative technologies, licensing strategies such as patent pools can be used to overcome such challenges. A wealth of scientific and technical information is contained in electronic patent databases, which are increasingly recognised for their potential value in facilitating North–South technology transfer and collaborative partnerships. Organisations that manage these databases, such as WIPO (via national IP offices), are right now implementing several large-scale online, networked projects to disseminate patent-related information throughout Africa as part of WIPO's development agenda. The information and communication technology (ICT) systems involved, however, are themselves layered with copyright protection. Moreover, the scientific and technical information contained in patent databases is at best incomplete and at worst useless without corresponding information contained in the scientific literature, the latter of which is protected by copyright and often technological protection measures (TPMs) too. To make matters more complex, the scientific research sector is built to a great extent upon public–private partnerships, with huge sums of both private and public funding

supporting R&D, making issues of IP ownership fraught. How are IP rights to be managed to reduce bottlenecks and facilitate collaborative innovation in such circumstances? Despite the convenience of compartmentalisation, investigating IP issues in separate silos, through different programming areas or research projects, may miss important analytical insights and opportunities for influencing behavioural change. By combining the findings from case studies in different but related fields of IP, this book not only reflects research synergies and efficiencies, it also seeks to facilitate overarching insights into certain social, economic, political or other problems related to IP.

However, it must also be said that the book makes no claim to be comprehensive. No project of this nature could cover all relevant fields. Moreover, the case studies presented in the book were generated via responses that the Open A.I.R. network received from an open public call for research proposals. Thus the spread of topics and the countries covered was largely determined by the interests expressed by the researchers who initially came forward to propose studies and who successfully completed their studies. As a result, some topics that some readers may regard as central to understanding IP in relation to African innovation, creativity and development – e.g. access to medicines, plant breeders' rights, farmers' rights, video industries, biodiversity, utility models (UMs), industrial designs – receive only cursory mention, or no mention at all, in the chapters which follow. And while the editors of this volume were pleased to be able to include research from all four main regions of Africa – North, West, East and southern – there will undoubtedly be some readers not satisfied with the fact that only one North African country (Egypt) is featured, and that none of the research was conducted in a Francophone African country. Once again, on this matter of the geographical spread of the chapters of this book, the editors were restricted to consideration of the successful case studies which emerged via the open call.

Also, it is in the nature of the case study method that successful case studies tend to focus selectively on precise, somewhat narrow sub-issues within broader thematic areas, and often seek to chart new paths in a research landscape that already has some frequently examined features. So, within the patents theme, the researchers who contributed to this volume did *not* dwell upon the fairly well-covered issues of patents and access to medicines (see Abbott and Dukes, 2009; Adusei, 2012; 't Hoen, 2002) or patents and control of food (see Tansey and Rajotte, 2008). Instead, researchers concentrated on the emerging issue of patents and renewable energy, specifically biofuels – a source of energy promising to have significant impacts on both rural small-scale farmers and national economies in Africa, not to mention the global environment. Likewise, within the area of traditional knowledge (TK), researchers did *not* attempt to engage with the broad debates about international regimes for access and benefit-sharing (ABS)

or similarly high-level topics. Researchers instead concentrated on one specific question – the viability of “TK commons” models in Africa – as one possible solution to TK-related IP challenges.

The following six subsections go into more detail about the thematic areas covered in the book and the author contributions to each theme.

Informal management of knowledge

One cannot understand African innovation without understanding the vibrant, entrepreneurial informal economy (IE) operating in African nations. But Africa’s IE tends to be conceptually disconnected from the leading scholarly literature on innovation, entrepreneurship and IP. In this volume, a pair of chapters (Chapters 2 and 3) – which should ideally be read as companion pieces – seek to begin to bridge this gap, by (in Chapter 2) establishing an IP and innovation conceptual framework inclusive of the IE, and (in Chapter 3) reflexively engaging with that framework via evidence collected on the ground in the Ugandan capital city Kampala. In Chapter 2, De Beer, Sowa and Holman review concepts developed to understand and measure innovation, and then outline frameworks useful for drawing links, in Africa, between innovation and paradigms of entrepreneurship, the IE and IP. The authors conclude that the time is ripe for African policy-makers to seek holistic approaches to building innovation and, in turn, fostering socio-economic development.

In Chapter 3, Kawooya provides findings from his Ugandan case study of interactions between informal-sector Kampala automotive artisans and formally employed researchers at Makerere University’s College of Engineering, Design, Art and Technology (CEDAT). The site of the interactions studied was CEDAT’s formal–informal hybrid (or “semi-formal”, as Kawooya calls it) entity, the Gatsby Garage automotive workshop. By probing the innovation practices at Gatsby Garage and at linked sites of informal activity, the research found that the informal artisans follow largely non-protectionist approaches to IP, both in their interactions with formal-sector partners and in their collaborations with counterparts in the informal sector.

Collaborative branding through trademarks and geographical indications

Throughout Africa, the agricultural sector remains central to economic and social development. New strategies are being developed to help brand African agricultural products with the unique product and production qualities they possess. Trademarks and related concepts such as certification marks and geographical indications (GIs) are important determinants of the likely success of such strategies. For many innovators, creators and entrepreneurs, especially those working as

or with small- and medium-sized enterprises, their brand may well be their most valuable intangible asset in need of protection. In Africa, there are various examples of collectivities of citizens, firms or other organisations who are interested in collectively protecting brands. The latent commercial and non-commercial value in agricultural products and processes is often interconnected with the TK of indigenous and local communities (ILCs) (Dagne, 2010). But in the absence of a satisfactory protection mechanism for TK, communities must use other tools. In some circumstances, GIs might be used to associate products or processes with desirable qualities attributable to specific geographic locations. In other contexts, ordinary trademarks might be used to protect (or stop others from protecting) words and marks that might confuse consumers in the marketplace. Related to these legal strategies are systems of certification marks, which might shift market power in favour of producers of certified organic or fairly traded goods and services. Effectively, collaborative branding through certification marks or geographical indications presents a possible counter-narrative to the openness instincts that dominate the A2K movement's perspective on copyright and patent issues. Similar to patent pooling, these branding tools create systems that are open on the inside yet closed to outsiders. Studying the nuances of such arrangements holds great potential for contributing to better understanding of the role that IP plays in openness-based innovation and creativity settings.

In Chapter 4, Oguamanam and Dagne examine the Ethiopian coffee and Ghanaian cocoa industries in order to determine their potential to benefit from *sui generis* GIs as a model for practical adoption of IP for open development objectives. Through local field work, the authors investigate whether or not GIs could be successfully and sustainably used as instruments of place-based IP (PBIP). The authors submit that the implementation of GIs involves a range of tasks, including: the establishment of legal and institutional structures; maintaining the quality, reputation or characteristics of the products; enforcing and defending rights; and developing product awareness in international markets. These tasks involve significant costs and efforts that need to be measured and weighed against the expected benefits.

Chapter 5, authored by Adewopo, Chuma-Okoro and Oyewunmi, describes and interprets the findings of a case study into the potential application of communal trademark systems for certain Nigerian leather and textile products. The authors consider the national legal and regulatory environment, the levels of standardisation practised by small-scale leather and textile producers, and the views of producers regarding the viability of communal trademarking. The authors find interest, among the producers they survey, in communal trademarking, but at the same time they identify potential legal and practical challenges.

The potential of traditional knowledge (TK) commons arrangements

The question of how the TK of ILCs in Africa and elsewhere can and should be protected against misappropriation has been controversially discussed for decades. African countries currently protect TK in a wide variety of ways: some by way of *sui generis* systems, others via incorporation of TK into existing sets of IP laws. Interestingly, in the context of TK, many countries in Africa find themselves in the unaccustomed position of being net *exporters* of knowledge rather than, as is the case with most other types of IP, net *importers*. This situation results at times in high-level calls by African and other developing countries (at WIPO, for instance) for stronger protection of TK through IP laws – a position which contrasts with these countries’ frequent demands for generally more flexible standards of IP protection. In other words, on TK matters there tends to be an inversion of typical North–South protectionist dynamics, with African and Southern nations to some extent taking up elements of the protectionist IP logic more usually associated with the stances of Northern governments and firms.

Within African ILCs, TK has typically been managed as a collectively held, shared and preserved resource. But recent decades have seen increased private sector proprietary, closed, commercial exploitation of TK, often in ways that do not benefit the communities that have created and preserved the knowledge. Chapters 6 and 7 look at one particular aspect of the current debate on exploitation of TK: the idea of a “TK commons”. The current prospect that faces many ILCs is unregulated access to their knowledge, leaving it open to abuse or requiring negotiation of a separate ABS agreement for every non-commercial use. TK commons systems seek to provide another possible model, whereby TK can be promoted and circulated without having either to place it in the unrestricted public domain, where it is “free for all”, or to deny all access to it entirely.

In Chapter 6, Ouma looks at the policy context for a possible TK commons in Kenya. Previous projects in Kenya, such as a digital archive documenting Maasai knowledge, have laid the groundwork for positive TK commons policy initiatives in Kenya, and the country has a National TK Policy (and draft law) seemingly capable of supporting commons approaches. But, the author concludes, collaboration between Kenyan government entities and ILCs is, at present, insufficient for full realisation of a TK commons. In Chapter 7, authors Cocchiaro, Lorenzen, Maister and Rutert outline their research findings from a legal, social and anthropological examination of the TK commons adopted by a grouping of traditional medicinal practitioners in the Bushbuckridge region of South Africa. Based on findings generated through embedded participatory research and legal analysis, the authors argue that one potential way for these traditional healers to improve management of the TK in their commons could be via establishment of a legal “trust” mechanism.

Copyrights and empowered creativity

The two copyright chapters in this book seek to break down assumptions that creators and users of cultural outputs hold homogeneous perspectives. In particular, both chapters reveal that not all creators need or want more or maximum copyright protection. This suggests a need for outside-the-box solutions, which Chapters 8 and 9 explore. In Chapter 8, Rizk presents findings from an extensive survey of creators and consumers of independent music in Egypt. The author seeks to determine, in the case of the output of the independent musicians, the potential applicability of alternative business models (see reference to the work of Lemos earlier in this chapter) which could enhance copyright compliance and still respect the wishes of both musicians and listeners. The research found a complex web of behaviours and perspectives (among both creators and consumers) in relation to the music and in relation to compliance, or lack thereof, with Egyptian copyright law. Key findings were that neither the musicians nor the consumers of their work are concerned by the lack of copyright compliance inherent in the widespread pirate copying and illegal commercial exploitation of independent music, as both the listeners and the creators regard paid-for live performances as the preferable means of commercial exploitation. While acknowledging the reticence among the musicians surveyed towards forms of commercialisation beyond payment for live performances, Rizk highlights the potential utility of an online Creative Commons-based “digital commons” arrangement for the music. Online combination of access to free and paid-for content and services (a kind of “freemium” model) could, the author argues, serve to simultaneously legalise, accommodate and refine the Egyptian grassroots music sector.

In Chapter 9, Sihanya reflects on the state of Kenyan scholarship in relation to the country’s copyright environment. Sihanya researched attitudes and experiences among Kenyan scholarly publishing stakeholders in relation to emerging notions of “open scholarship” and alternative publishing with relaxed copyright restrictions. The author uncovered support for open scholarship among librarians and users, and a mixture of enthusiasm and reticence among scholarly authors. The primary interest of the scholarly authors Sihanya surveyed was wide dissemination of their ideas (an interest potentially well-served by open access [OA] and other alternative online publishing approaches). But, at the same time, the authors surveyed said they do not want to open themselves up to abuse of their economic rights, i.e. to jeopardise their ability to control commercial exploitation of their works. Sihanya concludes that Kenya’s copyright environment, particularly in relation to enforcement of authors’ economic rights, needs to be clarified and solidified in order for Kenyan authors to more fully embrace open scholarship and alternative publishing.

Patenting dynamics and African innovation policy priorities

Chapters 10, 11 and 12 investigate patenting and related matters relevant to African innovation objectives. Mgbeoji's Chapter 10, based on a survey of patent stakeholders in 44 African countries, focuses on the practical realities of patent examination in Africa. Mgbeoji found that most African patent offices are ill-equipped to discharge their two crucial functions: evaluation of the merits of an invention (to determine whether the criteria of patentability have been met); and collation and dissemination of patent information for the use of researchers, industry and other interested members of society. Mgbeoji argues that these weaknesses at African patent offices have the potential to hamper technology transfer and, in turn, retard domestic industrial development.

Chapters 11 and 12 look at specific issues connected to biofuel patenting, in Mozambique and Egypt, respectively. Both the developed and developing worlds face sustainable development crises for which energy matters are both cause and cure. In addition to wind, solar, geothermal, tidal and other sources, biofuels hold particular promise for the future, while at the same time triggering ethical, environmental and economic challenges. IP plays a little-studied role in this context. IP rights have the potential to induce investment in, and facilitate transfer of, innovative biofuel technologies, but at the same time can conceivably restrict R&D in the sector. Only very recently has attention begun to focus on this topic (see UNEP, n.d.). In Chapter 11, Dos Santos and Pelembe present their findings in Mozambique from a study of national biofuel policy-making and a biofuel patent landscaping exercise. The authors found strong Mozambican government policy commitment to development of small-scale biofuel enterprises and innovation, but, at the same time, a potentially countervailing dominance, by foreign firms, of biofuel technology patenting. Dos Santos and Pelembe argue that strong government support is necessary in support of locally driven biofuel technology research, innovation and development. Among other things, government needs to, according to the authors, facilitate affordable access to technology for small farming and producing enterprises. In Chapter 12, Awad and Abou Zeid outline their findings on Egypt's legal environment for biofuel patenting, and on the country's dearth of domestic biofuel innovation. The authors suggest policy and practical mechanisms that could help spark more Egyptian innovation in this area, with their recommendations including consideration of a clean energy "patent commons".

Ownership of outputs from publicly funded research

The patent chapters just outlined segue into the broader debate on the African continent – which forms the context for Chapters 13, 14 and 15 – about how IP policy can help or hinder the derivation of benefit from publicly funded research.

Scientific research resulting in innovation, and therefore benefiting development, can be complex, requiring large data sets, diverse analytical skills, and sophisticated, expensive equipment. By participating in international consortia, African publicly funded research institutions benefit from collaboration with global leaders in various fields, as such collaborations expose African researchers to best practices and give early access to research data and cutting-edge research equipment. But will African policy and legislative initiatives modelled on foreign instruments such as the US Bayh-Dole Act of 1980 (which permits certain recipients of federal research funds in the US to obtain IP protection for their inventions), be suitable for Africa, i.e. will public research in African nations, at its current levels, benefit from a Bayh-Dole-style commercialisation focus for the IP produced? One Bayh-Dole style law already exists on the continent, in South Africa, and there is a likelihood that other African nations will follow South Africa's example.

In an effort to provide some empirical evidence in support of deliberations by African policy-makers and law-makers giving consideration to introduction or revision of Bayh-Dole-style legislation in their respective countries, Chapters 13, 14 and 15 examine matters of IP protection for the results of publicly funded research in three African countries. In Chapter 13, Ncube, Abrahams and Akinsanmi analyse evidence from two South African universities, the University of Cape Town (UCT) and Johannesburg's University of the Witwatersrand (Wits), in relation to how these universities' innovation and knowledge dissemination activities are potentially influenced by the country's IP regulatory environment for publicly funded research. The authors investigated the ways in which UCT and Wits interact with South Africa's relatively new Intellectual Property Rights from Publicly Funded Research and Development (IPR-PFRD) Act of 2008. The research found problematic aspects with the IPR-PFRD Act's emphasis on knowledge protection and commercialisation, but at the same time evidence was found of initiatives and mechanisms, separate from the Act, by which the need for knowledge "socialisation" (generating non-commercial, societal benefits) and the practices of "open science" (wide sharing of data in order to maximise dissemination and collaboration) in relation to publicly funded research can still be fulfilled in South Africa.

In Chapter 14, Belete analyses findings from research into an apparent disconnect in Ethiopia between the state's innovation policy objectives (which emphasise transfer of protected IP between universities and industry) and the practical on-the-ground realities of scientific research in the country. The author found a dearth of innovative research at Ethiopia's universities, and scant linkage between universities and the private sector. In the author's opinion, the Ethiopian government should, instead of focusing on IP protection, explore alternative ways

of funding and facilitating dissemination and sharing of innovative research, i.e. to support the open science objectives also identified in Ncube *et al.*'s Chapter 13. The open science theme also emerges in Chapter 15, in which Ama outlines and analyses the perceptions of IP in public policy and among publicly funded researchers in Botswana. Based on review of policy and legal instruments and statistical analysis of original survey data, Ama found that (as in the South African and Ethiopian cases covered in chapters 13 and 14), the Botswana government is putting strong emphasis on taking advantage of IP-related opportunities in the service of national science, technology and innovation (STI) goals. However, at the same time, Ama's survey of Botswana's public researchers found that the researchers had low levels of awareness of both national and institutional IP frameworks governing research outputs. In addition, Ama found that the public researchers surveyed had a strong, open science-oriented commitment to wide dissemination of their outputs, a commitment potentially at odds with the patenting orientation of some of the elements of the IP policies of the Botswana government and public research institutions.

3. Comparative analysis: conclusions on the current reality

Chapter 16 is a synthesis and comparative analysis, collaboratively authored by the four editors. The chapter draws out the common and contrasting findings generated by the studies outlined in Chapters 2 to 15. As well as comparing and contrasting specific research findings, the chapter draws some broad conceptual conclusions regarding three key themes that are consistently present in the case studies: (1) *collaborative innovation and creativity*; (2) *openness*; and (3) *IP*. This concluding chapter seeks to give a sense of the *status quo*, i.e. the current functioning, in African settings, of collaborative innovation and creativity in relation to openness and IP modalities. And then, based on that *status quo*, the chapter, and the book, concludes with three broad, evidence-based recommendations for consideration by African policy-makers. These recommendations are to patiently avoid importing and entrenching foreign IP approaches that may not suit local conditions; to broaden conceptions of relevant IP rights beyond merely formal mechanisms in order to create collaborative knowledge governance systems; and to focus on the future rather than the past or present when implementing IP policies.

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