14

ABS, Reconciliation and Opportunity

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Contrary to conventional assumptions, ABS is not an issue for developing countries alone; it besets developed and developing countries alike. Neither is it a subject that is easily limited to the simplistic binary of provider and user country; or of Indigenous and non-Indigenous knowledge systems; of biodiversity-rich and genetic resource barren countries. ABS is a strategy that harmonizes the complementary strengths of every strand in the process of knowledge production, for example the 'scientific' and traditional/Indigenous knowledge; the local and the global, etc. Every country is a stakeholder in ensuring that the process of accessing genetic resources and various knowledge systems associated thereto are adequately integrated into the complex contexts for the evolution of knowledge and its scaling up for a just and equitable benefit sharing system.

In a way, therefore, ABS is about equitable knowledge governance as an aspect of social justice. Those are worthy goals in and of themselves. But perhaps more importantly, they have ramifications for sustainability in various contexts. They include the conservation of biological diversity, enhancing the standard of living of Indigenous peoples and Local Communities (IPLCs), sustaining their knowledge systems and worldviews as aspects of their self-determination, not to mention optimization of insights and maximization of opportunities for innovation, collective wealth creation and the management of environmental challenges that face us now and in the future.

A deliberate and genuine ABS regime at both global and national levels opens wide-ranging opportunities for knowledge production on a sustainable scale across various sites of innovation. Studies by the ABS Capacity Development Initiative and Peoples and Plants International elaborate on a range of sectors, as a practical matter, where demands for access to genetic resources and associated traditional knowledge raise significant ethical challenges for researchers and industries which can be mediated by the ABS process. Those sample sectors are botanical, agriculture, food and beverage, pharmaceutical, biotechnology and cosmetic industries.

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ABS can support effective knowledge governance in the botanical industries which focus on the use of plant-based products for medicines and health promotions. It is an industry that produces and markets a wide range of products under the designations of 'herbal medicines, dietary herbal supplements, phytomedicines and phytotherapeutic agents' (Laird and Wynberg, 2015, 3). Experts affirm that 'unlike pharmaceuticals, botanicals are not highly purified or chemically modified medicines and typically do not involve identification of active constituents and characteristics of biological activities' (ibid.) in the ways they are applied by 'Indigenous knowledge practitioners.'

ABS is implicated in the uses of genetic resources or seeds (most of which are curated and conserved as part of global gene pool by IPLCs) in commercial agricultural production, through conventional breeding, various forms of direct or indirect genetic modifications and marker-assisted, trait or variety-enhancing applications and diverse manners of crop and environmental protection or control in agricultural production. Similarly, ABS is relevant to the food and beverage industry. Dependent on genetic resources for food and agriculture which are supported and sustained substantially by traditional agricultural knowledge, innovations and practices of IPLCs, the industry operates at various intersections – 'agriculture, processing, distribution and retail' – in the food and beverage space. ABS is relevant to enhance and advance collaborative knowledge production in food and beverages subsectors relevant to 'novel and functional foods, biotechnology, nanotechnology, bio-processing' (Wynberg, 2015, 2).

In the pharmaceutical industrial sector, analysts note the progressive decline of interest in natural products research generally and especially in that sector. But available records indicate that between 1981–2013, on an annual average, 31% of new drugs that entered the market were natural products (Laird, 2015). Drug discovery based on natural products remains an important cornerstone of the pharmaceutical industry. Notwithstanding the perceived declining influence of genetic resources and traditional knowledge in drug manufacturing, stakeholders in the pharmaceutical industry now recognize that ABS protocols are integral aspects of optimizing R&D and knowledge production in that sector on an ethical and sustainable basis.

Perhaps the sector that has magnified the ABS imperative the most is the biotechnology sector, which consists of a diverse range of evolving interfaces of technology with biological systems and various forms of living organisms and their derivatives for applications in healthcare, agriculture and industrial biotechnology as well as climate change or environmental mitigation and control. The ABS imperative is relevant in this sector not only because of the interconnectedness of knowledge systems (including traditional knowledge) as a continuum but because of the stewardship of IPLCs in the conservation of global genetic pool. According to Sarah Laird, 'Industrial biotech is growing rapidly due to advances in science and technology, concerns over climate change and energy security, and growing interest in more efficient manufacturing processes that use less energy, produce less waste, and

result in purer products' (2015, 2). Stakeholders are wont to access genetic materials relevant to industrial biotechnology from global genetic reservoirs mostly curated by IPLCs through their complex knowledge systems and now conveniently said to be in the public domain by their users (Oguamanam, 2018).

Recently, industrial biotechnology interests focus on unique ecosystems, such as 'areas with high species diversity, extreme environments, and unique ecological niches' (Laird, 2015a, 2). The value of such extreme environments and ecosystems, which is often the natural turf of many Indigenous peoples in Canada and elsewhere, for bioprospecting and research is further exacerbated by the ecological unravelling incidental to climate change and the consequential unsettling of hitherto pristine marine ecosystems and other unique and extreme climatic conditions. The quest to adapt and or mitigate the disruptive effects of climate change requires exploring all epistemic insights and options, including those from the traditional knowledge of IPLCs. It is an approach that further underscores the ABS imperative notably in the context of climate change.

In Canada, the rapidly melting sea ice in the Artic and sub-Artic regions has since opened new prospecting dynamics both in extractive industry sectors and in areas of novel genetic resources in ways that draw traditional knowledge and insights of the Inuit and other stakeholder Indigenous communities into increasing relevance and urgency for a functional ABS regime (Dylan, Chapter 5). As evident in Oguamanam and Koziol's contributions in Chapter 7, biopiracy is already a reality in Canada. It is no longer a reference to what is happening in far-flung Indigenous and local communities in the global south. Many Indigenous peoples are having to contend with uses of genetic resources endemic to their natural environments and communities and their associated traditional knowledge by third parties within and without with little or no reference to them. That trend is most likely to increase as a corollary to climate change intensification and its inherent opportunities.

However, in Canada as elsewhere, there are demonstrable examples throughout this book (Bannister, Chapter 12; Burelli, Chapter 13; Oguamanam & Koziol, Chapter 7) of how researchers and Indigenous peoples have engaged in creative forms of partnerships that express sensitivity to principles related to ABS, even though those can benefit more from stronger ethical consciousness. Despite these developments, existing and formal legal regimes relevant to ABS remain inchoate, isolated and deficient (Dylan, Chapter 5). These partnerships are patchworks; often, of ad hoc dimensions. They have yet to account for the realities of the interface of genetic resources and associated Indigenous or traditional knowledge as envisaged under the Nagoya Protocol. Meanwhile, as the Nagoya Protocol continues to be embraced and implemented in regions (e.g. Regulation EU No511/2014) and across countries,[1] a range of new opportunities as well as challenges for its implementation confront countries such as Canada that have yet to seriously or fully embrace ABS.

Notwithstanding Canada's current lethargy on the domestic implementation of ABS, unbeknown to many, the country was once one of the leading champions of

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ABS at the early onset of the international negotiations on the Nagoya Protocol. Within that context, as elaborated by Tim Hodges and Jock Langford in Chapter 2, Canada was committed to full recognition of Indigenous peoples as vital partners on ABS. The country later dropped the ball on the ABS file for a number of reasons which, Hodges and Langford argue, include the complexity of the subject matter, 'political disinterest, entrenched interests, senior bureaucratic inertia and fundamental failure to see Canada as both a user and provider of genetic resources and traditional knowledge.' Yet, globally and within Canada, stakeholders continue to advance the implementation of ABS which is now the received wisdom of responsible research, effective biodiversity conservation strategies, ethical bioprospecting, and corporate best practices. Canada can no longer afford to ignore these developments.

ACCESS AND BENEFIT-SHARING IN THE SHADOW OF RECONCILIATION

Perhaps there is no better time and context to realistically engage ABS in Canada than now, for a number of reasons. The first is a point already made above – climate change, rapidly melting sea ice and the resulting new dynamic in Canada's Northern regions and their implication for bioprospecting and disruptive effect on Indigenous ways of life. In addition, as a related matter, another reason is the reality of extant flashpoints of biopiracy within Canada in which Indigenous peoples' knowledge and uses of genetic resources are already the target of appropriation. With the continued impact of climate change being felt across the confluence of ecological and Indigenous ancestral homelands in Canada, new opportunities for the extractive industries have continued to open up but little or no consideration has been given to the potential or real ramifications for dealings in genetic resources and associated traditional knowledge in these contexts.

Perhaps more than the circumstances above, the most opportune time or moment to take ABS seriously is the ongoing policy of reconciliation with Indigenous peoples as led by the current federal government. Two important instruments, among sundry others, relevant to the reconciliation agenda are crucial to advancing ABS in Canada as a complementary part of reconciliation. They are the 2015 Truth and Reconciliation Commission of Canada's Calls to Action (TRC Calls to Action, 2015) and the 2017 Department of Justice's Principles Respecting the Government of Canada's Relationship with Indigenous peoples (Department of Justice, 2017). A lot has been written on these two documents and related others in the preceding chapters (e.g. Hodges & Langford, Chapter 2; Nichols, Chapter 4; Perron-Welch & Oguamanam, Chapter 6). Despite its historic reluctance, in 2017 Canada finally withdrew its decade-long reservation against the United Nations Declaration on the Rights of Indigenous peoples (UNDRIPs). Pursuant to the TRC's Calls to Action, proclamations from the federal government indicate a willingness to 'breathe life'

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into Section 35 of the Constitution by using UNDRIPs as a framework for activating and unpacking Section 35 rights. That approach was inspired by the TRC's Calls to Action and reflected in the enunciated principles respecting the Government of Canada's relationship with Indigenous peoples.

In a nutshell, Section 35 of the *Constitution Act, 1982* guarantees existing Aboriginal rights and such rights that were preserved (i.e. not extinguished) or those conferred in treaties signed between Indigenous peoples or communities and the Crown before the adoption of the *Constitution Act*. That section ranks perhaps as one of the most contested, litigated and interpreted constitutional texts in Canada's jurisprudence. Over the years, Canada's judiciary has supervised progressive and elaborate enunciations of those rights in direct and indirect ways[2] notwithstanding procedural difficulties and entrenched inequitable power relations that have persisted to deny Indigenous peoples' determined efforts to realize the promises of those rights, which have remained frustratingly elusive (Nichols, Chapter 4). The courts have affirmed that Section 35 rights (rights that were never extinguished) are rights in continuum and essential to the sustainability of the Indigenous peoples of Canada. In essence, those rights do not depend on formal legal recognition in Canada, directly or in delegation. Included in the universe of those rights are recognition of the identities of Indigenous nations as distinct societies, with their own world views, cultures, practices, legal and political traditions, authorities, and complex relationships of interdependence and understanding with natural forces and their own ecological and environmental ethics, to mention just a few.

A persistent and thorny aspect of Canada's relationship with Indigenous peoples revolves around the scope and interpretational approach to Section 35 of the *Constitution Act* and, by extension, the status of Indigenous peoples in the Canadian federation. Despite progressive judicial intervention, the dominant colonial approach remains fixated in favour of Canadian sovereignty and juridical competence to the exclusion of Indigenous sovereignty and meaningful self-determination. The result is the continued subservience of Indigenous peoples with little regard for the principle and integrity of true, nation-to-nation relations. Eurocentric concepts – like the doctrine of discovery and *terra nullius*, which denigrate and deny Indigenous peoples, their lands, identities, and status and construe them as subjects of European sovereignty and objects of paternalistic intervention – frame the entire Canadian-Indigenous relationship.

The 2015 TRC's 94 Calls to Action are revolutionary as a major catalytic roadmap for reconciliation. In its core essence, among other considerations, reconciliation is less a literal expression than it is an important legal initiative, and much more (Bannister, Chapter 12). It harps at the fair and equitable terms of engagement between Indigenous and non-Indigenous Canadians. In a way, it is a charter of respectful and mutual co-existence in a form of shared or collaborative sovereignty among equal partners, which is how Indigenous peoples have always understood the treaty-making process. As recalled by Perron-Welch and Oguamanam (Chapter 6),

Binnie, J., argues that with a framework of reconciliation, a concert of Indigenous and non-Indigenous Canadians results in 'a sovereign entity with a measure of common purpose and united efforts. It is this entity, as inheritor of the historical attributes of sovereignty, with which existing aboriginal and treaty rights must be reconciled' (*Mitchell v. MNR*, para. 129). In essence, reconciling pre-existing and, indeed, continuously evolving Indigenous societies and ways of life and attendant rights with the sovereignty of the Crown is the essence of reconciliation (R. *v. Van der Peet*, 1996, para. 31). The TRC's Calls to Action were unequivocal regarding the anchoring of reconciliation on nation-to-nation relationship, and rejection of all vestiges of colonial doctrines and principles that hitherto defined the Crown's relationship with Indigenous peoples. It endorsed a full-fledged and equal partnership model of the Canadian federation that recognizes Indigenous laws and legal traditions and a respectful Crown-Indigenous treaty and overall relationship on the basis of mutual respect, and shared commitment in maintaining that relationship on a sustainable and equitable basis.

An important aspect of reconciliation is giving full weight to pre-existing Indigenous sovereignty over their land and resources, including their legal traditions, knowledge systems, and the customary practices and bundles of relationships that undergird their inherent rights. Those include rights to genetic resources and the practice or applications of associated Indigenous knowledge as pre-existing Indigenous rights which are now at the core of ABS. The rights are fully affirmed in the UNDRIPS, which the TRC's Calls to Action have benchmarked as a critical framework or roadmap to reconciliation. Interestingly, as indicated, the 2017 Ten Principles to undergird the Government of Canada's relationship with Indigenous peoples builds on the TRC's 94 Call to Action and packs fundamental aspects of UNDRIP, unequivocally sanctioning Indigenous peoples' rights to self-determination and self-government while endorsing reconciliation as the central objective of Section 35 of the *Constitution Act*.

Despite the skepticism that can sometimes cloud Canada's ongoing reconciliation mantra – justifiable given the legacy of broken promises – the reconciliation blueprint dovetails neatly with the existing international legal architecture on Indigenous rights. ABS is but one of the nascent and fledgling aspects of international initiatives that engage IPLCs' rights. This book has highlighted aspects of the inherent difficulty of building an ABS regime in a complex, colonial, federal structure with a complex and often dark history of relations with Indigenous peoples. Interestingly, however, the current reconciliation initiative provides us with a pragmatic and comprehensive framework for the potential realization of ABS. Markers of that framework include the work of the Royal Commission on Aboriginal Peoples, the Truth and Reconciliation Commission's Calls to Action, the Ten Principles and the Prime Minister's Working Group of Ministers charged to ensure the federal Crown's devotion to its obligations to Indigenous peoples and to the UNDRIPS.

The expressed expectations of Indigenous peoples in the ABS Canada focus groups (Oguamanam, Phillips, Nichols, Koziol, 2015, 2016, 2017)[3] that ABS can be implemented in a condition that is not only sensitive to their worldviews, but one that recognizes their sovereignty and rights to self-determination and self-government, including their legal systems and traditions in a framework of collaborative federalism are sentiments that are amply captured by the aforementioned documents. It is instructive to point out that sharing, which is a defining element of ABS is one of the central characteristics of Indigenous worldviews and relationships. For Indigenous peoples, on its surface, the undergirding rationales for ABS invoke natural sentiments in sharing as well as justice and equity. But for ABS to make any sense, Indigenous peoples have to be genuine partners in its implementation by leveraging, in an unfettered manner, all the Section 35 rights pursuant to and within the framework of the TRC's Calls to Action and the roadmap of reconciliation. Thus, Canada has never had a more opportune moment and a better political context to energize the ABS file which, as we have seen, is logically integral to reconciliation.

ABS: STRATEGIES, CHALLENGES AND OPPORTUNITIES FOR CANADA

In the shadow of the reconciliation project, Canada and, certainly, many stakeholder countries need a more dedicated strategy to give effect to ABS on many fronts. First, administratively, as Tim Hodges and Jock Langford (Chapter 2) argue, there is an urgent need for interdepartmental coordination on ABS and for the continuing engagement and participation of Indigenous peoples and their organizations. They recommend that each department at federal, provincial/territorial and even Indigenous levels of government must develop a threshold or trigger for ABS concerns and must be able to coordinate horizontally and, certainly in any direction for that matter, to ensure that ABS is realized and not undermined. One of the oft-cited obstacles to implementation of ABS is the ubiquitous and cross-cutting nature of the subject matter. In Canada alone, ABS could be engaged in one degree or another across diverse departments, including Crown-Indigenous Relations, Indigenous Services, Global Affairs, Trade, Industry, Justice, Environment and Climate Change, Heritage, Natural Resources, Forestry, Fisheries and Oceans, Agriculture and Agrifood, Health, etc. Yet, ABS is not the only subject matter that is dispersed across a wide range of government departments. Coordination happens on other files – what is desperately required is strong and sustained political will and leadership.

Second is the case for capacity building (where there is none) and capacity development (where existing capacity is inadequate) on ABS.[4] Capacity building and capacity development do not only arise with regard to IPLCs but also they are critical needs for public servants and a range of policymakers who are engaged in

decision making on ABS. Indigenous participants in the ABS Canada Focus Groups insist that the making of domestic ABS law and policy must be an exercise in equal partnership. They argue that many policymakers need to develop capacity to understand the realities and expectations of Indigenous peoples on ABS as foundational matter that precedes the making of policy. In addition to that often-unmentioned context of capacity building (i.e. as it applies to public servants and a range of policy makers), the Nagoya Protocol recognizes the need for capacity building and capacity development on ABS. After all, compared to other interest holders in ABS, such as corporations and individual or institutional researchers, there is no doubt that Indigenous peoples are in greater need of capacity building and capacity development on the subject. Regrettably, however, the Protocol limits its focus on capacity building and capacity development to the local communities of the global south. That exclusionary approach reflects the fault line of the contemporary global development narrative (Oguamanam & Hunka, Chapter 3). It is a narrative that ignores or masks the development gaps and deficits of Indigenous peoples of the global north such as those in Canada, United States, Australia and their counterparts everywhere else in that geopolitical bloc.

Therefore, capacity building and capacity development on ABS presents a potential context or opportunity for global solidarity among Indigenous peoples of the global north and their local community counterparts in the south. For a number of considerations, Indigenous peoples of Canada and other Indigenous peoples of the enclave territories of the north could look to their local community counterparts in the south for capacity building and capacity development on ABS in a counter-intuitive form of north-south development (Oguamanam & Hunka, Chapter 3). The focus of the Nagoya Protocol on capacity building and capacity development on the global south is understandable but not entirely justifiable for its exclusionary tenor. The region has far more countries and, consequently, more experience with implementing ABS pursuant to the Nagoya Protocol (Medaglia, Perron-Welch & Phillips, 2014) as evident from the statistics from the ABS Clearing-House. Also, that region remains the highest beneficiary of independent capacity development on ABS as demonstrated in the work of such organizations as the ABS Capacity Development Initiative and other civil society organizations that have remained bulwarks against biopiracy in the global south. The prospects for the Indigenous peoples in Canada to look southwards for capacity building and capacity development on ABS as a matter of solidarity will not only fast track their participation in the process, it will engage and exercise their inherent rights to self-determination while building needed solidarity.

Third, the current dynamic for ABS enforces an imperative for a new research and ethical landscape that requires deliberate incorporation of ABS as a new reality of research and development (Bannister, Chapter 12; Burelli, Chapter 13; Oguamanam, Chapter 11; Phillips, Smyth & de Beer; Chapter 10). ABS is an integral aspect

of researcher-community outreach, partnership and engagement as well as a crucial feature of corporate best practices and corporate community engagement. Canada's research ethics landscape has evolved through progressive and ongoing attempts to integrate Indigenous peoples as equal stakeholders in research and knowledge creation. After an elongated period of suspicion and exclusions that characterized Indigenous perception of the research enterprise, Indigenous peoples have continued to demonstrate renewed and constructive engagement with researchers and are now determined to be active and not just passive participants in research and development generally and those involving them in particular as demonstrated by Bannister and Burelli (Chapters 12 and 13). ABS would constitute a fundamental aspect of the future of research ethics and bioprospecting in Canada and globally as it presents an opportunity for further research ethics review or 'fine-tuning.'

The good news is that while the Nagoya Protocol has provided the impetus, existing practices demonstrate the involvement and awareness of Indigenous peoples in partnership and execution of elements of ABS in their relationship with researchers and corporations. To put it simply, there is no need to reinvent the wheel. Globally, ABS has evolved on the back of diverse legal principles and rules at the intersection and confluence of actors in vertical and horizontal spheres of engagements and in multiple contexts around genetic resources, IPLCs, biodiversity conservation, ecological dynamics, intellectual property, innovation, markets and industries, and research and development in both public and private regulatory spaces. In the European Union, the fledgling regional experience on ABS reflect sensitivity to the confluence of legal regimes and regard for country-to-country differences and local contexts as foundational to a functional ABS regime (Coolsaet et al., 2015).

But in Canada, there is an opportunity to leverage existing practices in the shadow of the Nagoya Protocol and reconciliation to model Indigenous-sensitive research and knowledge co-creation that is respectful of equitable ABS. Canada can look in a number of directions for inspiration. Like Brazil or the Commonwealth of Australia, Canada is a federal state that must invariably balance a nationally consistent ABS framework with sensitivity to the local contexts in its sub-national parts, (Phillips, Chapter 9; Wright, 2017) including across its 73 Indigenous nations. Each of the latter should be capable of constituting their own competent authorities on ABS, as repeatedly professed by Indigenous partners and participants in the ABS Canada Focus Groups. Canada has more catching up to do though. The country's long hiatus on the ABS file accounts for the slow uptake of ABS and its mainstreaming in the research landscape among the research communities and corporate interests in Canada. That is contrary, for example, to the case in Switzerland where the Swiss Academy of Sciences undertook a project on ABS in Academic research since 2006 (Biber-Klemm & Sylvia Martinez, 2006) thereby setting the stage for an ongoing national conversation and policy evolution (Biber-Klemm, Sylvia Martinez & Anne Jacob, 2010).

Fourth is the idea of Canada's potential late comer advantage on ABS and the opportunities inherent in that otherwise undesirable status. The preceding paragraph has alluded to Canada's ability – along with its Indigenous peoples – to learn and build on developments from other jurisdictions who already have a head start on ABS. Perhaps more importantly, the rapidity and escalation of technological developments around the uses and applications of genetic resources and their interface with associated Indigenous or traditional knowledge in diverse realms of biotechnology (health, agriculture, environment, etc.) has precipitously called for reconsideration of conventional uses of genetic resources which is premised on user's direct physical contact. Future domestic implementation of ABS would need to be mindful of increasing possibilities of the technological contexts in which uses of genetic resources and even associated traditional knowledge is possible through information about genetic resources that de-links them from their physical sources and origins (Oguamanam, Chapter 11; Phillips, Smyth & de Beer, Chapter 10). One clear example is the recent initiative by the Conference of Parties (COP) of the CBD (serving also as COP of the Nagoya Protocol) which in 2016 set up an Ad Hoc Technical Expert Group on Digital Sequence Information (DSI) on Genetic Resources to shed light on the use of DSI on genetic resources in the context of the CBD and the Nagoya Protocol.

In its 2018 report, the Ad Hoc Technical Expert Group recognized various forms and categories of information relevant to the utilization of genetic resources in digital and other hi-tech and scientific contexts. The Group's opinion was divided, however, on whether the definition of genetic resources in the CBD and Nagoya Protocol includes DSI. While some believe that DSI is included by implication in the definition of genetic resources, others are of the view that DSI refers to intangible material and is therefore not included in the definition of genetic resources. The significance of an interpretation that includes DSI in the definition of genetic resources is that even though use of DSI does not entail direct access to physical genetic resources, it could still amount to a use that would trigger ABS in favour of providers in the origin or sources of the genetic resources. As such, users of DSI are not able to evade ABS or disclosure of source or origin obligation attached to their use of DSI simply because they may not have had physical contact with the genetic resources and their providers. With specific regard to use of DSI on genetic resources for fair and equitable benefit sharing, the expert group makes the follow observations in para 20 (a) and (c) of its report:

> 'DSI' could bring transformational change to the use of genetic resources, which may influence the type of benefits and the way benefits are shared. There may be useful lessons in this respect from how digitization of information in other sectors has impacted benefit-sharing, including possible lessons from music, software, publishing and other industries; … On the other hand, 'DSI', in the light of advances in sequencing technologies in particular, may, in some cases, challenge the implementation of arrangements for access to genetic resources and benefits

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> sharing (ABS) by obviating the need for users to seek access to original tangible genetic resources, thus potentially enabling users to bypass procedures for access and benefit-sharing.
>
> (CBD-DSI AHTEG, 2018)

With all of these important and impactful technological transformations on ABS, Canada is in a position to implement a robust domestic ABS regime. As many contributions in this book have maintained (e.g. Hodges and Langford, Chapter 2; Oguamanam, Chapter 1; Oguamanam and Koziol, Chapter 7), no country is exclusively a provider or a user of genetic resources; many, especially Canada, are clearly as much providers as they are users. Consequently, domestic implementation of ABS would aim to incorporate cutting edge beneficial technologies such as the applications of DSI or even digital DNA (Oguamanam & Jain, 2017) that advance research and development in genetic resources and associated traditional knowledge in mutually beneficially and not exclusionary ways. The debate whether the scope of definition of genetic resources includes DSI remains ongoing in the cognate forum such as the World Intellectual Property Organization Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Traditional Cultural Expression (WIO-IGC), where regrettably Canada takes a position that reflects its self-positioning as a user as opposed to also a provider of genetic resources and associated traditional knowledge.[5]

Fifth is related to the last point on the opportunities inherent in Canada's 'latecomer advantage' that enables the potential incorporation of new technological insights into its domestic implementation of ABS. It is in respect of the increasingly ubiquitous and profound role of data in the exploitation and management of genetic information and associated traditional knowledge which have significant implications for research and development concerning Indigenous peoples in the ABS context. Genetic resources and, certainty, associated traditional knowledge now constitute part of the big and open data landscape (Oguamanam, Chapter 11). In that context, research and development relating to IPLCs are reduced to pieces of information and datasets that are readily de-linked from their sources and origins and integrated into the global big data infrastructure as an essentially virtual resource to which everyone has access for all manners of uses and applications. While the role of big and open data in advancing information and knowledge production as a global public good is important, they raise new dynamics and strong ethical concerns in the context of the undergirding rationale for ABS, especially with regard to IPLCs who have, historically, been victims of unequal power relations that undergird research. In the formulation of a domestic ABS regime in Canada and elsewhere, it is essential to critically appraise how to balance the open and big data dynamic with a deliberate and meaningful sensitivity to Indigenous peoples and their interest in data sovereignty and data equity. This would ensure that the prevailing and nascent technologies are deliberately deployed to promote, not undermine, the letter and spirit of ABS to the detriment of historically disadvantaged

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parties such as IPLCs. Recently, block chain applications or software are being deployed in the management of marketing and miscellaneous value chain information in agriculture. That innovation is a potential game changer in ABS and related matters, especially with regard to resolving the problem of de-linking information from its source.

CONCLUDING REFLECTIONS

The experience of ABS Canada's three years of field work shows that the making of a domestic ABS law and policy will not be a simple exercise. For starters, the concept itself is as complicated as any phenomenon can be. In addition, the historical antecedents of Canada's relationship with Indigenous peoples are characterized by justifiable suspicion on the basis of failed promises and a long history of colonialism, including a colonial legal tradition that erects substantive and procedural obstacles against Indigenous peoples' quest for justice, fairness and equity on many fronts. ABS is, in a way, a little known and disguised site for engaging the interconnected legion of issues that shape Canada's relationship with Indigenous peoples which are also broached at many separate and interlinked regimes of international law from Indigenous peoples' rights, environmental sustainability, biodiversity conservation, resource rights, agriculture, food, health, biotechnology to innovation and intellectual property rights, among many others.

While ABS may seem like an arcane or niche subject quite alienated from the daily markers of Indigenous injustice in Canada, many Indigenous participants in the ABS Canada Focus Groups insist that issues raised by ABS are as constitutional as they are aspects of the holistic scale of injustice that characterize their relationship with the Canadian state. With the right political will across all orders of government and a commitment to an equitable economic partnership with Indigenous peoples, now is an opportune time to formally enable a domestic ABS regime in Canada, which does not exclude opening up new partnerships for entrepreneurship with Indigenous peoples. This is with regard to the context for the current initiative to revisit Canada's relations with Indigenous peoples through reconciliation as well as with regard to more robust international and various national regimes on ABS courtesy of the Nagoya Protocol, not counting existing variegated contractual arrangements between researchers and Indigenous peoples across Canada that continue to negotiate and implement arrangements that increasingly recognize ABS concerns.

While the Nagoya Protocol represents a framework for ABS, each domestic regime has the potential to improve on Nagoya with sensitivity to stakeholder expectations and local realities. Such expectations need to be galvanized through a comprehensive stakeholder needs assessments supported through inclusive and continuing stakeholder partnerships and other creative models of meaningful, effective and inclusive consultations. In both the background study to the present volume and in its many contributions, it is clear that even though Canada has yet to

fully recognize it, Indigenous peoples are supposed to be major actors on ABS and must be recognised as such. After all, ABS is concerned with genetic resources and associated traditional knowledge – inherent in that phrase is a recognition that genetic resources constitute the dominant site for the production of Indigenous knowledge. However, apart from Indigenous peoples, governments and a range of policy makers, other actors directly engaged in ABS include researchers and corporations. While the contributions in this volume have explored the interface of ABS with all the prominent stakeholders, there is no devotion to corporations as crucial constituent of ABS stakeholders.

As part of their existing trust deficit with the Government of Canada, Indigenous peoples perceive the government to be aligned with corporate interests with regard to ABS, which many believe explains Canada's lethargy on the subject. For good reason, in ABS and cognate regimes and incidental negotiations, Canada has a tendency to align with a bloc of countries that self-identify as genetic resource user countries in perpetuation of the increasingly discredited provider-user dichotomy. This is primarily because Canada likes to emphasize its status as a leading biotechnology country without paying much attention to its increasingly evident status as genetic resource provider country, not to mention the abundance of associated traditional knowledge of its many Indigenous peoples. This historically pro-industry disposition by the Government of Canada has shielded corporations from proactively engaging with other ABS stakeholders beyond the government. To formally implement ABS as part of Canada's domestic policy and legal regime, corporations must be part of the group of stakeholders directly committed to shaping the system. The existing gulf between corporations, Indigenous peoples and other stakeholders in ABS has continued to fuel exaggerated or unrealistic and uncritical expectations about the whole process. Those hyped expectations can be tampered to their realistic levels with the transparency that will flow from the proactive participation of corporations in the making of domestic ABS laws, and through respectful partnerships with Indigenous peoples and all other interests. For corporations, ABS should be seen as a site for sound corporate practices, good public relations and healthy community engagement rather than rather an avoidable irritation or a perceived barrier to doing business.

The importance of a domestic ABS policy for all countries, including Canada, is now evident. This is especially so in the light of the fact that dichotomizations of countries as users and providers of genetic resources is simply not sustainable. For Canada and other kindred countries, lack of a domestic ABS policy will present an obstacle to their multinational corporations to access genetic resources and associated traditional knowledge in the centres of genetic origins or other countries that have domestic ABS laws. In this volume, we have weaved the results of ABS Canada's Focus Groups on ABS – which gauged the pulse of segments of Indigenous peoples on the subject through a participatory partnership model of mutual learning and capacity building by and with Indigenous peoples – and the many other contributors to this volume. From that experience, it is clear that there are

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many opportunities to continue to explore meaningful forms of engagements and collaborations on the subject. The opportunities inherent in such endeavours far outweigh the challenges. Whatever the inadequacies of the present project, this volume has attempted to demystify the subject of ABS in the Canadian policy space, while calling attention to the escalating contexts in which ABS issues arise and the opportunity for advancing ABS in Canada as a logical part of the reconciliation agenda. All of this has been done with a view to encourage continuing and progressive re-thinking of Canada's approach to ABS which, in the context of prevailing international developments and extant domestic political and economic opportunities, is no longer justifiable.

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NOTES

1 The Access and Benefit-Sharing Clearing-House (ABS-CH) publishes on periodic basis information on interim national reports and statistics on the implementation of the Nagoya Protocol globally. See for statistic and report at the time of writing, ABS-CH https://absch.cbd.int/.

2 See, for example, Calder et al. v. British Columbia (1973), R v. Sparrow (1990), R v. Adams (1996), R v. Van der Peet (1996), Delgamuukw v. British Columbia (1997), R v. Marshall (1999), Corbiere v. Canada (1999), Campbell v. British Columbia (2000), Mitchell v. MNR (2001), Haida Nation v. British Columbia (2004), Mikisew Cree First Nation v. Canada (2005), McIvor v. Canada (2009), Tsilhqot'in Nation v. British Columbia (2013), Daniels v. Canada (2016).

3 The four authored the reports of ABS Canada Focus Groups on ABS held in 2015 (Moncton), 2016 (Ottawa) and 2017 (Saskatoon).

4 In the context of ABS, capacity building and capacity development are both engaged in different degrees depending on the extent of existing capacity in a given community. For example, in terms of mobilization and raising awareness, much capacity development needs to be done to supplement existing levels of knowledge and awareness; whereas in the case of specific subjects such as negotiating material transfer agreements under mutually agreed terms and such considerations as appropriate forms of benefits sharing, in many Indigenous communities there is a dearth of capacity or expertise. Such a situation requires building capacity from the 'bottom up.'

5 At the current negotiations of international instrument(s) for effective protection of traditional knowledge, pursuant to the WIPO IGC, while African countries, countries in the group of like-minded bloc and the Indigenous caucus insist that digital technologies now render physical contact between genetic resources and their users unnecessary, Canada, the United States, Japan and a host of others maintain that direct physical contact between genetic resources and users is necessary to trigger disclosure of origin or source of the genetic resources to support application for intellectual property, especially patents based on such genetic resources and associated in traditional knowledge.