Introduction

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I.1 UNDERSTANDING ECONOMIC INEQUALITY

I.1.1 *The Scale of the Problem*

Since the mid-1970s, it has been generally believed that reasonable inequality is the price for a vibrant economy. Today, however, disparities in income and wealth are increasingly perceived as a threat. Indeed, issues about economic inequality have now moved to the center of national and global policy debates.

The *World Inequality Report 2022*, spearheaded by Thomas Piketty and compiled by his collaborating team, finds that "[t]he richest 10% of the global population currently takes 52% of global income, whereas the poorest half of the population earns 8.5% of it."[1] The report states further that "[o]n average, an individual from the top 10% of the global income distribution earns ... USD 122,100 ... per year, whereas an individual from the poorest half of the global income distribution makes ... USD 3,920 ... per year" – only slightly over 3 percent of what the top decile makes.[2] The report continues: "The poorest half of the global population barely owns any wealth at all, possessing just 2% of the total. In contrast, the richest 10% of the global population own 76% of all wealth."[3] Based on purchasing power parity estimates, on average the poorest half of the population owns US$4,100 per adult, while the top 10 percent own US$771,300 per adult.[4]

[1] Lucas Chancel, Thomas Piketty, Emmanuel Saez & Gabriel Zucman, World Inequality Report 2022, at 10 (2022).
[2] *Id.*
[3] *Id.*
[4] *Id.*

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Another report, released by Oxfam, indicates that the number of billionaires has doubled to over 2,000 over the past decade.[5] In 2019, these billionaires "had more wealth than 4.6 billion people."[6] As if all of these statistics were not depressing enough, the *World Inequality Report 2022* states that the year 2020 "marked the steepest increase in global billionaires' share of wealth on record."[7] In the words of *The Guardian*, "the billionaire class has added $308bn to its wealth in four weeks – even as a record 26 million people lost their jobs."[8] Whether directly or not, the world's richest has benefited from the COVID-19 pandemic.

In his seminal work *Capital in the Twenty-First Century*, Piketty describes the historical trends of wealth concentration, with a focus on developed countries.[9] He shows that wealth concentration in these countries has steadily risen in the past few decades of the twentieth century, after declining between the 1930s and the 1960s. Consider the United States for instance. Between 1978 and 2015, "the bottom 50 percent income share in the United States [dropped] from 20 percent to 12 percent of total income, while the top 1 percent income share rose from 11 percent to 20 percent."[10]

Given the high income and wealth inequality at both the national and global levels, it is no surprise that the United Nations Development Programme has worked closely with other U.N. agencies to eradicate poverty, reduce inequalities, and foster sustainable development.[11] Sustainable Development Goal 10, one of the seventeen goals adopted by the United Nations in December 2015, specifically calls for reducing "inequality within and among countries." Other organizations, such as the World Bank and the International Monetary Fund, have also viewed inequality alleviation as a central development policy challenge in the twenty-first century.[12]

[5] Clare Coffey, Patricia Espinoza Revollo, Rowan Harvey, Max Lawson, Anam Parvez Butt, Kim Piaget, Diana Sarosi & Julie Thekkudan, Time to Care: Unpaid and Underpaid Care Work and the Global Inequality Crisis 21 (2020).

[6] *Id.* at 9.

[7] Chancel et al., *supra* note 1, at 15.

[8] Dominic Rushe & Mona Chalabi, *"Heads We Win, Tails You Lose": How America's Rich Have Turned Pandemic into Profit*, Guardian (Apr. 26, 2020), www.theguardian.com/world/2020/apr/26/heads-we-win-tails-you-lose-how-americas-rich-have-turned-pandemic-into-profit.

[9] Thomas Piketty, Capital in the Twenty-First Century (Arthur Goldhammer trans., 2014).

[10] Facundo Alvaredo, Lucas Chancel, Thomas Piketty, Emmanuel Saez & Gabriel Zucman, *Global Inequality Dynamics: New Findings from WID.world*, 107 Am. Econ. Rev. 404, 406 (2017).

[11] For example, International Labour Organization, Global Wage Report 2016/17: Wage Inequality in the Workplace (2016); U.N. Department of Economic and Social Affairs, World Social Report 2020: Inequality in a Rapidly Changing World (2020); U.N. Development Programme, Human Development Report 2019: Beyond Income, Beyond Averages, Beyond Today: Inequalities in Human Development in the 21st Century (2019); UNESCO, World Social Science Report 2016: Challenging Inequalities: Pathways to a Just World (2016).

[12] For example, International Monetary Fund, Fiscal Monitor October 2017: Tackling Inequality (2017); World Bank, Poverty and Shared Prosperity 2016: Taking on Inequality (2016).

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I.1.2 *Types of Economic Inequality*

As the previously cited reports and data have shown, there are many types of economic inequality and different possible taxonomies. In *An Agenda for Equality* released at the U.N. Summit for the Adoption of the Post-2015 Development Agenda, the former U.N. High Commissioner for Human Rights Zeid Ra'ad Al Hussein identified three types of inequality: horizontal, vertical, and global.[13] For illustrative purposes, this subsection discusses each type in turn.

The first type is horizontal inequality, which covers "inequalities between social, ethnic or other population groups."[14] Examples include inequalities based on race, color, gender, sexuality, language, religion, political affiliation, national or social origin, wealth, or health status. Such inequalities raise concerns about the exclusion of the disadvantaged, vulnerable, and marginalized from political, economic, social, cultural, and technological opportunities.[15] Although these inequalities are often the result of past and current discrimination, other factors have played contributing roles.[16] In recent years, horizontal inequalities, especially those relating to gender and race, have garnered growing attention in the intellectual property field – from the World Intellectual Property Organization (WIPO),[17] national intellectual property agencies,[18] and academic commentators.[19]

[13] Zeid Ra'ad Al Hussein (U.N. High Commissioner for Human Rights), *An Agenda for Equality*, Statement at the Summit for the Adoption of the Post-2015 Development Agenda – Interactive Dialogue (Sept. 25, 2015), www.ohchr.org/en/2015/09/agenda-equality-zeid-raad-al-hussein-united-nations-high-commissioner-human-rights [hereinafter *An Agenda for Equality*].

[14] *Id.*

[15] Sakiko Fukuda-Parr, *Keeping Out Extreme Inequality from the SDG Agenda – The Politics of Indicators*, 10 Glob. Pol'y 61, 63 (2019); Gillian MacNaughton, *Emerging Human Rights Norms and Standards on Vertical Inequalities*, *in* Human Rights and Economic Inequalities 33, 37 (Gillian MacNaughton, Diane F. Frey & Catherine Porter eds., 2021).

[16] Gillian MacNaughton, *Vertical Inequalities: Are the SDGs and Human Rights up to the Challenges?*, 21 Int'l J. Hum. Rts. 1050, 1051 (2017).

[17] World Intell. Prop. Org., The Global Gender Gap in Innovation and Creativity: An International Comparison of the Gender Gap in Global Patenting over Two Decades (2023); *Intellectual Property, Gender, and Diversity*, World Intell. Prop. Org., www.wipo.int/women-and-ip/en/ (last visited May 11, 2023).

[18] For example, U.S. Copyright Off., Women in the Copyright System: An Analysis of Women Authors in Copyright Registrations from 1978 to 2020 (2022); U.S. Patent & Trademark Office, Office of the Chief Economist, Progress and Potential: A Profile of Women Inventors on U.S. Patents (2019); U.S. Patent & Trademark Office, Office of the Chief Economist, Progress and Potential: 2020 Update on U.S. Women Inventor-Patentees (2020); U.K. Intellectual Property Office, Gender Profiles in Worldwide Patenting: An Analysis of Female Inventorship (2016).

[19] For example, Jessica C. Lai, Patent Law and Women: Tackling Gender Bias in Knowledge Governance (2022); Colleen V. Chien, *The Inequalities of Innovation*, 72 Emory L.J. 1 (2022); Paul R. Gugliuzza & Rachel Rebouché, *Gender Inequality in Patent Litigation*, 100 N.C. L. Rev. 1683 (2022); W. Michael Schuster, Miriam Marcowitz-Bitton & Deborah R. Gerhardt, *An Empirical Study of Gender and Race in Trademark Prosecution*, 94 S. Cal. L. Rev. 1407 (2021); S. Sean Tu, Paul R. Gugliuzza & Amy Semet, *Overqualified and*

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The second type of inequality is vertical inequality,[20] which "refers to inequalities of wealth, income or social outcome, including inequalities in health, education, housing and political power."[21] Many of the figures cited earlier in this chapter concern this type of inequality. Although vertical inequalities have been under-explored in international policy debates, they are staples in domestic political debates, especially during elections.

The third type of inequality is global inequality,[22] or what commentators and the U.N. Sustainable Development Goals have referred to as "inequality among countries." The North–South divide frequently discussed in relation to the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement) and other international intellectual property agreements provides a textbook example of global inequality in the intellectual property context.

Although these three types of inequality deserve separate theoretical, empirical, and policy attention, they can also provide useful insights when examined alongside each other. For instance, Branko Milanovic reminds us that although the inequality among Asian countries has been narrowing, with their average incomes slowly converging, such narrowing may "give relatively greater salience to inequalities within nations."[23] Likewise, François Bourguignon notes our tendency to conclude that the recent acceleration of globalization was responsible for the rise in national inequality even though "globalization has *also contributed* to a drop in international inequalities."[24] In the future, we may face a world where there is shrinking global inequality but rising national inequality. It will therefore be instructive to develop a better understanding of the relationship between the two.

I.1.3 *Research on Economic Inequality*

Beginning in the 1950s, economics has been dominated by the idea that inequality diminishes as countries become more technologically developed and as more people take advantage of the opportunities generated by such development. This idea was first formulated by Nobel laureate Simon Kuznets.[25] Named after him, the Kuznets curve hypothesizes that inequality increases with economic development at first before eventually declining. Building on his seminal work, a myriad of studies

Underrepresented: Gender Inequality in Pharmaceutical Patent Law, 48 BYU L. Rev. 137 (2022).

[20] *An Agenda for Equality*, *supra* note 13.

[21] MacNaughton, *supra* note 16, at 1051.

[22] *An Agenda for Equality*, *supra* note 13.

[23] Branko Milanovic, Global Inequality: A New Approach for the Age of Globalization 5 (2018).

[24] François Bourguignon, The Globalization of Inequality 3 (Thomas Scott-Railton trans., 2017).

[25] Simon Kuznets, *Economic Growth and Income Inequality*, 45 Am. Econ. Rev. 1 (1955).

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on income inequality and growth have found evidence confirming the Kuznets curve.[26]

In recent years, however, commentators have started to question the Kuznets curve hypothesis. Among the critics were distinguished economists such as Piketty, Joseph Stiglitz, and Erik Brynjolfsson.[27] For example, in *The Second Machine Age*, Brynjolfsson and Andrew McAfee declare that "the main driver [of inequality] is exponential, digital, and combinatorial change in the technology that undergirds our economic system," especially after the 2008 global economic crisis.[28] There is indeed mounting evidence showing how modern capitalism has increased income and wealth inequality. This evidence brings to the forefront an important question concerning the role of law and policy in the debate on economic inequality. If law and policy has exacerbated such inequality, what adjustments can we make to provide redress?

Thus far, policymakers have attributed economic inequality and income and wealth concentration to financial deregulation, tax benefits for high-income individuals and households as well as corporations, and underinvestment in public services such as healthcare and education, among others. One field that has not been explored much is intellectual property. What role does intellectual property law and policy play in the debate on economic inequality? This volume seeks to fill this void.

Has intellectual property law and policy – and, more broadly, law and policy in the innovation area – contributed to income and wealth inequality? If so, how significant is its contribution? Has the inequality generated by such law and policy affected certain segments of the population more than the others? Do the adverse impacts break down according to gender, race, wealth, level of education, or other factors? Will the analysis vary from industry to industry? Relatedly, are some forms of intellectual property rights more harmful to certain groups – if so, what are they, to what extent, and why?

Looking at economic inequality at the global level, does intellectual property law affect certain countries more than the others? For instance, shortly after the end of the TRIPS transition period for developing countries, the World Bank released a study estimating that the adoption of the TRIPS Agreement has resulted in rent transfers of more than twenty billion U.S. dollars from developing countries "to major technology-creating countries – particularly the United States, Germany, and

[26] For example, Jeffrey G. Williamson, Did British Capitalism Breed Inequality? (1985); Gene M. Grossman & Alan B. Krueger, *Economic Growth and the Environment*, 110 Q.J. Econ. 353 (1995).

[27] Erik Brynjolfsson & Andrew McAfee, The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies (2014); Piketty, *supra* note 9; Joseph E. Stiglitz, The Great Divide: Unequal Societies and What We Can Do about Them (2015).

[28] Brynjolfsson & McAfee, *supra* note 27, at 133.

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France – in the form of pharmaceutical patents, computer chip designs, and other intellectual property."[29] Intergovernmental bodies, policymakers, and commentators have also widely lamented the deleterious effects of TRIPS-plus bilateral, regional, and plurilateral trade agreements.[30] Based on these critiques, can we draw at least some preliminary conclusions about the negative relationship between intellectual property and economic inequality? If so, was the inequality confronting the Global South caused by intellectual property rights or by inappropriate standards for protecting and enforcing those rights? In addition, will the analysis differ depending on whether the focus is on copyrights, patents, trademarks, trade secrets, geographical indications, or other forms of intellectual property rights?

What about emerging economies? Countries such as Brazil, China, and India seem to have successfully played economic and technological catch-up, notwithstanding the relatively high TRIPS standards imposed upon them since the mid-1990s. What explains their ability to persevere and their subsequent innovative turn? Did high intellectual property standards provide at least some benefits to these countries? Did these emerging countries succeed by embracing only some but not all of TRIPS standards – or practicing what several commentators have termed "selective adaptation"?[31] In addition, amid the emerging countries' impressive economic and technological gains, has the inequality within these countries worsened as a result? If so, what is the relationship between national inequality and global inequality? Is the former the price for reducing the latter?

All of these important questions deserve scholarly and policy attention. They have been underexplored, if at all, in existing intellectual property literature. We hope that this volume will add to this literature and get the debate on intellectual property, innovation, and economic inequality started.

1.2 THE STRUCTURE OF THE VOLUME

The research in this volume is situated in the broader literature crossing the fields of intellectual property law and economic inequality theory. While the book focuses specifically on the interrelationship between intellectual property and economic inequality, it also intersects with the literature on intellectual property and development, intellectual property and poverty, intellectual property issues relating to

[29] World Bank, Global Economic Prospects and the Developing Countries 2002: Making Trade Work for the World's Poor, at xvii (2001).

[30] For example, Mary Robinson (U.N. High Commissioner for Human Rights), *The Impact of the Agreement on Trade-Related Aspects of Intellectual Property Rights on Human Rights*, para. 27, U.N. Doc. E/CN.4/Sub.2/2001/13 (June 27, 2001); Peter K. Yu, *The Non-multilateral Approach to International Intellectual Property Normsetting*, *in* International Intellectual Property: A Handbook of Contemporary Research 83, 92–97 (Daniel J. Gervais ed., 2015).

[31] Peter K. Yu, *TRIPS and Its Contents*, 60 IDEA 149, 207–15 (2020).

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gender and race, the need for access to intellectual property–based goods and services, and intellectual property rights as social, economic, and cultural rights.

Interdisciplinary by design, this volume features economists, legal scholars, policy analysts, and other intellectual property experts. The chapters were written by a geographically diverse group of scholars based in East Asia, Europe, the Middle East, and North and Latin America. To strengthen the project, the chapters were presented at two workshops: the "Intellectual Property, Innovation and Global Inequality" Workshop at the Faculty of Law at the University of Haifa on December 10–12, 2018, and the "Inequality through IP: A New Policy Lever?" Workshop organized online by the Oxford Intellectual Property Research Centre at the University of Oxford on May 26–27, 2021.

The entire volume contains fifteen chapters. The remainder of this book is grouped into three parts, as detailed later. Each of the ensuing chapters aims to address one or more of the following questions: (1) What impact does the intellectual property law and policy have on economic inequality? (2) What impact does economic inequality have on the creation of intellectual property, the protection and enforcement of intellectual property rights, and the development of intellectual property law and policy? Finally, can intellectual property law and policy, whether alone or in conjunction with other policies, be used as a tool to help reduce economic inequality?

I.2.1 *Theoretical, Empirical, and Policy Issues*

The first part examines broad theoretical, empirical, and policy issues relating to the interrelationship between intellectual property and economic inequality. The chapters in this part focus on both national and global inequalities.

Opening this part is "Intellectual Property Rights and Inequality: Economic Considerations." Written by Keith Maskus, one of the world's foremost economists in the intellectual property field, this chapter reviews, with an emphasis on international comparisons, available economic theories and empirical evidence concerning the role played by intellectual property rights in increasing or reducing income and wealth inequality. Although the past twenty-five years have seen a simultaneous increase in both economic inequality and intellectual property protection in many countries, and there has been growing convergence in average incomes in developed and emerging economies, the linkage between the two remains inconclusive. Indeed, systematic evidence has been scarce. As the author points out, the role played by intellectual property protection in the emergence of inequality has been "[a]lmost completely unstudied" by economists. The interrelationship between the two – in particular, whether any causality exists – therefore deserves urgent scholarly attention.

The next chapter, "The Unequal Geographical Distribution of Innovative Activity: Implications for Income Inequality and Innovation Policies," was written

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by Carsten Fink, Ernest Miguelez, and Julio Raffo. Fink and Raffo are WIPO's lead economists. Drawing on more than forty years of data from international patent applications and scientific articles, this chapter examines the unequal geographical distribution of innovation at both the national and subnational levels. As the authors point out, countries, and regions within them, innovate at different rates. Even the world's most innovative countries face the challenge of unequal distribution of innovation, having hotspots and niche clusters. It is therefore worthwhile to explore why innovation has been unequally distributed and what consequences such unequal distribution has on income inequality. Notably, this chapter shows how innovation has been more geographically skewed than other economic activities at both the national and subnational levels. It further interrogates the role innovation policies can play in increasing knowledge acquisition and diffusion while changing the technological trajectory of countries and their subnational regions. As the authors remind us, the continuous increase in technological development, interconnectivity, and innovation concentration has instilled both optimism and pessimism.

Joining the theme of inequality in subnational regions is "Intellectual Property, Global Inequality, and Subnational Policy Variations," written by one of us (Yu). This chapter points out that the arrival of middle-income countries, such as Brazil, China, and India, has called into question the old North–South debate – a recurring theme in a number of chapters in this volume. Taking note of the wide geographic, sectoral, and income inequalities in these emerging countries and the growing literature on inequality *within* countries, as opposed to *among* countries, this chapter explains why such inequality in the intellectual property context deserves both scholarly and policy attention. It further proposes interventions in three areas: international norm-setting, national policymaking, and academic and policy research. This chapter underscores the need for policymakers and commentators to explore the feasibility and benefits of using subnational variations in intellectual property policies to combat national inequality.

As far as success in using innovation policies to generate economic growth and increase technological capabilities is concerned, there are no better examples than latecomer economies. Our coeditor, Keun Lee, is one of the leading scholars on this particular subject. His chapter, "Is IPR a Facilitator of, or a Barrier to, Catch-Up by Latecomers? Implications for Global Inequality," explains the important roles played by innovation and innovation policies in enabling countries to play catch-up and to avoid what commentators have referred to as the "middle-income trap." Drawing on experience from his home country, South Korea, and his decades-long research, this chapter explores the roles played by different forms of intellectual property rights in promoting innovation. It further discusses the impact strong intellectual property protection in the Global North has on the Global South's exports to the Global North. This discussion is particularly important considering the high intellectual property standards imposed on developing countries by the

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TRIPS Agreement; agreements administered by WIPO; and subsequent bilateral, regional, and plurilateral trade agreements. This chapter concludes by discussing how latecomer countries have successfully overcome intellectual property–related barriers to leapfrog their economy, often with local firms moving into new areas and products ahead of incumbents from the Global North. The key takeaway of this chapter is that enhancing innovation capabilities and economic growth will be key to reducing global inequality.

Closing out the first part is a chapter written by one of us (Benoliel) and Rochelle Dreyfuss, a frequent commentator on patent law and international intellectual property law. "Patents and Economic Inequality" examines the roles innovation and international intellectual property protection have played within the theory of economic inequality. This chapter further discusses how the demands of the Global North for ever-stronger patent and patent-like protections have exacerbated the problem of technological inequality. To mitigate this problem, the chapter suggests ways to restructure the patent system to better enable local inventors to avail themselves of the global knowledge base while also enhancing incentives for those innovators who fulfill the needs of the Global South. Suggested reforms include altering the landscape of prior art and recalibrating the inventive step to domestic capabilities. Specifically, the authors advocate the introduction of a relative novelty standard that includes only locally available technology in the prior art and that considers domestic innovators' capacity in determining inventiveness. In the authors' view, ensuring technological self-sufficiency and reducing intellectual property–based inequality are key steps toward mitigating the problem of income and wealth inequality.

I.2.2 *Intellectual Property and National Inequality*

The second part highlights the challenges national inequalities have posed to the intellectual property and innovation systems. Among the wide variety of contributing factors – or the "horizontal inequalities" explored earlier – the chapters in this part focus primarily on gender and, to a lesser extent, race.

Opening this part is a study conducted by Dotan Oliar, a law professor at the University of Virginia, and his collaborator Marliese Dalton. "Are Men and Women Creating Equal? Contextualizing Copyright and Gender in the United States" focuses on the gender gap in copyright registrations. It explores whether structural, systemic, industry-specific, or other barriers exist to prevent women from participating in the copyright system at the same rates as men. This chapter reviews a wide variety of factors, including data based on work type, trends in patent and trademark ownership, and gender-linked differences in other forms of property such as home and corporate ownership. The chapter further interrogates the extent to which the gender disparity in copyright registration based on work type reflects inequality within the creative professions, such as publishing, music, film, theater, art, dance,

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and architecture. While the available data suggest that the gender gap in copyright registration may reflect more general social realities, such as inequitable patterns of property ownership by women, it is impossible to rule out the possibility that the U.S. copyright system, along with the creative industries that it supports, may have a discriminatory effect on women's incentives to create. This study is interesting in terms of both its findings and methodology.

In "Building Innovation Skills to Overcome Gender Inequality: Mexico, India, and Brazil," Alenka Guzmán and Flor Brown, both economists in Mexico, examine gender inequality in inventive activities through a comparative study of Brazil, India, and Mexico. This chapter outlines the factors impeding women's ability to demonstrate their inventive capabilities. It further discusses the policies implemented by these emerging countries to reduce gender inequalities in education, science, and technological knowledge. Drawing on data provided by the U.S. Patent and Trademark Office on patents granted in Brazil, India, and Mexico and an empirical project that the authors have conducted to examine the dynamics of female inventive activities in these emerging countries, the chapter presents the project's findings and offers policy recommendations on how to boost female participation in inventive activities.

Also focusing on gender inequality is the third chapter in this part, "Unregistered Patents and Gender Equality: A Global Perspective." Written by a team of legal scholars in Israel and the United States – Miriam Marcowitz-Bitton, Yotam Kaplan, and Emily Michiko Morris – this chapter proposes a novel regime for automatic, unregistered patent rights. Complementing extant patent rights, the proposed rights would cover inventions that meet the standard substantive requirements for patentability but that have not gone through the expensive, complicated, and time-consuming patent examination process. Lasting for only a limited period of time, the proposed unregistered patents would protect only against the direct and knowing copying of the patented invention. Because the patent examination process has posed significant barriers to women inventors, the authors believe that this proposal would help reduce the gender gap in the patent system while also making that system more inclusive and egalitarian.

Another chapter targeting inequality in the patent system – in particular, its bias against women, racialized minorities, and small start-ups – is "Can Decentralization Encourage Equality in the Patent System?" Written by Lital Helman, this chapter builds on her earlier proposal for replacing the patent agency's central record with a decentralized database. Supported by blockchain or other innovative technology, this new database would provide more information about the invention as well as updates on the invention's additional functions. Under the proposal, inventors would submit patent applications to a shared record that can be updated during the patent examination process and throughout the duration of the patent. Such updates would allow third parties to submit prior art, scientists to weigh in on

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obviousness, patentees to offer licenses, and courts to list outstanding cases that pertain to the patent. In the author's view, the proposal would improve accessibility, affordability, and equality. It would also turn the extant patent record into an effective platform for learning about inventions and finding ways to commercialize them at affordable prices.

Closing this part is "Inequality and Asymmetry in the Making of Intellectual Property a Constitutional Right," written by Lior Zemer, a law professor who has published extensively on intellectual property clauses in national constitutions. This chapter explores whether countries could reduce inequalities in the innovation system by adopting intellectual property rights as socio-economic rights in their constitutions. Drawing on an original data set that includes all intellectual property clauses in national constitutions since the beginning of the nineteenth century, the chapter shows that the inclusion of an intellectual property–related clause in a constitution does not always lead to stronger intellectual property protection and enforcement. Instead, such inclusion may reflect the external demands from powerful trading partners and the power asymmetry between these partners and the country introducing a new constitutional clause. In view of this somewhat counterintuitive finding, the author calls for greater scholarship on intellectual property constitutionalism.

I.2.3 *Intellectual Property and Global Inequality*

The final part of this volume covers global inequality, or inequality among countries. Opening this part is "Inequality and Intellectual Property: Equity, Innovation, and Creative Imitation," written by Thomas Cottier, one of the world's foremost trade experts and a negotiator for Switzerland during the Uruguay Round of Multilateral Trade Negotiations. This chapter examines the potential for taking income and wealth distribution into consideration when interpreting international trade and intellectual property rules. It further explores the relationship between innovation and creative imitation. Recognizing that the latter is an important driver of development and has helped decrease inequality, the author calls for a better balance between the two by conceptualizing intellectual property as a means to stimulate and protect human investment. He also discusses the need to limit exclusive rights and protection to appropriate returns and reasonable profits. To exclude unwarranted economic rents, he argues that the international minimum standards in the TRIPS Agreement and subsequent TRIPS-plus bilateral, regional, and plurilateral agreements should be complemented by the graduation of obligations and the introduction of ceilings and maximum periods of protection for all forms of intellectual property rights. These maximum periods are particularly important for rights unlimited in time, such as trademarks, trade secrets, and geographical indications. In the author's view, equity and the principle of unjust

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enrichment can provide important tools for shaping the scope and duration of intellectual property rights.

The next chapter is "Managed Trade and Technology Protectionism: A Formula for Perpetuating Inequality?" written by Frederick Abbott, a noted commentator on international intellectual property, health, and trade law. This chapter examines how the recent trend toward "economic nationalism," localization of production, and preference for power diplomacy may affect the ability of low- and middle-income countries (LMICs) to develop and implement new technologies. Such development and implementation, in turn, would improve the economic performance of these countries vis-à-vis the dominant national or regional economies. This chapter laments how the existing international trade and investment agreements have favored high-income countries, making it difficult for LMICs to use foreign-owned technology to climb the innovation curve. To help the latter, the chapter identifies several policy options, including the creation of new, locally developed technical solutions to leapfrog stages of technological development and the creation of a more attractive environment for foreign investment. The chapter reminds us that there is no magic bullet for addressing the marked global disparity in income and wealth.

"Sharing Pathogen Sequence Data for Global Scientific Research under the Nagoya Protocol to the Convention on Biological Diversity" was written by a team of experts who have closely studied governance issues relating to genetic sequence data. In this chapter, Jerome Reichman, Carolina dos Santos Ribeiro, George Haringhuizen, and Paul Uhlir use the specific example of pathogen sequence data to advance a proposal to tackle the challenges posed by the uncertain coverage of what the Nagoya Protocol to the Convention on Biological Diversity has termed "digital sequence information." Aiming to restore the balance between provider and user countries, the protocol requires prior informed consent, mutually agreed terms, and access and benefit sharing. As well intended as they may be, these requirements could harm cross-border scientific research and the promotion of global public health when they overprotect genetic sequence data and create impenetrable transaction costs. To strike an appropriate balance, this chapter calls for the development of an agreed waiver for pathogen sequence data used for upstream scientific research. Such development would not compromise the duty of users to share monetary benefits from commercial applications with provider countries. Instead, the proposed waiver would help alleviate the problems of definition and subject-matter coverage that have stymied multilateral action in this area. It would also help address global inequality by protecting the interests of provider countries, usually in LMICs. The authors believe that their proposal could provide a model for other biodiversity data in the future.

Also highlighting the promise of international initiatives but taking a more forward-looking approach is the last chapter in this volume, "Distributive Justice

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beyond Intellectual Property Laws: An International Perspective." Written by Shlomit Yanisky-Ravid, an expert on artificial intelligence and blockchain technology, this chapter calls for a new and broader understanding of intellectual property rights that internalizes equality and distributive justice considerations, especially at the global level. In the author's view, such an approach is particularly important in what she has called the "digital 3A" era of automated, autonomous, and advanced technologies. To illustrate how such an approach could help address the problem of global inequality, the chapter identifies three services WIPO has developed to provide support to those in need, wherever they may be geographically. WIPO Proof, which has now been discontinued, provided each submitted file with a time-stamped digital fingerprint to prove its existence at a specific point in time. WIPO Match is a free online matching tool that enables those having specific intellectual property–related development needs to find providers of the needed resources. WIPO Re:Search is a global public–private consortium that brings together collaborators to accelerate research and development on the pharmaceuticals, vaccines, and diagnostics needed to treat neglected infectious diseases.

1.3 FINAL WORDS AND ACKNOWLEDGMENTS

Because of the interdisciplinary nature of this volume, each chapter provides citations in the format that is widely used in the author's or authors' discipline. Although the editors and the publisher have made some effort to ensure consistency, this book recognizes the diversity of disciplinary norms and preferences.

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