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International Intellectual Property Rights and the Pharmaceutical Industry: A Comparison of Former French Colonies

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Abstract

The first chapter of this thesis introduces the historical background and the regulating bodies within the international patent system. This chapter finds that the individual rights to intellectual property are an essential part of many declarations of human rights in the Global North. This section also finds that the United Nations advocates for the interests of the Global North and strong intellectual property rights.

The second chapter of this thesis critically reviews the literature on the intellectual property system and its relation to pharmaceutical patents. States in the Global North are typically the ones in favor of more substantial intellectual property agreements. Issues arise when pharmaceutical patents prevent other manufacturers from entering the market and producing a cheaper product. States in the Global South favor lenient intellectual property protections because they do not benefit from the protection.

The third chapter of this thesis discusses the relationship between patent protection strength and access to vital medicines through the lens of the AIDS crisis in Côte d'Ivoire and Senegal. This chapter finds that aggressive international intellectual property treaties have caused the exclusion of the global south from developing vital national pharmaceutical industries to deal with national health crises.

The fourth and final chapter summarizes this research's findings, recalls this thesis' contributions, and relates the argument to further research about the COVID-19 vaccine. While writing and editing this thesis, more and more information is coming out every day about the limitations pharmaceutical patents have on granting states in the Global South access to life-saving vaccines. The world has not learned from the HIV/AIDS crisis the effect international pharmaceutical patents have on global health. Overall, the production of essential medicine should be immune from international patent agreements.

RÉSUMÉ

Chapitre I

Le premier chapitre de cette thèse présente le contexte historique et les organes de régulation au sein du système international des propriétés intellectuelles. Il est allégué qu'un brevet est accordé à un inventeur, non seulement pour le bénéfice de l'inventeur, mais également pour le bénéfice de la société dans son ensemble. Il y a eu des problèmes dans chaque traité international de propriété intellectuelle, comme on peut le voir tout au long de ce chapitre. Non seulement les demandes de protection par brevet sont onéreuses et inaccessibles pour la plupart des personnes des États du sud planétaire, mais la protection par brevet empêche les États du sud planétaire d'accéder aux produits pharmaceutiques essentiels. L'OMPI est chargée de promouvoir la protection de la propriété intellectuelle et d'aider les États à aligner leur cadre juridique de propriété intellectuelle sur l'idée occidentale de la propriété privée. En outre, l'OMC a établi un cadre commercial pour faire appliquer les traités internationaux de propriété intellectuelle. Si un État souhaite devenir membre de l'Organisation mondiale du commerce, il doit se soumettre à l'idéologie occidentale de la propriété intellectuelle.

Chapitre II

Le deuxième chapitre de cette thèse passe en revue de manière critique la littérature sur le système de propriété intellectuelle et sa relation avec les brevets pharmaceutiques. Le principal argument avancé est que les brevets pharmaceutiques font souffrir les États du sud planétaire. Les sociétés pharmaceutiques protègent leur propriété intellectuelle à des fins lucratives plutôt que de sauver plus de vies. Néanmoins, les États

ne devraient pas permettre aux entreprises de refuser l'accès à ceux qui souffrent de maladies curables. En outre, une protection solide de la propriété intellectuelle n'est pas nécessaire pour le développement. La grande majorité des économies prospères se sont développées lorsque les brevets étaient considérés comme préjudiciables au marché libre. Des exemples peuvent être vus en Suisse et aux Pays-Bas qui ont développé des industries importantes pendant leur période sans brevet.

Chapitre III

Le troisième chapitre de cette thèse examine la relation entre la force de la protection par brevet et l'accès à la thérapie antirétrovirale essentielle contre le VIH. À travers le prisme de la crise du sida en Côte d'Ivoire et au Sénégal, cette thèse prouve de nombreux défis que la communauté internationale doit relever pour donner aux États à faibles revenus l'accès à des produits pharmaceutiques rentables. Les États du Nord planétaire, en particulier la France, associent le commerce à une protection élevée de la propriété intellectuelle. Ce lien rend impossible pour la Côte d'Ivoire et le Sénégal d'avoir un régime de protection de la propriété intellectuelle faible car la France a toujours une place forte sur les économies de ces États. Le solide régime international de propriété intellectuelle rend les produits pharmaceutiques trop chers à importer et presque impossibles à produire dans les États du Sud planétaire. Les cas de la Côte d'Ivoire et du Sénégal montrent clairement comment les traités internationaux de propriété intellectuelle favorisent les industries pharmaceutiques internationales du Nord planétaire.

Il est allégué qu'un brevet est accordé à un inventeur, non seulement pour le bénéfice de l'inventeur mais aussi pour la société dans son ensemble. Cependant, si l'on regarde à travers l'histoire, les réussites du développement, telles que les Pays-Bas et la Suisse au XIXe siècle, ont décollé sous la faiblesse des systèmes de protection de la propriété intellectuelle. Ce système de développement inégal est comparable à celui du changement climatique. De nombreux États ont pu développer leur économie avec des techniques préjudiciables à l'environnement. Cependant, les États du sud planétaire n'ont pas la possibilité de se développer dans les mêmes conditions. De même, dans le cadre de l'accord sur les ADPIC, une faible protection de la propriété intellectuelle n'est plus une option de développement si un État dû le sud planétaire souhaite avoir la possibilité de commercer avec les États dû le Nord planétaire.

Les États du Nord planétaire associent leurs politiques commerciales au niveau de protection de la propriété intellectuelle. Par conséquent, les produits pharmaceutiques sont trop chers à importer et presque impossibles à produire. Les cas de la Côte d'Ivoire et du Sénégal montrent clairement comment les traités internationaux de propriété intellectuelle favorisent les industries pharmaceutiques internationales du Nord planétaire. Pendant la crise du VIH / sida en Afrique, l'Afrique du Sud a été empêchée d'autoriser l'importation parallèle de thérapies antirétrovirales par les sociétés pharmaceutiques du Nord planétaire qui détenaient les brevets pour traiter la maladie. Les sociétés pharmaceutiques internationales ne devraient pas refuser les médicaments vitaux de patients qui n'ont pas les moyens de payer les prix élevés des produits

pharmaceutiques. Les sociétés pharmaceutiques ne devraient pas être autorisées à mettre un prix sur la vie humaine.

La Côte d'Ivoire

Relation économique avec la France

Après la chute de l'Empire colonial français dans les années 1960, la France a conservé de nombreux avantages du colonialisme. La sphère d'influence française en Afrique, appelée Françafrique, explique la forte relation culturelle, politique et économique que l'on retrouve dans les anciennes colonies françaises. À l'instar de nombreuses anciennes colonies françaises en Afrique, la Côte d'Ivoire continue d'avoir une relation de quasi-dépendance avec la France. La Côte d'Ivoire est le premier partenaire commercial de la France dans la zone franc CFA et le troisième en Afrique subsaharienne (étrangères s.d.). De plus, la France est le deuxième partenaire commercial de la Côte d'Ivoire (étrangères s.d.). En matière d'États d'Afrique subsaharienne, la France a la relation la plus active avec la Côte d'Ivoire. Il y a près de 700 entreprises françaises en Côte d'Ivoire qui représentent environ 30% du PIB de la Côte d'Ivoire (étrangères s.d.).

La zone franc CFA contribue aux relations économiques étroites que la Côte d'Ivoire entretient aujourd'hui avec la France. « Le taux du franc CFA était fixé à la monnaie française, et les pays membres africains étaient tenus de stocker 50% de leurs réserves de devises auprès de la France » (McGowan 2020, traduit par Perrone 2021). Cette exigence de stocker 50% de leurs réserves de devises avec la France montre le contrôle économique continu de la France pendant les années de la Françafrique. Cette

exigence n'allait être modifiée que récemment avec l'introduction de la nouvelle monnaie ECO. Cependant, la mise en œuvre de l'ECO pourrait être retardée de cinq ans en raison de l'impact de la pandémie de Coronavirus (Mandisa Xuba 2021).

La crise du VIH et la Côte d'Ivoire

Entre 2002 et 2007, le nombre de patients infectés par le VIH recevant un traitement antirétroviral est passé de 3 000 à 30 000 en Côte d'Ivoire (Toure et al. 2008). Le principal facteur chez les patients infectés par le VIH qui ne reçoivent pas de traitement antirétroviral est l'observance de la prise régulière du médicament. Bon nombre des obstacles liés à l'observance sont, malheureusement, des barrières économiques et politiques externes.

Un obstacle logique à l'observance de la prise régulière d'un traitement antirétroviral est de recevoir le médicament à temps. Pendant les crises politiques et sociales entre 2002 et 2010, plus de la moitié de tous les centres de santé publique ont été fermés (Barańczuk et al., 2016). L'importation et la distribution d'une thérapie antirétrovirale suffisante ne sont pas fiables, en particulier en période d'instabilité politique. En 2011, « les manifestations de rue, les blocus et d'autres problèmes ont perturbé l'approvisionnement en antirétroviraux (ARV) dans différentes régions » (Côte d'Ivoire : la crise politique affecte l'approvisionnement en ARV s.d., traduit par Perrone 2021). Avant cette affaire de manifestations bloquant physiquement l'accès des personnes aux centres de santé pour recevoir leurs médicaments, il y avait des pénuries de thérapies antirétrovirales en Côte d'Ivoire. En 2005, les Ivoiriens vivant avec le VIH / sida ont été frappés par une interruption de trois mois de l'approvisionnement (en Côte d'Ivoire : la

crise politique affecte l'approvisionnement en ARV s.d.). Dans une étude réalisée entre 2006 et 2007 à Abidjan, en Côte d'Ivoire, il a été constaté que les ruptures de stock de médicaments avaient un impact important sur la rétention aux soins chez les patients infectés par le VIH. En particulier, « les ruptures de stock de médicaments ont conduit à 72 arrêts de traitement prolongés et 98 modifications de régime, soit 11% des 1 554 patients qui ont commencé le cART entre le 1er février 2006 et le 1er février 2007. Ces ruptures de stock de médicaments étaient responsables de 9% de toutes les interruptions de cART et 30% de toutes les modifications du schéma cART » (Pasquet et al. 2010, traduit par Perrone 2021). Dans l'ensemble, il est clair de voir à quel point les ruptures de stock de médicaments a un impact sur l'utilisation continue de la thérapie antirétrovirale.

Même avec des prix subventionnés, les patients n'ont toujours pas les moyens de payer le coût de la thérapie antirétrovirale. Au cours d'une étude menée en mars 2002, les familles avec moins de 50 dollars EU par mois a reçues un forfait mensuel subventionné de 7,50 dollars EU (Eholié et al. 2007). L'une des raisons auto déclarées les plus fréquentes d'un patient qui a manqué une ou plusieurs pilules au cours de cette étude était le manque d'argent (20%) (Eholié et al. 2007). Le programme pilote RETRO-CI en Côte d'Ivoire suggère qu'une fois que l'État surmonte les obstacles financiers à l'accès aux médicaments, l'observance du traitement antirétroviral peut être aussi élevée que l'observance observée dans les États industrialisés (Katzenstein, Laga et Moatti 2003). Pendant la crise du VIH / sida, des lois restrictives sur les brevets ont conduit à une hausse des prix des thérapies antirétrovirales. Entre 1996 et 2000, les prix des ARV ont été plus bas en Côte d'Ivoire, où la pharmacie de santé publique a introduit un mécanisme

d'appel d'offres ouvert à tous les fournisseurs internationaux, y compris les producteurs de génériques, qu'en Ouganda où l'approvisionnement était limité à une société privée à but non lucratif (Medical Access Uganda Ltd.) qui représentait les intérêts des sociétés internationales de brevets » (Katzenstein, Laga et Moatti 2003, traduit par Perrone 2021). Cette citation montre à quel point l'accès aux producteurs de génériques peut affecter de manière significative l'efficacité de la réduction des coûts des médicaments essentiels en Côte d'Ivoire.

Sénégal

Relation économique avec la France

« La plus ancienne relation de la France en Afrique subsaharienne est avec le Sénégal. La présence française au Sénégal date du XVIIe siècle » (Chafer 2013, traduit par Perrone 2021). Cependant, ces dernières années, la relation économique franco-sénégalaise s'est changée. « Alors qu'en 2003 90% des entreprises du secteur industriel étaient des filiales d'entreprises françaises, la proportion est tombée à 75-80% en 2012 » (Chafer 2013, traduit par Perrone 2021). Malgré cela, cette relation étroite s'étend toujours au produit intérieur brut sénégalais. Les entreprises françaises continuent de représenter 25% du PIB et des recettes fiscales (Ministère de l'Europe et des Affaires 2020).

À l'instar de nombreuses anciennes colonies françaises en Afrique, la France reste le premier investisseur au Sénégal. Depuis 2000, l'AFD a engagé plus de 1,5 milliard d'euros de financement au Sénégal. (Ministère de l'Europe et des Affaires 2020). Rien qu'en 2010, la France était le principal investisseur étranger au Sénégal avec 719 millions

d'euros, soit près de la moitié du total des investissements directs étrangers (IDE) du Sénégal » (Chafer 2013).

Malgré les efforts sénégalais pour diversifier leurs investissements et leurs sources d'approvisionnement, la France a toujours une place forte sur l'État. Non seulement la France reste le premier investisseur au Sénégal, mais la France est également le premier partenaire commercial du Sénégal (ministère de l'Europe et des Affaires 2020). En 2011, la valeur des exportations françaises vers le Sénégal était de 887 millions d'euros, alors que les importations françaises en provenance du Sénégal s'élevaient à 96 millions d'euros (Chafer 2013). Cette donnée signifie que l'excédent commercial de la France avec le Sénégal en 2011 était de 791 millions d'euros et qu'il s'agissait du plus important excédent commercial de la France en Afrique subsaharienne (Chafer 2013).

La crise du VIH et le Sénégal

La prévalence du VIH au Sénégal est bien inférieure à celle de la Côte d'Ivoire. Ce nombre bas de personnes séropositives au Sénégal est principalement dû au leadership sur les questions de traitement. En 1998, le Sénégal a été le premier État d'Afrique subsaharienne à mettre en place un programme de traitement antirétroviral (Brunner et al.2016). Cependant, en raison du manque d'agents de santé en dehors de la région de Dakar, l'accès au traitement reste limité. Dakar et dans d'autres zones urbaines sont seulement les lieux qu'offre l'accès au traitement. De plus, compte tenu de la faible prévalence du VIH par rapport à d'autres États d'Afrique subsaharienne, le financement du VIH par les donateurs internationaux est limité (Brunner et al.2016).

En 2003, le coût annuel du HAART (traitement antirétroviral hautement actif) était supérieur au PIB moyen par habitant en Sénégal (Katzenstein, Laga et Moatti 2003). Ces prix élevés ont conduit à la décision de décembre 2003 de la PNA de fournir gratuitement un traitement ARV. Bien que le Sénégal soit l'un des rares États africains à offrir un traitement ARV gratuit, le diagnostic et les traitements des infections opportunistes nécessitent toujours des frais qui représentent un obstacle pour beaucoup au Sénégal (Brunner et al.2016). Un autre obstacle au traitement est le niveau élevé de stigmatisation associé au dépistage. Bien que le Sénégal offre un dépistage du VIH gratuit, de nombreuses personnes préfèrent le dépistage dans le secteur privé. Cette préférence s'accompagne d'un honoraire qui la rend inaccessible à une grande partie de la population.

Conclusion

Les remarques finales de cette thèse incluent des idées connexes pour des recherches ultérieures. En particulier, cette thèse appelle à approfondir les recherches sur les implications des lois internationales sur la propriété intellectuelle et l'accès aux tests pour le COVID-19 et le vaccin COVID-19. En particulier, il serait intéressant d'approfondir la recherche sur la médecine traditionnelle vers laquelle les États africains se tournent en réponse au manque de vaccins disponibles dans la région.

D’autres Recherche

Les États du Nord planétaire négligent souvent la médecine traditionnelle car une grande partie de la population africaine l'utilise. Les produits traditionnels « fabriqués en Afrique » représentent une grave menace pour les multinationales pharmaceutiques

internationales. Ils ont créé un buzz sur les réseaux sociaux car les Africains voient la capacité africaine à créer, innover, inventer et imposer un produit 100% local (Diouwara 2020). Cependant, ce secteur de la médecine a développé quelques traitements à base de plantes car les zones dans lesquelles ces traitements se développent n'ont pas accès aux vaccins l'Occidentaux.

Le président malgache Andry Rajoelina a présenté le 20 avril 2020 un remède à base de plantes « baptisée Covid Organics, à base d'artemisia, une plante utilisée dans des médicaments contre le paludisme, et d'autres herbes qui poussent à Madagascar » (Faivre Le Cadre et al.2020). Ce thé a été largement produit pour plusieurs États africains dont les citoyens cherchent désespérément à remédier aux symptômes du COVID. « L'OMS n'a pas validé cette tisane car 'tout médicament recommandé doit avoir fait l'objet de tests et d'essais pour prouver son efficacité et son innocuité afin qu'il ne soit pas néfaste à la population, ce qui n'est pas le cas pour ce remède' » (Faivre Le Cadre et al.2020). L'Agence nationale de sécurité des médicaments (ANSM) en France met en garde contre l'achat de produits à base d'artemisia d'origine douteuse sur Internet (Diouwara 2020). Cependant, « Dans la promotion de son "remède," le président malgache est allé plus loin. Il n'hésite pas à affirmer que si les vertus du Covid Organics sont contestées, c'est parce qu'il a été créé en Afrique » (Atou Diaw 2020).

Les États africains ont également développé une méthode pour utiliser moins de tests car ces États n'ont pas le même accès aux tests que les États du nord planétaire. Cela en dit long étant donné que la plupart des États du nord planétaire ont un petit nombre de tests. « La vaste majorité des tests de dépistage effectués dans le monde sont négatifs » ;

par conséquent, quand on mélange dix échantillons dans un seul test, il y a de fortes chances que le résultat soit négatif (Sabourin). Cette méthode réduit le coût et le temps nécessaires pour tester un grand nombre de personnes. Un essai est en cours au Sénégal pour tester un kit de dépistage COVID-19 capable de donner un résultat en moins de 10 minutes. Il coûte environ un dollar américain, ce qui en ferait un outil beaucoup plus abordable pour les États africains que les tests traditionnels, dont le prix se chiffre en dizaines de dollars.

En outre, les États africains ont également développé un gel antibactérien à faible coût. Depuis l'arrivée du COVID-19 en Côte d'Ivoire, l'enjeu n'est pas de trouver du gel désinfectant mais de l'acheter (Sabourin, 2020). « 'Il y a eu une flambée des prix, qui ne sont plus à la portée de la majorité de la population', dit Kouassi Benjamin Yao, professeur à l'Institut national polytechnique Félix Houphouët-Boigny, situé dans la capitale du pays, Yamoussoukro » (Sabourin, 2020). En collaboration avec l'Institut national de la recherche scientifique du Québec et le CRDI, le professeur Kouassi Benjamin Yao étudie la valorisation des déchets agricoles transformables en éthanol, principal ingrédient du gel désinfectant. À ce jour, plus de 15 000 litres de solution gel désinfectant et de gel ont été produits de cette manière. Ils n'ont pas été vendus mais distribués gratuitement aux autorités ivoiriennes et aux associations à but non lucratif (Sabourin 2020).

Les pays africains étaient également mieux préparés à l'épidémie de COVID car ils ont combattu le virus Ébola pendant des années. La République démocratique du Congo (RDC), un État de 100 millions d'habitants, avait lutté contre l'une des pires

épidémies d'Ébola de l'histoire, une maladie infectieuse qui, comme le COVID, est incurable. « Dès la mi-janvier, les points de contrôle sanitaire installés dans les aéroports, les ports et les postes-frontières de cet immense pays — le deuxième plus vaste du continent après l'Algérie — pour éviter la propagation de l'Ebola ont pu être utilisés pour la COVID-19. » (Sabourin 2020). « Des campagnes faisant la promotion des mesures d'hygiène à respecter étaient déjà en cours dans la plupart des provinces — une mesure qui s'applique aux deux virus. » (Sabourin). De plus, « des laboratoires possédaient déjà l'équipement nécessaire, la RDC a été l'un des 20 premiers pays d'Afrique en mesure de dépister la COVID-19 » (Sabourin 2020).

INTRODUCTION

Should a state have the power to withhold lifesaving medication from an entire continent to protect an international pharmaceutical corporation's intellectual property? It is essential to recognize the relationship between intellectual property regulation strength and access to essential technologies in low-income states. The strength of this relationship affects the international response to strengthening intellectual property rights treaties. Some may argue that Northern and Southern states generally have different technology needs. Therefore, the wealthier Northern states would not have a reason to develop the technologies needed most by those in the Global South if the Global South were to discard their strong intellectual property protections. However, the unintended consequence of Western states pushing for strong intellectual property rights treaties is that it prevents innovation and hinders states in the Global South from obtaining essential medicines. International intellectual property protection of pharmaceutical products is harmful to the health of states in the Global South.

The first chapter of this thesis introduces the historical background and the regulating bodies within the international patent system. The second chapter of this thesis critically reviews the literature on the intellectual property system and its relation to pharmaceutical patents. The third chapter of this thesis discusses the relationship between patent protection strength and access to vital medicines through the lens of the AIDS crisis in Côte D'Ivoire and Senegal. The fourth chapter is an overview of this research's findings, recalls this thesis' contributions, and relates the argument to further research about the COVID-19 vaccine. Overall, the pharmaceutical industry produces more than capitalist clutter. The pharmaceutical industry products are of vital interest to all states, especially those in the Global South. For this reason, the production of essential medicine should be immune from monopoly constraints.

CHAPTER I THE INTERNATIONAL PATENT SYSTEM

1.1. Regulating International Intellectual Property

(1.1.1) What is Intellectual Property?

Intellectual property refers to the protected creations of the mind. The two types of intellectual property are industrial property and copyright. Industrial property consists of inventions, trademarks, industrial designs, and geographical indications (Idris 2003). Copyright covers more artistic works such as literary works, art, and architectural design. Like all other property rights, intellectual property rights allow intellectual property owners to benefit from their investment. For example, *the Hague Agreement Concerning the International Registration of Industrial Designs* (1925), a World Intellectual Property Organization (WIPO) administered treaty, offers a procedure for international registration of designs. Applicants can file a single international application either with WIPO or the national or regional office of a state party to the treaty. The design will then be protected in as many signatory states of the treaties as the applicant designates (Idris 2003). Copyright and related rights protection is obtained automatically without the need for registration or other formalities. However, many states provide for a national system of optional registration of intellectual property and deposit of works (Idris 2003).

(1.1.2) National vs. International

Nationally, intellectual property rights are used to spark innovation in every community. Innovation is not the same as invention. Innovation is a process that begins from the conception of an idea to launching a new product/process in the marketplace. The term 'innovation' is used here to refer to the process of bringing value to the market.

This process begins from the concept formulation stage to the successful launching of a new or improved product in the marketplace, or the result of that process, to meet the explicit or implied needs of current or potential customers (Kalanje 2005). The grant of a property right by the government, albeit generally for a limited period, over useful intangible intellectual output provides the owner of such legal property rights the right to exclude all others from commercially benefiting from it. In other words, the legal rights prohibit all others from using the underlying IP asset for commercial purposes without the prior consent of the IP right holder (Kalanje 2005).

States, especially those in the Global South, increase the strength of their intellectual property protections to increase their international reputation. Political leaders in francophone Africa have long understood the importance of a positive international reputation for securing investment, foreign aid, and trade deals (Deere 2008, 248). Political elites in West African states will often align themselves with influential players in the international system on a discourse, intellectual property being the perfect example. The OAPI states, for example, must commit to intellectual property protection to boost their international image to attain the financial benefits from powerful states. Even if one of the OAPI states violates the TRIPS obligations, powerful states would be dissuaded from retaliating against them because of their status as developing states. A realist international relations view indicates that political leaders in African nations understand the importance of a positive international reputation for securing foreign aid and trade deals.

International treaties dealing with each state's intellectual property set up ground rules for international trade, such as how long copyright or patents should last or the fundamental subject matter of trademarks. Since intellectual property laws are based geographically, each state has its own domestic laws, international intellectual property treaties are a baseline of protection each state must provide. The Oslo Manual provides an authoritative framework for states to develop internationally comparable innovation surveys. The Oslo Manual is the international reference guide for collecting and using data on innovation. The UNESCO Institute for Statistics helps states design their national surveys by providing training and technical assistance on international methodological frameworks and guidelines, such as the *Oslo Manual*, developed in consultation with partners, such as Eurostat, OECD, and RICYT (UNESCO 2016).

Intellectual property rights are an essential aspect of the Universal Declaration of Human Rights (UDHR). The UDHR provides the "right to benefit from the protection of moral and material interests resulting from authorship of scientific, literary, or artistic productions." Nevertheless, everyone's right to share in the benefits of science has been enshrined in human rights instruments since the last century. This principle can be seen initially in Article 27 of the Universal Declaration of Human Rights (UDHR) and subsequently in Article 15 of the International Covenant on Economic, Social, and Cultural Rights (ICESCR). Through a human rights perspective of intellectual property, one will find that many believe that both creators and the general public benefit from intellectual property protection (Chapman 1998). The idea behind this rationale is that by protecting inventors' and creators' rights, there is an incentive for them to create;

additionally, broader society can enjoy the benefits of scientific progress and its applications.

Intellectual property protection is also an essential aspect of the United Nations' Sustainable Development Goals. "IP is a critical incentive for innovation and creativity, which in turn are key to the success of the SDGs" (WIPO 2019). Some of the economic benefits of strong intellectual property rights protections include being 39% more likely to attract foreign investment, 55% more likely to adapt to state-of-the-art technologies, 67% higher share of the workforce employed in knowledge-intensive sectors, and 26% more competitive economies (U.S. Chamber of Commerce 2016).

In reference to Sustainable Development Goal 9: Build resilient infrastructure, promote sustainable industrialization, and foster innovation, intellectual property protection plays an important role. Many believe the next generation of technology will be developed as a result of effective intellectual property protections. The World Intellectual Property Organization (WIPO) is listed as a partner in many programs with a commitment to achieve specific Sustainable Development Goals. All of WIPO's partnerships are within the Small Island Developing States action network. Some examples of the programs that WIPO is a partner of include: Access to Research for Development and Innovation, Access to Specialized Patent Information, Pacific Traditional Knowledge Action Plan, and Technology and Innovation Support Centers. The most relevant goal to WIPO is the seventeenth sustainable development goal which is to strengthen the means of implementation and revitalize the global partnership for sustainable development.

The most crucial minimum standard set up by international intellectual property treaties is the principle of national treatment, which operates as an international IP golden rule, "Do unto other countries' authors and inventors as you would have done unto your own."(Olsen 2015). Essentially, each state has to give foreigners intellectual property protection that is no less favorable than the protection granted to its own (Olsen 2015). This is an essential aspect of international intellectual property law because otherwise, states would prioritize domestic creators' intellectual property protection. This rule was created under the World Intellectual Property Organization (WIPO). This organization is responsible for many international intellectual property treaties and conventions. The other organization that plays an instrumental role in international intellectual property is the World Trade Organization (WTO). This organization is responsible for the enforcement of the Trade-Related Aspects of Intellectual Property Rights agreement. The TRIPS agreement contains parts of other intellectual property agreements with additional enforcement by the WTO, making ratification of the TRIPS agreement a compulsory requirement for organization membership.

(1.1.3) The Paris Convention

By the end of the 19th century, trade and industries began opening borders and relied on international cooperation. Not only were physical products being traded across borders more easily, but knowledge and intellectual property were more easily attainable due to the Technological Revolution. This international trade system was detrimental to creators of intellectual property as the prices varied from state to state. Charles Dickens was so outraged that "Christmas Carol" sold for 6 cents a copy in America, versus $2.50

in England. He toured the United States in 1842, pushing for the adoption of international copyright protection (Lohr 2002). Given this evolving trade system, it became necessary to protect the intellectual property rights of creators. Since the exclusive rights of a patent are only legally effective within a defined territory, if a patentee wishes to receive patent protection in multiple states, they have to secure protection in each state separately. This problem began a movement toward the international protection of intellectual property.

The International Convention for the Protection of Intellectual Property, commonly known as the Paris Convention, was signed in 1883. This international treaty was the first significant step taken to help creators ensure their intellectual property was protected in other states. This treaty mainly focused on industrial property, including patents, trademarks, and industrial designs (WIPO n.d.). Since this was the first international intellectual property treaty, there were many mistakes made. As with most international intellectual property treaties, The Paris convention does not have strong enforcement mechanisms. If a state violates the treaty, the only option is to solve the problem through the International Court of Justice. Every state that has violated the treaty opted to settle disputes state-to-state rather than getting the court involved (Olsen 2015). Additionally, the Paris Convention allowed states to tailor their patent laws to their interests instead of setting minimum standards like every intellectual property treaty following this one. This becomes a problem for wealthy nations with large pharmaceutical industries because less developed states can choose to exclude pharmaceutical patents if they feel that health-related intellectual property should belong to the greater society.

(1.1.4) The Berne Convention

The Berne Convention was first signed in 1886 in Berne, Switzerland, and was aimed at solving the problem of varying treatment of foreign authors among states (Olsen 2015). The Berne convention originated in France at the request of Victor Hugo and L'Association Litteraire et Artistique Internationale, who fought for artists' and authors' rights. Under the Convention, copyrights for creative works are automatically in force upon their creation without being asserted or declared. As soon as a work is "fixed," written or recorded on some physical medium, its author is automatically entitled to all copyrights in the work and any works derived from the original work. The United States did not ratify this treaty until 1989 because it required an author to register at the copyright office (Olsen 2015). Therefore, to join the Berne Convention, the United States had to make significant domestic laws changes.

The Berne Convention has some serious problems that other treaties have addressed. Since states signed onto the Berne convention cannot require authors to go through a formalized process, ownership information is often lost, and authors cannot be located. Like the Paris Convention, one problem with the Berne convention, and almost all intellectual property treaties, is that it does not have an effective enforcement system. When a state violates the treaty, members can try to settle the dispute through the International Court of Justice, but this has never been used.

(1.1.5) Patent Cooperation Treaty

The Patent Cooperation Treaty (PCT) is one of the most critical international intellectual property treaties allowing a unified procedure for filing international patents.

Those seeking patents in multiple states can submit one application instead of filing multiple patent applications simultaneously in every state one wants their invention protected by a patent. The PCT began accepting applications in 1978, starting with only 18 states. Today the PCT has 153 contracting states representing an estimated 95% of the world's economic activity by GDP and 87% of the world's population (Gurry 2017). The latest state to become bound by the PCT is Somoa on January 2, 2020 (WIPO n.d.).

The Patent Cooperation Treaty allows anyone who is a national or resident of a PCT Contracting State to file an application. The treaty is also only open to states party to the Paris Convention for the Protection of Industrial Property. Once the patent application is received, it is subjected to an international search carried out by one of the patent offices appointed by the PCT Assembly (WIPO n.d.). The assembly is made up of every state that is a party to the PCT. The search results in a report that lists things that may affect the patentability of the invention claimed by the application in specific states. This report is then given to the applicant, who can decide whether to withdraw their application or not based on the report's opinion of the patent being granted.

A PCT application is not attainable for every national or resident of a PCT Contracting State. Nearly 80 percent of contracting states are developing and least-developed states (Gurry 2017). However, a PCT application can range from $3,000 to $4,500 depending on the size of the entity seeking the patent and the invention they are looking to patent (WIPO 2021). However, this is not the total price of protecting one's intellectual property internationally. There are additional fees, including a transmittal fee, search fee, and international fee, adding up to another $3,500 (WIPO 2021). Overall,

there seems to be little to no benefit of developing nations from the PCT except to bolster their international reputation with central international intellectual property states. However, the importance of a positive international reputation is immense as it helps secure foreign aid and trade deals.

(1.1.6) Trade-Related Aspects of Intellectual Property Rights Agreement

The World Trade Organization administers the TRIPS Agreement, and it has a robust enforcement mechanism in place under the WTO's dispute settlement body. The TRIPS Agreement covers five broad areas: how general provisions and basic principles of the multilateral trading system apply to international intellectual property; what the minimum standards of protection for intellectual property rights that members should provide; which procedures members should provide for the enforcement of those rights in their territories; how to settle disputes on intellectual property between members of the WTO; and transitional arrangements for the implementation of TRIPS provisions (WTO).

If a state is accused of noncompliance with the TRIPS Agreement's minimum standards, the WTO then decides whether there is a violation and what kind of punishment they need to impart. The TRIPS Agreement also extends protection to geographical indications. This means that the word "Champagne" can only be used for sparkling wine produced in France's Champagne region. It also extends to words like Bordeaux, Chablis, Parma ham, Roquefort cheese, Florida orange juice, or Vermont white cheddar. The TRIPS Agreement is the most comprehensive international agreement on intellectual property as it addresses the same problems as previous agreements with the addition of an effective enforcement mechanism. So, the TRIPS Agreement by the

WTO is essentially a complementary agreement to the WIPO agreements that simply adds to the international standards (WTO).

(1.1.7) Doha Ministerial Conference

Concerns that patent rules might restrict access to affordable medicines were raised by states categorized by the WTO as "developing countries" (WTO, *THE DOHA DECLARATION ON THE TRIPS AGREEMENT AND PUBLIC HEALTH*). The November 2001 declaration of the Fourth Ministerial Conference in Doha, Qatar, responds to these obstacles "developing countries" faced when seeking to implement measures to promote access to affordable medicines. The declaration also provides the mandate for negotiations on a range of subjects, and other work, including issues concerning TRIPS implementation.

In the Doha Declaration, there is an acknowledgment of the role intellectual property plays in the development of new medicines and recognizes the effects intellectual property protection has on prices. It emphasizes that the TRIPS Agreement should not prevent member governments from acting to protect public health and affirms governments' right to use the agreement's flexibilities. The declaration also emphasizes that the TRIPS agreement should specifically be used to help developing states that have epidemics of "HIV/AIDS, tuberculosis, [and] malaria (Mohan 2002).

The Doha Ministerial Declaration on TRIPS and Public Health created during the Doha Ministerial Conference extended the period for least developed nations to comply with pharmaceuticals provisions until 2016. In November 2015, the TRIPS Council further extended this transition period until January 1, 2033, or when a particular nation

ceases to be in the "least developed" category (WTO Responding to least developed countries' special needs in intellectual property). This extension is highly imperative since the Doha Declaration recognizes that some "developing countries" have insufficient manufacturing capabilities in the pharmaceutical sector to use the compulsory licensing under the TRIPS agreement effectively. The solution to this problem was to specify that "'compulsory licensing must be predominately for the supply of the domestic market' in regards to states that did not have the manufacturing capabilities to supply their people with drugs domestically" (Mohan 2002). In addition to compulsory licensing, the Doha declaration permits the use of parallel exportation. The declaration provides a framework for the holder of the underlying patent to receive a single payment for their product. In exchange, the declaration also requires the exporting state only to provide the number of pharmaceutical drugs necessary to meet the importing state's needs (Mohan 2002).

(i.) Compulsory Licensing

There are two types of licensing agreements that can be used for the generic manufacturing of Antiretroviral treatments in sub-Saharan Africa. "Compulsory licensing is when a government allows someone else to produce a patented product or process without the consent of the patent owner or plans to use the patent-protected invention itself" (Ogada et al. 2020). The primary justification for a compulsory license is based on the objective to minimize drug prices. On the other hand, a "voluntary license is an authorization given by the patent holder to a generic company, allowing it to produce the patented article, such as a medicine, as if it were a generic" (Ogada et al., 2020).

However, this license is only supportive of states with an active local generics manufacturer.

"Compulsory licensing enables a competent government authority to license the use of a patented invention to a third party or government agency without the consent of the patent-holder" (WTO, THE DOHA DECLARATION ON THE TRIPS AGREEMENT AND PUBLIC HEALTH). The TRIPS Agreement allows the use of compulsory licenses under some conditions. Under the TRIPS Agreement, governments can only make limited exceptions to patent rights, provided certain conditions are met (WTO n.d.). Compulsory licensing and government use of a patent without its owner's authorization can only be done under some conditions aimed at protecting the legitimate interests of the patent holder (WTO n.d.). The TRIPS Agreement also states that a compulsory license can only be acquired after the “proposed user has made efforts to obtain authorization from the right holder on reasonable commercial terms and conditions and that such efforts have not been successful within a reasonable period of time” (Mohan 2002). This has a clear impact on states unable to make medicines and therefore want to import the more affordable generics. Thus, the consideration involved is that drugs are of vital interest to states unable to manufacture medicines.

A compulsory license is essential to the development of affordable essential medicines. Generic manufacturers enter the market and compete for similar products at lower prices, thus impeding the monopolization of high prices and lucrative profits by the original patent-holding firms. This provision is unpopular with the pharmaceutical industry since it impedes their ability to obtain a profit margin. Consequently, the

pharmaceutical industry tries through powerful lobbying to safeguard its interests. However, the pharmaceutical industry consumers are not just consumers; they are patients in need of a cure. For this reason, the production of generic medicines manufactured under a compulsory license should be immune from monopoly constraints developed under the TRIPS Agreement. The means to achieve this goal is through a more liberal compulsory license for pharmaceuticals.

(ii.) Parallel Importation

Parallel importing is vital to the access of affordable medicines for states in the Global South. “Parallel importation is importation without the consent of the patent-holder of a patented product marketed in another state either by the patent holder or with the patent holder's consent" (WTO, THE DOHA DECLARATION ON THE TRIPS AGREEMENT AND PUBLIC HEALTH). Since many patented pharmaceutical products are sold at substantially different price points in different markets, parallel importing enables access to lower-priced patented products. Pharmaceutical products being exported to the Global South must be affordable in terms of the population's purchasing power. Parallel importation allows states in the Global South to import medicines from a cheaper market than what it would cost the state to purchase it directly from the company. This option was not beneficial to the Global South until the Doha Declaration. States in the Global South were given access to establish their own regime for the adoption of the exhaustion of rights. Under the exhaustion of rights, the World Health Organization allows for the “import[ation] of a patented product into a country without the authorization of the title holder or his licencees, to the extent that the Product has

been put on the market elsewhere in a legitimate manner" (WHO, 2002). While this is a great start to the conversation on pharmaceutical patents, it is not accessible enough for all states in the Global South.

1.2. Regulating Bodies

(1.2.1) World Intellectual Property Organization (WIPO)

The World Intellectual Property Organization (WIPO) is responsible for promoting intellectual property protection and administering various multilateral treaties dealing with intellectual property. However, the enforcement of these treaties is conducted by the World Trade Organization (WTO). WTO can enforce intellectual property treaties through trade sanctions against a state. This is because the WTO's Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement introduced rules into the multilateral trading system. Before the TRIPS agreement, there have been many conventions and treaties on intellectual property, as seen above. However, none of them had a way of enforcing compliance beyond the use of the International Court of Justice.

WIPO works with governments and other stakeholders to help states align their legal intellectual property framework with multilaterally negotiated global principles, norms, and practices. WIPO provides legislative advice on ways to update national IP laws to ensure they keep pace with the realities of a rapidly evolving, technology-driven world and legal best practice – all keys to achieving the Sustainable Development Goals ("The Impact of Innovation"). WIPO plays a significant role in developing the international IP legal framework by their administration of 26 international intellectual

property treaties. To effectively handle disputes, WIPO's Arbitration and Mediation Center offers mediation, arbitration, and domain name dispute resolution services between private parties because the World Trade Organization only handles interstate cases (WIPO n.d.). While the UN and other intergovernmental organizations have used soft law techniques for some time, their use by WIPO is a recent development. Soft law meaning the use of hortatory rather than obligatory language. The decision to introduce mediation initiatives to advance the development of intellectual property law is primarily due to the inadequacies of the traditional treaty method described above (Kwakwa 2002, 192).

(1.2.2) World Trade Organization (WTO)

The World Trade Organization (WTO) deals with trade rules between nations and essentially supervises international trade. The World Trade Organization established a framework for trade policies that have significantly impacted the enforcement of international intellectual property treaties. Since the World Trade Organization is the only international organization dealing with the rules of trade between nations, it makes sense that this organization would be the one to develop a mandatory agreement between nations on intellectual property rules. To enforce international intellectual property treaties, the World Trade Organization established the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS).

The WTO is run by around 150 members who make decisions by consensus. The main advantage of making decisions by consensus is that the decisions are more acceptable to all members. The WTO's role concerning the TRIPS Agreement is settling

disputes. WTO members have all agreed to a particular set of rules unanimously. Suppose members believe fellow members are violating trade rules. In that case, it is the hope that states will use the multilateral system of settling disputes (WTO n.d.).When a dispute is brought to the WTO, the preferred solution is for the states concerned to settle the dispute by themselves. Therefore, the first stage of the WTO dispute settlement is consultations between the governments concerned (WTO n.d.). Even when the case has progressed into the more legal court or tribunal stage, consultation and mediation are always an option.

(1.2.3) OAPI

The Organisation Africaine de la Propriété Intellectuelle (OAPI) was created with the Bangui agreement of 1977. The OAPI is responsible for implementing and applying the standard administrative procedures deriving from a uniform system for the protection of industrial property, contributing to the protection of literary and artistic property, encouraging the creation of national associations of authors, and centralizing information of all kinds relating to the protection of literary and artistic property (The Government of the Central African Republic et al. 1977). The current members of the OAPI are: Benin, Burkina Faso, Cameroon, the Central African Republic, Chad, Comoros, the Congo, Côte d'Ivoire, Equatorial Guinea, Gabon, Guinea, Guinea-Bissau, Mali, Mauritania, Niger, Senegal, and Togo (OAPI n.d.). The most distinctive characteristic and advantage of OAPI is that a single trademark registration is automatically effective in all its member-states. This means that the members of the OAPI do not have their own national intellectual property laws.

1.3. Chapter Conclusion

The first chapter of this thesis introduced the historical background and the regulating bodies within the international patent system. It is alleged that a patent is granted to an inventor, not only for the inventor's benefit but also for the benefit of the greater society. There have been problems in every international intellectual property treaty, as can be seen throughout this chapter. Not only are applications for patent protection expensive and unattainable by most nationals of states in the Global South, but patent protection keeps states in the Global South from accessing essential pharmaceutical products. WIPO is responsible for promoting intellectual property protection and helping states align their legal intellectual property framework with the Western idea of private property. Additionally, WTO established a trade framework to enforce international intellectual property treaties. If a state wishes to be a member of the World Trade Organization, the state must submit to the Western ideology of intellectual property.

CHAPTER II LITERATURE REVIEW

2.1. The Debate

Intellectual property is highly complex because different states develop varying intellectual property protection levels in their domestic laws. Developed states are typically in favor of strong intellectual property rights because they try to get the full economic benefits from their intellectual property. Their argument stems from the fact that developed states put in a significant amount of investment in intellectual property development, and they want to protect their investments. In particular, research and development of pharmaceuticals is costly; therefore, the producer wants a return on their investment. On the other hand, developing states are more in favor of lenient intellectual property protection. Developing states argue that because intellectual property advancements typically take place in developed states, they are not benefitting from strict intellectual property protections. In fact, since developing states have to pay high royalties and licensing fees for the use of intellectual property from developed states, developing states view strong intellectual property rights as a tool to deny access to advancements in technology and knowledge.

This chapter examines arguments in favor and against the strengthening of worldwide patent protection, explicitly dealing with the pharmaceutical industry. The argument emphasizes that the pharmaceutical patents in particular promise benefits and costs that would differ depending on who the affected party is of the disease. Some diseases, such as HIV and Malaria, primarily affect the Global South. For these diseases, patents are not a substantial enough incentive to attract pharmaceutical companies to

develop pharmaceutical products since the Global South's purchasing power is too low to make up for the research and development costs. For major global diseases, such as COVID-19, states in the Global South are suffering because of patents. Despite companies with the patents not providing enough vaccines for the Global North, they will not share their patented information with other pharmaceutical companies. In the end, the states that will suffer the most from patents are those that cannot afford to outbid states in the Global North for pharmaceutical innovations.

2.2. Paradigm Shift in Africa

Currently, the global intellectual property regime is facing a paradigm shift. Until the early 2000s, the Western world promoted an intellectual property regime based on American and European protection standards (Idris 2003, 133). This one-size-fits-all regime expected all states, regardless of their socio-economic or cultural differences, to apply the same Western rules. Under this paradigm, each new multilateral intellectual property treaty further increased the protection of all types of intellectual property. While these treaties were not made unilaterally by the West, the West significantly influenced these treaties' creation. France, in particular, generally holds that the freedom of the individual is above the benefit of the greater public interest. This can be found in international intellectual property rights and compliance with international intellectual property treaties because international intellectual property treaties emphasize that individual creative developments have individual ownership. As late as 2003, the WIPO Director-General wrote that IP laws are "an essential component of economic strategy

regardless of whether the country is developed or developing" (Idris 2003, 133). In general, copyright and patent protection laws are reflective of Western ideology.

The history of Western ideology being reflected in the global intellectual property regime can be seen in Africa's former French colonies. In 1999, the sixteen members of the African Organization for Intellectual Property (OAPI) revised the Bangui Agreement intending to comply with the TRIPS agreement a decade ahead of their extended scheduled time (Deere 2008, 240). In revising their joint, regional legal framework for intellectual property protection, the OAPI significantly increased their intellectual property standards. The OAPI even forfeited many of its legal options and safeguards and went beyond the TRIPS agreement's minimum requirements (Deere 2008, 240)

Politicians in Francophone Africa were socialized to confer with France for policy advice and expertise (Deere 2008, 246). Even as some states in the region, such as Senegal, deepened their relationship with the United States to rid themselves of the French influence, they aligned themselves intellectually with another rich and powerful state. In addition to being aligned with powerful states in the West, states in Francophone Africa are dependent on foreign aid. Most of the OAPI states are heavily dependent on development assistance from France, the International Development Association (IDA), and the European Union (Deere, 2008, 267). Foreign influence plays a role, but things like low literacy rates keep many people in the OAPI states from participating in policy debates. Therefore, the OAPI states are at a high risk of being vulnerable to external pressure regarding intellectual property treaties such as TRIPS.

NGO critics attribute the swift strengthening of intellectual property rights to pressure on OAPI members from powerful international actors such as WIPO, France, and multinational corporations (Deere 2008, 241). Médecins Sans Frontières (MSF) even went as far as to say that the revised agreement was “inspired by the World Intellectual Property Organization whose budget is partially funded by industrialists” and “revised under pressure exerted by pharmaceutical industries of the North” (Deere 2008, 241). Before the colonization of states in Francophone Africa, indigenous concepts, laws, and enforcement mechanisms were operated on a tribal basis (Deere, 2008, 249). Many of the new legal rights and customs imposed upon these African states by the major former colonial powers in the region focused on individual rights and ownership. In France, in particular, intellectual property rights had been considered without question one of man's natural rights. Nevertheless, these new laws directly opposed the tribal customs of community rights and collective heritage. Until the mid-to-late nineties, patent rights for the OAPI region were governed by the French Institut national de la propriété Industrielle (INIP) in France. African natives had virtually no access to any part of the intellectual property system, leaving them with a continued reliance on external actors, namely France, in making decisions on intellectual property (Deere 2008, 249). Despite the decolonization of Francophone Africa from France, the African region remains economically, politically, and intellectually dependent on France and foreign donors at large (Deere 2008, 245). When France left Francophone Africa, they left fixed marks on their political, educational, and linguistic choices.

Global IP monopoly holding firms have “ruthlessly outsourced manufacturing across the planet to reduce labor and regulation costs” (David and Halbert 2015). For example, a handbag designed in France can be manufactured in China for a fraction of the cost and then shipped back to France to be sold at a price only an authentic trademark-branded item can command. Pharmaceutical companies use this tactic as well. "The nature of their business gives drug makers techniques, like sheltering valuable pharmaceutical patents in tax-friendly havens like Ireland, that many other industries cannot use" (Berenson 2007). There is a long history of Francophone African IP rights being owned by non-African firms. The majority of the patents registered in the region belong to pharmaceutical and medicinal purposes to secure an import monopoly (Deere 2008, 244).

2.3. Anti-Patent Movement

A milestone in the evolution of the patent law was the large-scale anti-patent movement from 1850-1907. During this period, patents and tariffs were attacked by free traders since both patents and tariffs reduce the market's openness (Clay 2011). In Germany, patent laws deemed as "injurious to common welfare" were abolished by Chancellor Otto von Bismarck (Mgbeoji 2003). Similarly, proposals for a patent system in Switzerland were rejected four times between 1849 and 1863. Leading economists in Switzerland characterized the patent system as "pernicious and indefensible" (Mgbeoji 2003). The Netherlands further repealed their patent laws in 1869 (Mgbeoji 2003). The Netherlands and Switzerland cases show that industrialization does not have to be linked to strong intellectual property protections.

One may argue that the Dutch company in question kept the recipe a secret since reverse engineering is often difficult or unsuccessful. Pharmaceutical companies still have this option even if the legislation for intellectual property is revised and partly explains how successful companies operated without patents. In that sense, intellectual property rights are perhaps more open to regulation and allow governments to limit or otherwise mitigate the temporary monopoly of a patent.

However, without the restraints of the intellectual monopoly system at play today, competition would motivate innovation and break up monopolies. The idea would still need to be purchased from the innovator, but for a smaller amount than the current patent price. Lack of restraints on intellectual property reproduction would continue to be beneficial to the innovator because the copied idea would still need to be purchased from the original creator. Patents and copyrights tell people what they can and cannot do with a given property. Therefore, without the limitations of intellectual property rights, there is more imitation. But imitation is socially beneficial to the greater society. Increased competition due to imitation encourages collaboration which is the foundation for innovation.

(2.3.1) The Case of the Netherlands

The 1870-1914 period is regarded as the period in which the Netherlands became an industrialized state (Schiff[1] 1971). This period coincides with the absence of patent protection in the state. The Netherlands abolished its patent system in 1869, reflecting a

[1]*Industrialization without national patents: the Netherlands, 1869-1912; Switzerland, 1850-1907* by Eric Schiff is the main cited text dealing with industrialization and national patents. This book is also the main text that describes the Second Industrial Revolution through the lens of the Netherlands and Switzerland.

common view of patents as a form of restriction on trade (Schiff 1971). During this period, there was an impressive level of overall development and industrialization.

In 1871, the first margarine factory was founded in the Netherlands, using an invention originally patented in France. A French chemist Mège Mouriès shared the process of producing margarine with Dutch butter merchant Jurgens. Jurgens shared a margarine sample with his butter competitor, van den Bergh, and van den Bergh began to manufacture margarine. After this split, van den Bergh continued to improve the margarine recipe but kept his improvements a secret. This trade secret allowed both van den Bergh and Jurgens to continue to produce margarine, but in the end, Jurgens was not able to reverse-engineer the improvements van den Bergh made (52-58, Schiff 1971). During the patentless period, the output trend was upward in quality and quantity (58, Schiff 1971). The Netherlands margarine factory's story demonstrates how the lack of patents did not stifle industrialization or development.

(2.3.2) The Case of Switzerland

The absence of patent protection in Switzerland has not hampered their industrialization. As is mentioned above, several proposals to introduce a patent law were rejected. The argument used was that “a patent monopoly would violate the principle of equal justice under law” (87, Schiff 1971). Two major industries, textile and chemical, felt that a patent law's harmful effects would outweigh the beneficial ones. In the Zurich Congress of 1883, the textile industry reasoned that the industry was not ready to face prospective patent protection risks. During this same meeting, the chemical industry insisted on being left outside the scope of the prospective patent law because Switzerland

would grant patents to foreign chemical industries that the local industry could not compete with (92, Schiff 1971).

The arguments in favor of keeping Switzerland a patentless state were not without historical evidence of the period's growth without patents. Cotton spinning and weaving was the state's most important industry. According to a report on the Paris World's Fair of 1889, Swiss knitting machines were to take first place for product value, export volume, and the number of workers employed (99, Schiff 1971). Not hampered by Swiss patents on the English invention, in 1859, Alexander Clave founded a silk dyeing factory in Basel. From this small factory emerged the Chemische Industrie in Basel (CIBA) in 1884 (100 Schiff 1971). Schiff (1971) concludes that "no nation, large or small, with or without a patent system, has contributed as many basic inventions as did Switzerland during her patentless period" (110). Among the most important Swiss industries developed during the patentless period are the chemical, textile, chocolate, soup, baby food, and perfume industry.

2.4. Challenging Pharmaceutical Patents

(2.4.1) India v. Novartis

States in which drugs are relatively cheap, such as India, face another kind of challenge: attempts to overturn the laws that make those drugs accessible. Novartis, the Swiss pharmaceutical giant, fought a decade-long battle to secure India's monopoly control over its treatment for leukemia. Novartis tried to have a key provision of Indian patent law struck down as unconstitutional in the process. However, "International legal rules accepted by India, in particular, the WTO TRIPS Agreement, provide sufficient

leeway or flexibility in the adoption of patenting standards to allow the approach adopted by the Indian Parliament" (Abbott 2013).

As part of a series of amendments to the India Patents Act that took effect on January 1, 2005, the Parliament of India adopted Section 3(d) (Abbott 2013). Section 3(d) was with the stated purpose of addressing concerns that the introduction of a pharmaceutical product patent protection would inhibit the availability of medicines for India and developing states more generally. Nevertheless, in 2007, Novartis challenged the provision's constitutionality and its compatibility with the TRIPS agreement. The High Court of Madras rejected this challenge. In April 2013, Novartis appealed again to India's Supreme Court against rejection by the India Patent Office of a product patent application for a specific compound. The Supreme Court of India affirmed the rejection stating that Novartis failed to prove significant development of new compounds. "For India, a patent applicant must not only show that a new form of known compound is different from an old form, but that the modification will result in an improvement in the treatment of the patient" (Abbott 2013).

The decision “received severe criticism from a number of originator pharmaceutical companies, including Novartis, and from the US Chamber of Commerce” (Abbott 2013). Though this was expected as the United States Chamber of Commerce represents the interests of American businesses who support strong intellectual property protections. The Federal Court of India rationalizes their practice of rejecting patents that do not demonstrate a significant therapeutic effect and encourages the development of new compounds, therefore encouraging innovation (Abbott 2013). The theory is that

“granting patents after researchers have demonstrated that drugs will accomplish something significant in terms of curative effect will encourage researchers to concentrate on achieving desirable end results, rather than winning marketing games” (Abbott 2013). The intellectual property protections in India reflect patients' interests rather than the interests of the shareholders of multinational corporations.

2.5. Access to HIV/AIDS treatment

Currently, most people in high-income states live beyond the age of 70 and die of chronic diseases. These are also leading causes of death in middle-income states, along with tuberculosis, HIV/AIDS, and road traffic accidents. However, in low-income states, people predominantly die of infectious diseases, and more than a third of all deaths are among persons aged under 15 (WIPO, 2012). Concerning access to medications for HIV, TB, and malaria, the Commission on Human Rights has also stressed the need for member states to make full use of the flexibilities under the TRIPS Agreement in their national legislations (WIPO, 2012). Immediately after the TRIPS Agreement came into effect, member states in the WHO discussed its potential impact on public health and requested the WHO Director-General "to report on the impact of the work of the World Trade Organization (WTO) with respect to national drug policies and essential drugs and make recommendations for collaboration between WTO and WHO, as appropriate" (WIPO, 2012). Since then, the interface of public health, IP, and trade has been the subject of many debates and resolutions that reflect a growing consensus over the years.

The challenge with the AIDS epidemic today is that despite the increases in money raised and global acknowledgment of AIDS, the treatments are not accessible to

developing nations because of high production and pharmaceutical patent costs. Global statistics and statistics from this research show clearly that the burden of AIDS falls greatest on Africa. When the epidemic exploded in the 1990s, Africa was hit the hardest because of its lack of access to the medications that came out to slow the AIDS crisis. Without treatment, it typically takes nine to eleven years for the HIV infection to progress to full-blown AIDS (Steinbrook et al., 2004).

"Even today, more than 12 million people still do not have access to HIV treatment, and 1.7 million people became infected with HIV in 2019 because they did not have access to essential HIV services" (UNAIDS, 2020). In 2019, only 61% of adults (aged 15+) living with HIV in Western and Central Africa could access antiretroviral therapy. This is compared to the 81% of adults living with HIV in Western and Central Europe and North America that have access to antiretroviral therapy in 2019. (Global HIV & AIDS statistics - 2020 fact sheet).

Table 1. Percentage of AIDS-Related Deaths Out of Total Deaths Compared to Life Expectancy in Côte d'Ivoire by Year

Year	HIV/AIDS Death per 100,000	AIDS-related deaths	Life Expectancy	Antiretroviral therapy coverage (% of people living with HIV)	Population
2010	185.93	27000	51.5	16	20532950
2015	114.07	21000	54.7	35	23226143
2019-2019		13000	57.3	63	25716544

(Côte d'Ivoire | UNAIDS n.d.), (Antiretroviral therapy coverage (% of people living with HIV) | Data n.d.)

Table 2. Percentage of AIDS-Related Deaths Out of Total Deaths Compared to Life Expectancy in Senegal by Year

Year	HIV/AIDS Death per 100,000	AIDS-related deaths	Life Expectancy	Antiretroviral therapy coverage (% of people living with HIV)	Population
2010	26.82	1600	62	27	12678148
2015	18.85	1800	65.6	43	14578459
2019-2021		1200	67.35	70	16296364

(Senegal | UNAIDS n.d.), (Antiretroviral therapy coverage (% of people living with HIV) | Data n.d.)

It is clear to see the direct link between HIV/AIDS-related deaths and life expectancy through these former French colony African states. With an increase in AIDS-related deaths, there is a decrease in life expectancy in all cases. The decrease in AIDS-related deaths in Senegal and Côte d'Ivoire can be attributed to the increase in generics production plants being opened in Africa and the increase in antiretroviral therapy coverage of the population.

Concerning the HIV/AIDS epidemic, the UN General Assembly has passed several resolutions on protecting the human rights of people living with HIV and improving access to HIV treatment. In the 2030 Sustainable Development Goals, many goals advance the protection of people living with HIV. In particular, Goal 17: strengthen means of implementation, advocates for "the reform of patent laws and regulatory systems, full use of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) flexibilities, monitoring free-trade agreement negotiations and taking legal action" (UNAIDS SDGs). Strengthening the means of implementation through the public health flexibilities included in the TRIPS agreement and confirmed by the Doha

Declaration shows that the United Nations acknowledges that strong intellectual property protection limits states' capacity to provide HIV/AIDS treatment.

2.6. Chapter Conclusion

The second chapter of this thesis critically reviewed the literature on the intellectual property system and its relation to pharmaceutical patents. The main argument of this chapter is that international pharmaceutical patents deny states in the Global South access to vital medicines and medicinal technology. Pharmaceutical companies would instead protect their intellectual property for profit purposes than save more lives. Nevertheless, states should not allow companies to deny access to those suffering from curable diseases. Also, strong intellectual property protection is not necessary for development. The vast majority of successful economies developed when patents were seen as detrimental to the free market. Examples can be seen in Switzerland and the Netherlands which developed significant industries during their patentless periods.

CHAPTER III CASES

France is an outlier in the European Union for having such a strong intellectual property rights regime (Levy-Carciente and Montanari 2020).

The Global Intellectual Property Center (GIPC) index aggregates data from an abundance of sources and can quantify a state's enforcement level based on 45 indicators. The team that produces this annual index introduces new indicators and new visuals to their report every year. This index is the most up-to-date and easy-to-use data tool to determine a state's level of enforcement of intellectual property rights, which indicates their overall level of strength of intellectual property protection. France is ranked 3rd out of the 53 states ranked on the GIPC index (GIPC France 2020). This ranking indicates that France's overall intellectual property environment is incredibly strong and sophisticated.

The Property Rights Alliance is a more comprehensive International Property Rights Index (IPRI) that covers 129 states. It represents 93.91% of the world population and 97.72% of the world GDP. The 2020 Index examines the robust relationship between property rights and other economic and social indicators of well-being, including – gender equality, entrepreneurship, research and development, human development, civic activism, and measures of internet connectedness (Levy-Carciente and Montanari 2020). Compared with the other states in the European Union, France's intellectual property rights score is nearly 1 point higher than the average European Union score (Levy-Carciente and Montanari 2020). Whereas France is an advocate for the protection of pharmaceutical patents, France’s former colonies are in need of less stringent protections.

But with the special relationship France has with Senegal and Côte d'Ivoire, it is not surprising these states feel compelled to strengthen their intellectual property regime.

On the IPRI by the Property Rights Alliance, Senegal has an overall intellectual property rights score of 4.598, and Côte d'Ivoire has an overall intellectual property rights score of 4.225. This score reflects the strength of a state's patent and copyright laws from a de jure and a de facto perspective (Levy-Carciente and Montanari 2020). The grading scale of the IPRI ranges from [0 – 10], where 10 is the highest value of a property rights system and 0 is the lowest value (or most negative) for a property rights system within a state perspective (Levy-Carciente and Montanari 2020). The average intellectual property rights score of 129 states in 2020 was 5.545. The states in the Global North typically ranged between 6 and 8 whereas the states in the Global South typically ranged between 4 and 6. The difference in intellectual property protection and its relationship with development is visibly shown by the IPRI report.

The IPRI also evaluates the correlation between the strength of intellectual property rights and improving citizens' quality of life. The first measure of the quality of life is a productive drive. GDP per capita has a strong correlation, while the influx of foreign direct investment has a weak correlation with the strength of intellectual property rights (Levy-Carciente and Montanari 2020). Some argue that a significant correlation between GDP per capita and strong intellectual property rights would indicate stronger intellectual property protections stimulate the economy and innovation. However, it is because strong intellectual property rights are encouraged by the Global North that this correlation exists. It is not that a more aggressive intellectual property rights regime

increases GDP per capita, but rather that the states with the highest GDP per capita are the same states who favor the protection of an individual's intellectual property.

Another measure of the quality of life is health quality. Not unlike GDP per capita, there is a substantial correlation between strong intellectual property rights and human health because of the Global North. It is not that a strict intellectual property rights regime increases citizens' health in a state. Instead, the states in the Global North have a capable health system, innovation in the health area, and rigid intellectual property rights. In summary, health quality and quality of life correlate with a high level of intellectual property regulations, but the regime does not cause an increase in these areas.

3.1. Application to Case Studies

Patents played a significant role in the affordable access to antiretrovirals used to treat AIDS. When a pharmaceutical company has the patent for a medicine, that pharmaceutical company has a monopoly over the product and production process for years. Patents are territorial rights, but in the African states that are a party to the OAPI, there is a single application to obtain a patent in all of the states. In the 1990s, South Africa wanted to authorize parallel imports of medicines to treat AIDS from states where prices were low. South Africa wanted to encourage the use of generics to make these medicines more accessible to states in the Global South (Soustras 2020). “At the time, Bristol-Myers Squibb (US), GlaxoSmithKline (UK) and Boehringer Ingelheim (Germany) held the patents for the antiretrovirals used to treat the disease” (Soustras 2020). In the Global North, these pharmaceutical companies felt this use of parallel importing would lead to the production of counterfeit and illicit medicines. So "[w]ith the

support of 30 other large pharmaceutical companies, they filed a suit against the South African government at the World Trade Organization, for infringement of intellectual property rights" (Soustras 2020). Finally, in September of 2000, Indian manufacturer Cipla offered antiretrovirals at a low cost (Soustras 2020).

WIPO organized an online questionnaire to identify the challenges African states experience in applying TRIPS flexibilities to meet public health needs. "The most often cited challenge in the survey was insufficiency or no local manufacturing capacity to produce generic pharmaceutical products in relation to the use of compulsory licensing" (Motari et al., 2021). "In 2018 Africare opened its first generics production plant in Africa in Cameroon, followed by another in Côte d'Ivoire. It plans to establish operations in Burkina Faso, Ethiopia and Zimbabwe" (Levy-Carciente and Montanari 2020). However, African manufacturers still depend on Indian suppliers for active ingredients and Chinese suppliers for fine chemicals. Therefore, the price of the products produced in Africa cannot compete with medicines imported from outside Africa (Levy-Carciente and Montanari 2020). Multinational pharmaceutical corporations have taken advantage of this and the opportunity to produce products in a tax-friendly haven by opening generics factories in the Global South. One case, in particular, is Chinese giant Fosun Pharma. "[this company] hopes to obtain WHO certification for a generics factory in Côte d'Ivoire that will cost $75m" (Levy-Carciente and Montanari 2020).

Table 3. Cost of Pharmaceutical Imports as a Percentage of Total Imports by Year in Côte d'Ivoire

Year	Pharmaceutical Products and Goods (US$)	Total Goods Imports (US$)	% of Total Imports (US$)
2010	$240,107,025	$7,796,000,000.00	3.08%
2015	$300,291,307	$8,565,000,000.00	3.51%
2018	$389,976,397	$9,463,000,000.00	4.12%

(Download trade data | UN Comtrade: International Trade Statistics n.d.)
(Goods imports (BoP, current US$) - Cote d'Ivoire, Senegal | Data n.d.)

Table 4. Cost of Pharmaceutical Imports as a Percentage of Total Imports by Year in Senegal

Year	Pharmaceutical Products and Goods (US$)	Total Goods Imports (US$)	% of Total Imports (US$)
2010	$136,324,675	$4,086,000,000.00	3.34%
2015	$181,546,440	$4,979,000,000.00	3.65%
2018	$245,350,821	$7,262,000,000.00	3.38%

(Download trade data | UN Comtrade: International Trade Statistics n.d.)
(Goods imports (BoP, current US$) - Cote d'Ivoire, Senegal | Data n.d.)

It is clear to see from this data set that pharmaceutical products and goods make up a sizeable percentage of the total cost of imported goods. Unfortunately, in low- and middle-income states, out-of-pocket expenditure is incredibly high. This highlights the difference between low- and middle-income states and high-income states. In high-income states, most people are concerned with the quality of health services, whereas the people of low- and middle-income states are engrossed with what essential medicines they can afford.

3.2. Côte D'Ivoire

(3.2.1) Economic Relationship with France

After the fall of the French colonial empire in the 1960s, France retained many of colonialism's benefits. The French sphere of influence in Africa referred to as françafrique, explains the strong cultural, political, and economic relationship found in former French colonies. Like many former French colonies in Africa, Côte d'Ivoire continues to have a nearly codependent relationship with France. Côte d'Ivoire is France's leading trade partner in the CFA franc zone and the third largest in sub-Saharan Africa (étrangères n.d.). Additionally, France is the second largest trading partner of Côte d'Ivoire (étrangères n.d.). In terms of states in sub-Saharan Africa, France has the most active relationship with Côte d'Ivoire. There are nearly 700 French companies in Côte d'Ivoire accounting for about 30% of Côte d'Ivoire's GDP (étrangères n.d.).

The CFA franc zone contributes to the close economic relationship Côte d'Ivoire has with France today. "The CFA franc rate was fixed to French currency, and African member countries were required to store 50% of their currency reserves with France" (McGowan 2020). This requirement to store 50% of their currency reserves with France shows France's continued economic control during the Françafrique years. This requirement was only recently going to be changed with the introduction of the new currency ECO. However, the implementation of the Eco could be delayed by five years due to the impact of the Coronavirus pandemic (Mandisa Xuba 2021).

(3.2.2) Intellectual Property Regime

Côte d'Ivoire is a signatory to the Paris Convention, the Patent Cooperation Treaty, and the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). It has also signed the Bangui Agreement establishing the African Intellectual Property Organization (OAPI) (Ogada et al. 2020). Although many of the signatory states of the OAPI fall under the Least Developed Countries category, Côte d'Ivoire is an exception. This means that Côte d'Ivoire does not have the same opportunity as other OAPI states to continue the TRIPS Agreement's transition period until 2033.

Côte d'Ivoire does not have a specific national intellectual property regime as they are a member state of the OAPI. This membership obliges them to meet the standards as defined by the Bangui Agreement. The membership in the OAPI also means that Côte d'Ivoire has shifted the responsibility of patent applications to the OAPI office located in Yaoundé, Cameroon (Ogada 2020, 59).

(3.2.3) National Pharmaceutical Industry

The history of political and military conflict in Côte d'Ivoire led to the underinvestment in the state's health. Since the conclusion of the conflict, the Ivorian government has made an effort to invest in the state's health care services and the facilities to produce generic medicines. Despite this investment, most Ivorians have limited access to care due to the high cost. This has led to "as many as 80% of Ivorians…turning to traditional medicine" (How Côte d'Ivoire is improving access and quality of health care 2020). While traditional medicine is not always substandard, there is a significant problem with counterfeit medications in this sector. The investment in the

national pharmaceutical industry and the universal health coverage will give many people access to medications they would not be able to afford otherwise and hopefully phase out the counterfeit medicine market.

(i.) Challenges

As of 2017, "the proportion of local pharmaceutical production stood between 7% and 10%" (Infrastructure investment and pharmaceutical regulation implemented in Côte d'Ivoire 2018). This rate is well below the proportion of local pharmaceutical production in neighboring states such as Nigeria and Ghana who have an average rate above 30% (Infrastructure investment and pharmaceutical regulation implemented in Côte d'Ivoire 2018). There are a few national policies to help facilitate the national pharmaceutical industry's development in Côte d'Ivoire.

One of the most fundamental challenges the pharmaceutical industry in Côte d'Ivoire faces is the shortage of skilled labor. The pharmaceutical industry requires a range of specialized skills in various disciplines. The latest data from the World Bank indicates that in 2014 only 5.3 percent of the population 25+ at least complete short-cycle tertiary education (Educational attainment, at least completed short-cycle tertiary, population 25+, total (%) (cumulative) - Cote d'Ivoire | Data n.d.). This presents a major obstacle to the local pharmaceutical industry's growth as local manufacturers are forced to call on industrial pharmacists and technicians trained in Western states to fill this gap. In addition to the lack of the population with skills for manufacturing pharmaceuticals, there is a lack of health care workers to distribute lifesaving medicine.

The number of physicians per 10,000 inhabitants is 1.4, below the regional average of 2.7 physicians per 10,000 inhabitants (Barańczuk et al., 2016).

The national preference agreement prevents medicines with the same active ingredient, formula, and dosage as those manufactured locally from being imported. However, "following the devaluation of the FCFA, this agreement is only applicable in a situation where the price of the drug does not exceed the imported one by more than 16%" (Ogada 2020, 16). This becomes a significant issue because the cost to produce medicine in Côte d'Ivoire is typically very high as the industry has to import all of the chemical components and raw materials (Ogada 2020, 23). CIPHARM, a pharmaceutical company based in Côte d'Ivoire, "has to import raw materials worth CFAF 2 billion from abroad on a highly speculative international market. Once in port, these raw materials can be blocked for several days" (Ogada 2020, 86). This affects the price of the drugs produced in Côte d'Ivoire and the amount of time it takes to produce the drugs. This challenge makes importing medicine a much more attractive option when accounting for cost efficiency and demand.

Further, the national pharmaceutical industry lacks the ability to honor the volume of medicine ordered by the New Public Health Pharmacy of Côte d'Ivoire (NPCP-CI). The NPCP-CI's is responsible for centralizing, scheduling, and purchasing technical equipment and pharmaceutical products necessary for the operation of public or private health facilities (La Nouvelle Pharmacie de la Santé Publique de Côte d'Ivoire n.d.). Since the NPCP-CI provides pharmaceuticals to all of Côte d'Ivoire's public health establishments, they need many pharmaceutical products to supply the health facilities.

There are only eight local production facilities, mainly small laboratories (How Côte d'Ivoire is improving access and quality of health care 2020). The leading pharmaceutical facility is CIPHARM which accounts for about 60% of local pharmaceutical production (Ogada 2020, 2). To provide enough cost-efficient medicines to the state, “Côte d’Ivoire currently imports 94% of its pharmaceuticals" (The impact of Côte d’Ivoire’s universal health coverage 2020). There is hope for the future of the state as they recently adopted universal health coverage. “In 2013, only 3–4% of the population had health insurance. In March 2014, the state adopted the Universal Health Care Law, which they plan to progressively implement between 2015 and 2019” (Barańczuk et al. 2016). This coverage will be a driver for the local pharmaceutical industry's development as it will lead to an increase in demand for high-quality medicines. It will not be possible to meet all of the demands of a successful universal health coverage system without a more efficient local production of generic medicines. All in all, the Ivoirian pharmaceutical industry does not benefit nearly enough from the national preference agreement because of their lack of competitiveness with imported medicines.

Not only is the cost of producing pharmaceuticals in Côte d’Ivoire a challenge, but adhering to the manufacturing and safety standards set up by the World Health Organization is also a challenge to the national pharmaceutical industry. “none of the pharmaceutical manufacturing companies has so far been able to obtain WHO prequalification or Good Manufacturing Practices (GMP) certification for a given product” (Ogada 2020, 33). This certification of a product allows pharmaceutical industries to sell their products to donors that require that companies have international

certification. This lack of certification disqualifies the local pharmaceutical industry of Côte d'Ivoire from even exporting generic pharmaceuticals produced to help other African states.

(ii) Tax Incentives to promote investment

Some other incentives to promote local pharmaceutical manufacturing include tax exemptions and tax credits. The investment code of 2018 includes tax exemptions ranging from 50% to 75% over five to fifteen years and tax credits determined as a percentage of the amount invested ranging between 25% and 50% (Kebe 2019). This updated investment code urges international investors to rely on local companies to undertake their operations. Foreign companies are even eligible for an additional tax credit of 2% if "the number of Ivorian executives and supervisory staff represents 90% of the total workforce in these two categories of employees" (Kebe 2019).

The 2019 tax schedule "exempts pharmaceutical companies from Customs duties and VAT, the acquisition of needed equipment, materials and tools with their spare parts, and the inputs that are necessary for both the manufacturing and packaging of medicines" (Côte d'Ivoire introduces new tax incentives 2020). This tax exemption hopes to increase interest in the installation of drug manufacturing facilities in Côte d'Ivoire. By gaining international investment in the building of drug manufacturing facilities, it will reduce the need for national investment in building facilities. The money can be allocated to another aspect of developing the national pharmaceutical industry.

(3.2.4) Côte d'Ivoire and HIV

Between 2002 and 2007, the number of HIV-infected patients receiving antiretroviral therapy increased from 3000 to 30,000 in Côte d'Ivoire (Toure et al. 2008). The main factor in HIV-infected patients not receiving antiretroviral therapy is adherence to taking the medication regularly. Many of the obstacles involved with adherence are, unfortunately, external economic and political barriers.

One logical obstacle to the adherence of regularly taking antiretroviral therapy is receiving the medication on time. During the political and social crises between 2002 and 2010, over half of all state health centers were closed (Barańczuk et al., 2016). The import and distribution of enough antiretroviral therapy are not reliable, especially during political instability. In 2011, "The street protests, blockades and other problems have disrupted the supply of antiretrovirals (ARVs) in different areas" (Côte d'Ivoire: Political crisis affects supply of ARVs n.d.). Before this case of protests physically blocking access for people to reach health centers to receive their medication, there have been shortages of antiretroviral therapy in Côte d'Ivoire. In 2005, Ivorians living with HIV/AIDS were hit by a three-month break in supplies (Côte d'Ivoire: Political crisis affects supply of ARVs n.d.). In a study done between 2006 and 2007 in Abidjan, Côte d'Ivoire, it was found that drug stock-outs heavily impacted the retention to care among HIV-infected patients. In particular, "Drug stock-outs led to 72 prolonged treatment discontinuations and 98 regimen modifications, representing 11% of the 1,554 patients who started cART between February 1, 2006, and February 1, 2007. These stock-outs were responsible for 9% of all cART discontinuations and 30% of all cART regimen

modifications" (Pasquet et al. 2010). Overall, it is clear to see how big an impact lack of stock has on antiretroviral therapy's continued use.

Even with subsidized prices, patients were still unable to afford the cost of antiretroviral therapy. During the study conducted in March 2002, families with less than US $50 per month were given a subsidized monthly package price of US $7.50 (Eholié et al. 2007). One of the most frequent self-reported reasons for a patient missing one or more pills during this study was lack of money (20%) (Eholié et al. 2007). The pilot program RETRO-CI in Côte d'Ivoire suggests that once the state overcomes financial barriers to access to drugs, adherence to antiretroviral therapy can be as high as adherence observed in industrialized states (Katzenstein, Laga, and Moatti 2003). During the HIV/AIDS crisis, restrictive patent laws led to higher prices of antiretroviral therapies. "Between 1996 and 2000 prices of ARVs were lower in Côte d'Ivoire where the Public Health Pharmacy introduced a tender mechanism open to all international suppliers, including generic producers than in Uganda where procurement was restricted to a private, not-for-profit company (Medical Access Uganda Ltd.) which represented the interests of international patent-holding companies" (Katzenstein, Laga, and Moatti 2003). This quote shows how much access to generic producers can significantly affect the efficacy of reducing costs for essential medicines in Côte d'Ivoire.

3.3. Senegal

(3.3.1) Economic Relationship with France

"France's oldest relationship in sub-Saharan Africa is with Senegal. The French presence in Senegal dates from the 17th century" (Chafer 2013). However, in more recent

years, the Franco-Senegalese economic relationship has shifted. "while in 2003 90% of firms in the industrial sector were subsidiaries of French companies, the proportion had declined to 75-80% by 2012" (Chafer 2013). Despite this, this close relationship still extends into the Senegalese gross domestic product. French companies continue to account for 25% of GDP and tax revenues (Ministère de l'Europe et des Affaires 2020). Similar to many former French colonies in Africa, France remains the top investor in Senegal. Since 2000, the AFD has committed more than €1.5 billion in funding in Senegal. (Ministère de l'Europe et des Affaires 2020). In 2010 alone, France was the major foreign investor in Senegal with EUR 719 million, almost half of Senegal's total foreign direct investment (FDI)" (Chafer 2013).

Despite Senegalese efforts to diversify their investment and supply sources, France still has a stronghold on the state. Not only is France still the top investor in Senegal, but France is also Senegal's number one trading partner (Ministère de l'Europe et des Affaires 2020). In 2011, the value of French exports to Senegal was EUR 887 million, whereas French imports from Senegal were EUR 96 million (Chafer 2013). This data means France's trade surplus with Senegal in 2011 was EUR 791 million and was France's most significant trade surplus in sub-Saharan Africa (Chafer 2013).

(3.3.2) Intellectual Property Regime

Senegal is a signatory to the Paris Convention, the Patent Cooperation Treaty, and the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). It has also signed the Bangui Agreement establishing the African Intellectual Property Organization (OAPI). "After Mali and Gabon, Senegal is the third state to ratify through

its parliament the Bangui Agreement" (Ogada et al. 2020). Although many of the signatory states of the OAPI fall under the Least Developed Countries category, Senegal is an exception. This means that Senegal does not have the same opportunity as other OAPI states to continue the TRIPS Agreement's transition period until 2033.

Senegal does not have a specific national intellectual property regime as they are a member state of the OAPI. This membership obliges them to meet the standards as defined by the Bangui Agreement. The membership in the OAPI also means that Senegal has shifted the responsibility of patent applications to the OAPI office located in Yaoundé, Cameroon (Ogada 2020, 59).

(3.3.3) National Pharmaceutical Industry

The national pharmaceutical industry of Senegal is still underdeveloped despite continued investment in the industry. Similar to Côte d'Ivoire, Senegal has a national public pharmacy. The National Pharmacy Supply (PNA) monopolizes the supply, storage, and distribution of essential drugs and medicines to the state's public health establishments. The lead regulatory agency in Senegal is the Direction de la Pharmacie et Medicament (DPM). This agency is responsible for many things but most important to this research is that it issues authorizations to import or manufacture pharmaceutical products (Brunner et al. 2016).

Senegal is also only home to five local pharmaceutical manufacturers: Winthrop Pharma Sénégal, Pfizer, Valdafrique, West Africa Pharma and l'Institut Pasteur de Dakar (Brunner et al. 2016). Senegal's local pharmaceutical industry exports to other states in West Africa, but similar to their relationship with France, the imports far exceed the

value of exports. In 2011 the value of exports was US $11.2 million while the imports peaked at US $167.2 million (Brunner et al. 2016).

(i.) Challenges

Similar to Côte d'Ivoire, Senegal struggles to meet the pharmaceutical needs of the state. "The local pharmaceutical industry only meets 10 to 15% of the state's drug needs" (Ogada 2020, 2). The national industry has been stalled by high production costs and raw material taxes. Compared to international competition, the national industry cannot produce drugs at a more cost-efficient price even though the pharmaceuticals produced by international companies are not affordable.

There are currently two programs set up in Senegal to support the local pharmaceutical industry. In 2017, one of these programs was established to create a set of product contracts that local pharmaceutical industries could bid on first. "For that purpose, a list of 60 products has been established, and only the local industries had the right to bid with a contract over 3 years to the winner" (Ogada 2020, 20). This operation was met with a major challenge. The local pharmaceutical industries did not have the capabilities to produce the 60 requested products. "Even with the advantage of being in close proximity to the market, the constraints of high utility costs (e.g., electricity, relatively higher labor costs, basic materials) make it cheaper to import mostly Asian products" (Brunner et al. 2016).

In the past, the PNA has relied on the national Treasury to purchase pharmaceutical drugs on the international market. This reliance has caused major issues in delays in payment and further delays in obtaining pharmaceutical drugs (Brunner et al.,

2016). This causes significant issues with the HIV/AIDS community as access to antiretroviral therapy is unreliable and causes people to miss doses of this vital medication unintentionally. If HIV/AIDS patients are to benefit from the ART program, they need to be supplied with ARVs without interruptions in the treatment for the rest of their lives" (Kyomuhangi 2005). This inability to make payments on time to the PNA's international suppliers has also reduced Senegal's ability to attract suppliers who offer high-quality pharmaceuticals at a cost-efficient price (Brunner et al., 2016).

Another challenge the pharmaceutical industry in Senegal faces is a lack of human resources for the health sector in general. The majority of the health workers in Senegal lie in the major city of Dakar. “Whereas the Dakar region has 0.2 physicians per 1,000 inhabitants, the Fatick, Kaolack, Kolda, and Matam regions have fewer than 0.04 physicians per 1,000 inhabitants” (Brunner et al. 2016).

(3.3.4) Senegal and HIV

As seen in the table (Table 1) above, the prevalence of HIV in Senegal is much lower than that in Côte d'Ivoire. The low number of people with HIV in Senegal is mainly due to the leadership on treatment issues. In 1998, Senegal was the first sub-Saharan African state to establish an antiretroviral treatment program (Brunner et al. 2016). However, due to the lack of health workers outside of the Dakar region, access to treatment remains limited to Dakar and other urban areas. Additionally, with the low prevalence of HIV compared to other sub-Saharan African states, HIV funding from international donors is limited (Brunner et al. 2016).

In 2003, the annual cost of HAART (Highly active antiretroviral therapy) was higher than the average GDP per capita (Katzenstein, Laga, and Moatti 2003). These high prices led to the December of 2003 decision for the PNA to provide ARV treatment free of charge. Although Senegal is one of the few African states that provide free ARV treatment, diagnosis and treatments for opportunistic infections still require fees that present a barrier for many in Senegal (Brunner et al. 2016). An additional barrier to treatment is the high level of stigma associated with getting tested. Though Senegal offers free HIV testing, many people prefer testing in the private sector. This preference comes with an additional fee that makes it inaccessible to much of the population.

3.4. Chapter Conclusion

The third chapter of this thesis discussed the relationship between patent protection strength and access to essential HIV antiretroviral therapy. Through the lens of the AIDS crisis in Côte D'Ivoire and Senegal, this thesis proves many challenges the international community must address to give low-income states access to cost-efficient pharmaceutical products. States in the Global North, France in particular, link trade with high intellectual property protection. This linkage makes it impossible for Cote d'Ivoire and Senegal to have a weak intellectual property protection regime because France still has a stronghold on these states' economies. The robust international intellectual property regime makes pharmaceutical products too expensive to import and near impossible to produce in the Global South states. It is clear to see from Côte d'Ivoire and Senegal's cases how international intellectual property treaties favor the international pharmaceutical industries of the Global North.

CHAPTER IV CONCLUSION

4.1. Do these cases answer my question?

It is alleged that a patent is granted to an inventor, not only for the benefit of inventors but also for greater society. However, Strong intellectual property protection is not necessary for development. The vast majority of successful economies developed when patents were seen as detrimental to the free market. If one were to look throughout history, the success stories of development, such as the Netherlands and Switzerland in the 19th century, took off under weak intellectual property protection systems.

This unequal system of development is comparable to that of climate change. Many states were able to develop their economy with technologies that are detrimental to the environment. However, states in the Global South do not have the opportunity to develop under the same conditions. Similarly, under the TRIPS agreement, weak intellectual property protection is no longer an option for development if a state in the Global South wants to have the opportunity to trade with states in the Global North.

States in the Global North link trade with high intellectual property protection. This linkage makes pharmaceutical products too expensive to import and near impossible to produce. It is clear to see from the cases of Côte d'Ivoire and Senegal how international intellectual property treaties favor the Global North's international pharmaceutical industries. During the HIV/AIDS crisis in Africa, South Africa was prevented from authorizing parallel importing of antiretroviral therapy by the pharmaceutical companies which held the patents to treat the disease. International pharmaceutical companies should not be able to gatekeep lifesaving medication from

patients who cannot afford to pay pharmaceuticals' high prices. Pharmaceutical companies should not be allowed to put a price on human life.

4.2. Counterargument

Those in favor of an increase in international intellectual property restrictions argue that a strong intellectual property regime will incentivize businesses in the Global North and the Global South. Innovations are non-rivalrous and partially non-excludable goods. Sunil Kanwar, a Professor of Economics at the University of Delhi, states that these two properties of innovation form the basis of the argument in favor of intellectual property protection. In return for the inventor being given protection for their invention after the property rights lapse, the invention is added to society's fund of knowledge (Kanwar 2003). Nevertheless, there have been several instances of patent abuse involving inadequate disclosure in the Global South, where vital bits of knowledge have been withheld from patent applications without which even a skilled innovator would not be able to replicate the product (Kanwar 2003). This abuse of the intellectual property system inherently harms the Global South because it is the Global South that gains the greatest benefit from the additions to society's knowledge fund.

Additionally, strong protections of intellectual property protection rights contribute to the creation of monopolies that accumulate ‘sleeping patents’ to preserve market share and halt competition (Kanwar 2003). The monopolist has a lot to gain, a lot to protect, and is, therefore, likely to use any means necessary to remain a monopolist. On the other hand, the entrant has much less to gain by doing the necessary R&D to come up with a substitute product because he will face a competitor upon entering. Apple, for

example, has hundreds of patents embodied in its iPhone designs, and it would be difficult for a competitor such as Samsung or Motorola to know in advance whether its smartphones might infringe on Apple's patents. Thus, technology firms face a constant risk of litigation, the outcome of which can be costly. In 2018, a US court ordered South Korea's Samsung Electronics to pay $539 million in damages for copying features of Apple's original iPhone (Apple awarded $539 million in US patent case against Samsung - BBC News 2018). This case is just one of countless intellectual property protection lawsuits based on a monopoly trying to remain a monopoly through patents.

Kanwar argues that strong intellectual property will increase the rate of innovation in the short term but lowers innovation in the long term as the producers tend to produce the older products that they know are profitable. Another argument is that intellectual property rights protection stimulates economic growth and encourages the research sector to invest more heavily and take greater risks. Empirical models examining the economic implications of strengthening the intellectual property rights regime in nations situated in the Global South demonstrate that the levels of IPRs exhibit a U-shaped relationship with per capita GDP (Chen and Puttitanun 2005). While this data implies that a state’s willingness to strengthen its intellectual property rights protection first decreases and then increases with its income. This is mainly caused by firms in the Global North reacting to the lack of intellectual property rights in the Global South by making their technologies more difficult to imitate (Chen and Puttitanun 2005). This lack of trust between states with differing intellectual property protection levels results in less efficient research technology and less innovation in the Global North. Therefore, even

though an increase in intellectual property rights protection does not directly benefit the Global South, it is essential for the Global South to adopt a tightening intellectual property rights protection for global welfare.

Contrarians also argue that states in the Global North and Global South generally have different technology needs. Without the southern protection of intellectual property rights, northern states would not develop the technologies needed by the Global South (Chen and Puttitanun 2005). Again, a lack of trust and willingness between states for global cooperation is the cause of states in the Global South protecting the intellectual property of big pharmaceutical companies. The costs of acquiring new technology and products shift the global terms of trade in favor of technology producers and against technology consumers. Without the Global North having the upper hand of being the technology producers, states in the Global South would not feel pressured to increase their intellectual property protections. By linking the trade of technology with the strengthening of intellectual property rights, it is a big win for the Global North because it encourages counter-piracy. However, if the Global South loosened intellectual property rights, they would be able to replicate the patented product for a lower price and therefore would be able to produce helpful technologies within their means and not have to rely on the Global North.

4.3. Further Research: COVID-19

While this research began before the COVID-19 pandemic, this research is timelier than ever. Given the circumstances surrounding COVID-19 tests and vaccines, it is just as important now as it was during the HIV/AIDS crisis for the Global South to

have access to essential medicines. As late as May 6, 2021, articles were coming out almost daily about President Joe Biden backing a waiver on vaccine patents to boost the universal supply of the COVID- 19 vaccine. “If approved, supporters say, the waiver would allow production of vaccines to be ramped up and provide more affordable doses for less wealthy countries” (BBC 2021). Not only will this patent waiver allow access to cheaper vaccines, but it will also ramp up the production on the number of vaccines being produced. *Medecins Sans Frontiers* has stated that many states in the Global South are currently struggling to vaccinate their populaces with 0.3% of the world’s vaccines (BBC 2021). This is in direct contrast states like the United States who have been hoarding vaccine doses so they can vaccinate their entire population.

In October 2020, India and South Africa called on the World Trade Organization to exempt member states from enforcing some patents, trade secrets, or pharmaceutical monopolies under the TRIPs agreement (Prabhala, Jayadev, and Baker 2020). This proposal is in response to the COVID-19 vaccines that are hitting the market in the wealthiest states. It was also the wealthiest states that opposed the idea and have opposed the idea two times since the initial proposal (Prabhala, Jayadev, and Baker 2020). Their rejection of the proposal is a huge problem because all WTO decisions are made by consensus. Therefore, the few prosperous nations can essentially veto an agreement that nearly 100 states favor (Prabhala, Jayadev, and Baker 2020). This proposal would allow the wealthiest states and the rest of the world to get more of the vaccines and treatments we all need. The major opposition to this waiver is pharmaceutical companies. Industry lobbyists have cautioned that “giving up the intellectual property rights could allow

China and Russia to exploit platforms such as mRNA" (Williams and Kuchler 2021). They warn that this breach of intellectual property could produce dangerous outcomes such as other vaccines or therapeutics for cancer (Williams and Kuchler 2021). Politicians in the Global North let the idea of individualism and the financial backing of a prosperous industry be prioritized over saving lives.

There are currently a few prominent COVID-19 vaccines hitting the market from leading pharmaceutical companies such as Pfizer and Moderna. The New York Times calculates that with the supply deals these companies made with the United States, the European Union, Japan, and Canada, these countries can expect, at best, to have about fifty percent of their populations covered by the virus by the end of 2021 (Prabhala, Jayadev, and Baker 2020). These two companies do not have the ability to produce enough of the vaccine to go around in states like the United States, the European Union, and Britain, let alone the Global South.

The foremost issue everyone should be concerned with is that the novel technology at the heart of the Moderna vaccine was developed partly by the National Institute of Health using federal funding from the United States (Prabhala, Jayadev, and Baker 2020). In particular, Moderna received approximately $2.5 billion in taxpayer money for research support and preorders for the vaccine, which covered 100 percent of the research costs (Prabhala, Jayadev, and Baker 2020). While Moderna has pledged not to enforce its COVID-19 vaccine-related patents against those intending to combat the pandemic, Doctors Without Borders points out that other types of intellectual property protection, such as trade secrets, are typically needed to produce vaccines (Prabhala,

Jayadev, and Baker 2020). Moderna is not the only company that accepted federal funding to develop its COVID-19 vaccine.

Pfizer received a $455 million grant from the German government to develop its vaccine and nearly another $6 billion in purchase commitments from the United States and the European Union (Prabhala, Jayadev, and Baker 2020). AstraZeneca has also benefited from public funding to fund the development of its vaccine. The company has received more than $2 billion from the United States and European Union for both research and purchase commitments (Prabhala, Jayadev, and Baker 2020). Like Moderna, AstraZeneca has made some less than generous offers in terms of intellectual property protection of their COVID-19 vaccine. AstraZeneca committed not to make a profit from its vaccine during the pandemic. However, AstraZeneca retained the right to declare the pandemic's end as early as July 2021 (Prabhala, Jayadev, and Baker 2020).

(4.3.1) Traditional Medicine

An alternative to the expensive medicines on the international market for COVID-19 symptoms is traditional medicine. The West often overlooks traditional medicine because a large part of the African population uses it. Traditional "made in Africa" products represents a severe threat to international pharmaceutical multinationals. They created a buzz on social networks because Africans see the African capacity to create, innovate, invent and impose a 100% local product (Diouwara 2020). However, this medicine sector has developed a few herbal treatments since the areas in which these treatments become developed do not have access to the West's vaccines.

Madagascan President Andry Rajoelina presented on April 20 an herbal remedy called Covid Organics, based on Artemisia, a plant used in medicines against malaria and other herbs that grow in Madagascar (Faivre Le Cadre et al. 2020). This tea has been widely produced for multiple African states with citizens who are desperate to remedy the symptoms of COVID-19. The WHO has not validated this herbal tea because any recommended drug must be tested to prove its efficacy and safety, which is not the case for this remedy (Faivre Le Cadre et al. 2020). The National Medicines Safety Agency (ANSM) in France warns against buying artemisia-based products on the internet of dubious origin (Diouwara 2020). However, the Madagascan president does not hesitate to assert that if the West contests Covid Organics' virtues, it is because it was created in Africa (Atou Diaw 2020).

African states have also developed a method to use fewer tests as these states do not have the same amount of access to tests as Western states. This says a lot considering most Western states have a small number of tests. The vast majority of screening tests performed are negative; therefore, when one mixes ten samples into one test, there is a good chance the result will turn out negative (Sabourin 2020). This method reduces the cost and the time it takes to test large numbers of people. A trial is underway in Senegal to test a COVID-19 screening kit capable of giving a result in less than 10 minutes. It costs around one US dollar, which would make it a much more affordable tool for African states than traditional tests, which are priced in the tens of dollars.

Additionally, African states have also developed a low-cost antibacterial gel. Since the arrival of COVID-19 in Côte d'Ivoire, the challenge is not to find disinfectant

gel but to buy it (Sabourin 2020). In collaboration with the National Institute of Scientific Research in Quebec and CRDI, Professor Kouassi Benjamin Yao, at the Félix Houphouët-Boigny National Polytechnic Institute, is studying the recovery of agricultural waste that can be transformed into ethanol, the main ingredient in hydroalcoholic gel. To date, more than 15,000 liters of hydroalcoholic solution and gel have been produced in this way. They were not sold but distributed free of charge to the Ivorian authorities and non-profit organizations (Sabourin 2020).

African nations were also better prepared for the COVID-19 outbreak because they fought the Ebola virus for years. The Democratic Republic of the Congo (DRC), a state of 100 million people, has been fighting one of the worst Ebola epidemics in history, an infectious disease that, like COVID-19, has no cure. From mid-January, the health checkpoints installed in airports, ports, and border posts in this immense state - the second largest on the continent after Algeria - to prevent the spread of Ebola could be used for COVID-19 (Sabourin 2020). Campaigns promoting proper hygiene measures were already underway in most provinces, which applies to both viruses. Moreover, since laboratories already had the necessary equipment, the DRC was one of the first 20 countries in Africa able to detect COVID-19 (Sabourin 2020).

4.4. Concluding Thoughts

Overall, the pharmaceutical industry's products are of vital interest to all states, especially those in the Global South. States in the Global North are typically the ones in favor of more substantial intellectual property agreements. There is a greater focus on individualism and private property in the Global North and a more significant innovative

pharmaceutical industry. States in the Global North put in a significant amount of investment in pharmaceutical research and development and therefore want a return on their investment. Issues arise when pharmaceutical patents prevent other manufacturers from entering the market and producing a cheaper product. States in the Global South favor lenient intellectual property protections because they do not benefit from the protection. Most pharmaceutical intellectual property advancements occur in the Global North; therefore, the Global South does not benefit nearly as much from the protections granted. In addition, since states in the Global South have to pay high royalties and licensing fees for the use of pharmaceutical intellectual property, pharmaceutical patent agreements act as a tool to deny states in the Global South access to advancements in technology and knowledge. For these reasons and many more, the production of essential medicine should be immune from international patent agreements.

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