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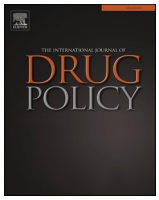

Policy Analysis

International property rights for *Cannabis* landraces and terroir products. The case of Moroccan *Cannabis* and hashish

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ABSTRACT

Background: In recent years, the cannabis industry has evolved from a world defined by the simplicity and ubiquity of illegality of recreational drug cannabis to a world marked by the legal and geographic complexity of ongoing depenalisation, decriminalisation, and legalisation processes. Within this landscape where drug *Cannabis* plants and their many derivatives see their legal status change, *Cannabis* cultigens and end products are increasingly likely to becoming subject to protection by intellectual property rights. This article delves into the implications of these changes for traditional *Cannabis* farmers, particularly in the Global South, as they face economic and legal threats amidst global legalisation efforts. It examines the potential role of appellations of origin in protecting local *Cannabis* cultigens and end products, focusing on Moroccan *Cannabis* and hashish as a case study.

Methods: The text resorts to the treaties and agreements regulating international property rights and plant variety protection, but also to the concepts of terroir and landrace and their definitions, in order to determine, by way of treaty interpretation and conceptual analysis, what type of legal and economic protections can apply to *Cannabis* landraces and terroir products. The analysis is also based on previous empirical research published by the author.

Results: The text argues that appellations of origin are the best intellectual property protections possible for landraces and terroir products because what needs to be protected is not innovation and individual ownership, but tradition and collective ownership, and because appellations of origin are suitable collective intellectual property rights. It shows that appellations of origin are best suited to protect terroir products and landraces because their originality and distinctiveness are place-based originality and distinctiveness.

Conclusion: The text concludes that appellations or origin offer the only existing intellectual property protection for preserving the distinctiveness of terroir cannabis products, and for landrace conservation. It acknowledges that neither appellations of origin nor existing plant variety protection laws can be legal forms of control of third parties' uses of landraces but that appellations of origin can help protect terroir products and landraces by way of their associated agro-ecosystems.

Introduction

In recent years, the producers, traders and consumers of recreational drug[2] cannabis have been faced with a changing and increasingly complex legal world. A world in which the simplicity and ubiquity of illegality of recreational drug cannabis – which dates back to the Second Opium Convention of 1925 (Société des Nations, 1925) – has been replaced by the legal and geographic complexity of ongoing

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[2] A recreational drug is a drug that is "used non-medically for personal enjoyment, pleasure, stimulation, etc." (EMCDDA, no date).

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depenalisation, decriminalisation, and legalisation processes. Within this fast-evolving global legal landscape where drug *Cannabis* plants and their many end products see their legal status change, cultigens[3] of the *Cannabis* genus and cannabis end products are likely to become increasingly subject to protection by intellectual property (IP) rights, depending on where they are produced, processed, and sold.

It is important to acknowledge from the outset that, according to the 1961 Single Convention on Narcotic Drugs (Article 1 b-d), which elevated the controls of cannabis and other drugs to a global level, "cannabis" refers to the flowering or fruiting tops of the *Cannabis* plant, referred to as the *Cannabis sativa* L. species; "cannabis resin" refers to the resin separated from the *Cannabis* plant, known under the colloquial name hashish; and "extracts and tinctures" refer to any such extracts and tinctures (United Nations, 1961). Hereafter *Cannabis* will refer to the *Cannabis* genus, while cannabis will refer to drug cannabis, that is, the psychotropic flowering or fruiting tops. It is worth noting that while the 1961 Convention lists cannabis, cannabis resin, and cannabis extracts and tinctures as controlled substances, it does not list the *Cannabis* plant itself and, as a consequence, the cultivation of the plant for the production of fibre and other non-psychotropic end products (in which case *Cannabis* is often referred to as hemp) has long been legal in many countries.

One consequence of the illegality of recreational drug cannabis is that, until recently, traditional[4] *Cannabis* farmers, most of them located in the Global South,[5] have been largely protected from the green revolution and the spread of modern hybrids that has replaced many local cultigens throughout the world since the 1950s. Such traditional *Cannabis* farmers have also been kept away from the strengthening of intellectual property rights for plant "varieties" (strictly speaking, cultivars: see below) within the frameworks of the International Union for the Protection of New Varieties of Plants (UPOV) and the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) of the World Trade Organization (WTO) (UPOV, 1961/1991; TRIPS, 1994), both because their productions are illegal and because, as we will see in greater detail, their local *Cannabis* cultigens are not "new varieties of plants" and do not correspond to the UPOV technical criteria for "varieties".

While there is some level of legal pluralism throughout the world, the fact remains that the current international legal regimes have been devised and imposed by Western countries, as the foundations of the modern international trade and Western legal regimes were imposed upon the world, and on the customary practices of indigenous peoples, based on power relations inherited from imperialism in the colonial era (Miles, 2010). The granting, or not, of economic rights on traditional knowledge to indigenous people, notably on biological resources and on their uses, has clearly been shaped by imperialism in the colonial era. In fact, "traditional knowledge has often been considered as 'open access' by colonial explorers and botanists, with the consequence of placing this knowledge into the public domain without authorization and consent from the communities (Meyer, Naicker, 2023; Thomas, 2006)."

As a result, it has been deemed "important to revise and expand international property rights linked to traditional knowledge (Dutfield, 2000; Harry, 2011; Shiva, 1997) since, according to Okediji (2018:2), the issues related to '[t]he protection of [Indigenous] traditional knowledge [are] among the most vexing and morally compelling issues in international IP law today'" (Meyer and Naicker, 2023: 3). In fact, some kind of economic and legal imperialism still takes place throughout the Global South, as many countries are "under pressure to adopt strong IP norms by US and EU trade policies that make foreign direct investment conditional upon strong IP protection" (Peschard et al., 2023: 39). For example, as of 2022, the signing of Euro-Mediterranean Association Agreements with the European Union made accessing to the 1991 Act of the UPOV convention mandatory for Morocco and five other African countries, something that "severely restricts these countries' ability to adopt legislation that protect peasants' rights and peasant seed systems" (Peschard et al., 2023: 46). Indeed, when they become a party to the 1991 Act of the UPOV Convention and when they implement its standards of plant variety protection, states undermine the customary practices of their indigenous and local peoples as well as their seed systems and agrobiodiversity, when they could instead rely on the TRIPS Agreement to "design *sui generis* systems of plant variety protection better suited to the agricultural and socioeconomic conditions" prevailing in their regions (Peschard et al., 2023: 12).

On top of that, after over a century of an international drug control regime (1925 and 1961) and decades of a global war on drugs (since 1971: Idler & Garzón Vergara, 2021), which have also been devised and imposed by Western countries, traditional *Cannabis* farmers worldwide now see their industries threatened, economically and legally, by ongoing legalisation processes. As a result, they must opt for new strategies of protection, registration and promotion instead of their former strategies of avoidance and concealment. Yet, since the early twenty-first century, the threat to traditional *Cannabis* farming has also come from the fast worldwide spread of modern *Cannabis* hybrid cultigens that directly threaten the many unique local cultigens (notably landraces) and their conservation (Chouvy, 2019).

Potential strategies of legal protection are also complicated by the fact that botanists still strongly disagree about the taxonomy of *Cannabis* when the International Code of Nomenclature for Algae, Fungi, and Plants (the set of rules and recommendations that govern the scientific botanical naming of all algae, fungi, and plants: Turland et al., 2018) requires an agreed-upon taxon. Also, to the difference of non-drug *Cannabis* cultivars ("hemp"), the thousands of drug *Cannabis* cultigens[6] produced by the mostly illegal drug cannabis industry rarely meet the criteria (distinctness, uniformity, stability) required this time by the International Code of Nomenclature for Cultivated Plants (the set of rules and regulations that govern the horticultural naming of cultivars: Brickel et al., 2016) or the UPOV Code (UPOV, 1961/1991) as they lack the stability required in order to be officially considered as cultivars (article 2.3 of the Cultivated Plant Code: Brickell et al., 2016: 6).

It is difficult, in this context, to foresee what the future holds for the traditional *Cannabis* farmers of the world. Their future matters not only

[3] To clarify terminology: variety refers to a botanical taxonomic rank (second to last rank, before that of form) while cultivar is, in horticulture and according to the International Code of Nomenclature for Cultivated Plants rules, a cultivated "variety" defined by a distinct, uniform, and stable phenotype, something that excludes all if not most landraces since they are genetically heterogeneous populations. As a consequence, the best way to globally refer to the different cultivated *Cannabis* plants, whether or not they are cultivars, is by speaking of cultigens ("cultivated plants"), that is, "deliberately selected plants that may have arisen by intentional or accidental hybridisation in cultivation, by selection from existing cultivated stocks, or from variants within wild populations that are maintained as recognisable entities solely by continued propagation" (Brickell et al., 2016: 144). As a consequence, we can say that if all cultivars are cultigens, not all cultigens are cultivars. As for the landraces with which we are concerned hereafter, they cannot be considered varieties or cultivars but they are clearly cultigens.

[4] Traditional farmers are small-scale farmers that rely on complex, diverse and locally adapted agricultural systems, managed according to multigenerational indigenous or local knowledge and tend to resort primarily to local seed varieties (often landraces), manual labour, simple tools, organic fertilizer, etc. See : Smith and Bragdon, 2016.

[5] For lack of a better term to designate middle- and low-income countries. See Patrick and Huggins, 2023.

[6] Leafly, *All Cannabis strains*, https://www.leafly.com/strains. 2,770 "unique" strains as of March 2019 and 8,133 in May 2024. Accessed on 22 March 2019 and 14 May 2024. "Strains" are widely mentioned in the cannabis industry to refer to cultigens (including cultivars) despite the fact that it is a term without any official meaning in either botany or horticulture. See *Cultivated Plant Code* by Brickell et al., 2016: Article 2.2, p. 6.

because most of the world's drug *Cannabis* has been cultivated for centuries in Asia, Africa, and Latin America by traditional farmers, but also because they are responsible for most of the plant's genetic diversity as they are the originators and guardians of the plant's many local cultigens (Chouvy, 2019). What is likely is that these farmers will suffer from the ecological, biological, economic, and legal impacts of *Cannabis* legalisation on their individual, regional, and national economies when the new global competition eventually compromises the competitive advantage of illegality (relative absence of regulation) that they have experienced until now. In fact, traditional *Cannabis* farmers will not only face the competition that global legalisation will entail, they will also face the challenge of navigating new and highly complex legal dispositions and tools that accompany legalisation.

This article therefore looks at geographical indications and especially at the more restrictive appellations of origin as potential if not ideal solutions to protect, economically and legally, local *Cannabis* cultigens and end products. Geographical indications are regulated by the TRIPS Agreement and are recognised by the World Intellectual Property Organization (WIPO) Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (IGC-GRTKF[7]). Article 22 of the TRIPS Agreement requires WTO Members to protect geographical indications as "indications which identify a good as originating in the territory of a Member, or a region or locality in that territory, where a given quality, reputation or other characteristic of the good is essentially attributable to its geographical origin" (TRIPS, 1994[8]; WIPO, 2021). Such indications are therefore granted international legal protection, unless, as we will see, geographical indications are considered to be common or generic food names in some countries.

Yet, in the case of cannabis, what ought to be protected, how, and for which beneficiaries is complicated by the overarching question of the worldwide illegality of commercial production and sale of recreational drug cannabis in all but two countries (Canada and Uruguay as of 2024). While geographical indications cannot help protect traditional drug cannabis products and *Cannabis* landraces in countries where they are illegally produced, they might still be worth considering as potential future legal solutions, if only for reasons of biodiversity conservation.

Such is the case in Morocco, whose hashish has long acquired a global reputation despite being produced illegally. *Cannabis* has been cultivated in Morocco for centuries (maybe since the 12th century) for both fibre and drug use but hashish production only started there in the early 1960s. Hashish production then progressively drove the Moroccan *Cannabis* economy away from producing the traditional *kif* mixture of cannabis and black tobacco. Smoking k*if* was named by metonymy after the *kif* or local *Cannabis* cultigen (landrace) used in its production and, later, in that of hashish (Chouvy & Afsahi, 2014). Within a few decades, Morocco reportedly became the world's first producer of hashish (ONUDC, 2003) and, despite growing quality issues due to mass production, Moroccan hashish achieved an international reputation of its own, with unique characteristics and qualities that make it very distinct from hashish from other regions (Chouvy, 2023b), especially from Afghanistan, Pakistan, and Lebanon, the three other largest producing countries of sifted hashish (UNODC, 2022).

This article will explain in detail what geographic indications and appellations of origin are and why the latter is especially suited to the legal and economic protection of terroir products or, more exactly, to the protection of their names or appellations. It will then detail what a terroir is and why Moroccan hashish is a terroir product, what a landrace is and why the *kif* cultigen is a landrace. While these concepts will be defined in greater details later on, we can say from the onset, and in very brief terms, that a terroir (a French loanword in English) is a complex concept according to which the orignality and specificity of an agricultural product are determined by both its natural and cultural environments and are dependent upon it (Chouvy, 2023c). As for a landrace, it is a population of genetically heterogeneous cultigens that, due to geographic isolation, has adapted to its natural and cultural environments (Chouvy, 2023c).

This article will explain that an appellation of origin is the best available intellectual property protection for Moroccan hashish and the *kif* landrace because of how difficult or even impossible it is for other intellectual property regimes to : protect a recipe or production technique for Moroccan hashish; define the *kif* landrace in precise botanical or horticultural terms (which is necessary to obtain plant variety protection provided that is new); determine which tribes or tribal confederations would be the legitimate beneficiaries of any intellectual property rights (and according to what criteria). In the end, this article also shows that an appellation of origin can protect not only hashish and landraces, but also the local agro-ecosystem that gives them their specificity and typicity (defined below).

A qualitative methodology was used to carry out the research and analysis presented in this text. The main methods used were treaty interpretation (textual approach) and conceptual analysis (terminological definitions). A historical and textual approach to interpretation of the treaties was favoured so as to focus on the words of the treaties and their careful analysis. A conceptual analysis of the terms specific to the research objects (terroir, landrace, variety, etc.) made it possible to determine to what extent the treaties were adapted to protecting the objects and activities at stake. This methodology revealed terminological inconsistencies (use of "variety" instead of "cultivar" for example) and technical inadequacies (plant "variety" protection not adapted to landrace protection or conservation).

Appellations of origin protect the names and origins of products

Appellations of origin preceded geographical indications but, being more strict and restrictive (to the point oe being denounced as being unfair protectionist measures in and by the United States: Watson, 2016), they have been far more contested and far less adopted internationally. The world's first appellation of origin was institutionalised in 1919 when France enacted a law[9] on the protection of *appellations d'origine*, designed to combat usurpations of wine origin and to protect both producers and consumers. Then, in 1935, France created its *Appellation d'origine contrôlée* (Controlled appellation of origin) sign but its precise definition only came after it was produced by the Lisbon Agreement on the Protection of Appellations of Origin and their International Registration (1958, amended in 2015 by the Geneva Act of the Lisbon Agreement on Appellations of Origin and Geographical Indications: WIPO, 2015a[10]).

The Lisbon Agreement was the first multilateral agreement to provide a definition of an "appellation of origin", mostly to clarify the concept and distinguish between origin and source of products (Boyer-Paillard, 2021). As a result, according to the Lisbon Agreement (Article 2), an "'appellation of origin' means the geographical denomination of a country, region, or locality, which serves to designate a

[7] WIPO, *Intergovernmental Committee (IGC)*, https://www.wipo.int/tk/en/igc/ Accessed on 22 March 2024.

[8] WTO, *Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), Part II — Standards concerning the availability, scope and use of Intellectual Property Rights (1994)*.https://www.wto.org/english/docs_e/legal_e/27-trips_04b_e.htm Accessed on 22 March 2024.

[9] WIPO, *Loi du 6 mai 1919 relative à la protection des appellations d'origine (1919)*. https://www.wipo.int/wipolex/fr/legislation/details/1578 Accessed on 22 March 2024.

[10] WIPO, *Geneva Act of the Lisbon Agreement on Appellations of Origin and Geographical Indications (2015)*. https://www.wipo.int/publications/en/details.jsp?id=3983 Accessed on 22 March 2024.

product originating therein, the quality or characteristics of which are due exclusively or essentially to the geographical environment, including natural and human factors".[11]

The definition provided by the Lisbon Agreement actually gave legal expression to the old French concept of terroir, which was maybe best defined, in 2005 during a UNESCO conference, as "a delimited geographical area defined by a human community which has built up, over the course of its history, a set of distinctive cultural features, knowledge and practices based on a system of interactions between the natural environment and human factors" (Teissier du Cros, Vincent, 2005: 26). With its definition of an appellation of origin, the Lisbon Agreement gave value and granted protection to the geographical and cultural origin of a product, i.e. to its terroir, and not only to its source.

Strictly speaking, origin refers to the geographical (spatial) but also historical and cultural origins of a product, basically where it originates. Source only takes into account the geographical provenance of a product, that is, where it is produced, without considering if it originates in the considered region (Bérard, Marchenay, 2008). A product coming from a given place (source) is not necessarily a product originating from that place (origin) and as result, the origin of a product refers inherently to how quality is determined by a geographical environment, including natural and human factors.

Then, in 1994, the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) introduced intellectual property law, including geographical indications, into the multilateral trading system for the first time. According to its Article 22, all WTO members have to "provide the legal means for interested parties to prevent the use of any means in the designation or presentation of a good that indicates or suggests that the good in question originates in a geographical area other than the true place of origin in a manner which misleads the public as to the geographical origin of the good".[12] The TRIPS Agreement provides protection for many categories of intellectual property, including "geographical indications (first mention of the term in a multilateral agreement) and "appellations of origin"'(WIPO, 2001). Since it binds all 164 WTO members to its rules, the TRIPS Agreement enjoys a much wider international support than the Lisbon Agreement or the Geneva Act with their 30[13] and 21[14] contracting parties respectively. It took both the Lisbon Agreement and the TRIPS Agreement for the French *Appellation d'origine contrôlée* to translate, in 1992, into the Protected Designation of Origin, the European Union's own appellation of origin sign (Serra and Wolikow, 2022).

Yet, while it enjoys less international support than the TRIPS Agreement, the Lisbon Agreement allows for a level of protection above that which is provided for general products in the TRIPS Agreement (Dudding, 2015 : 181). The Lisbon Agreement is most restrictive in that it requires all contracting parties to protect the appellations of origin of other contracting states within their own territories, regardless of the criteria used to define each country's appellations: it offers "the same protection that appellations of origin have in their countries of origin" (Dudding, 2015: 181). With appellations of origin and their emphasis on origin and the role of natural and human factors in determining the quality or characteristics of a product, the Lisbon Agreement therefore offers the strictest possible protection of all geographical indications. In fact, the Geneva Act, adopted in 2015 in part to – unsuccessfully – increase membership in the Lisbon Agreement, extended the protection offered by the Lisbon Agreement to geographical indications alongside appellations of origin and allowed certain intergovernmental organisations, such as the European Union (in 2020), to join, making the international system of protection more inclusive.

As a result, the Geneva Act protects both geographical indications and appellations of origin in a more restrictive manner than the TRIPS Agreement since it makes the protection of geographical names as strict for food products (unlike TRIPS) as for wine and spirits (like TRIPS). The Geneva Act also protects the fact that appellations of origin are more restrictive than geographical indications in their requirements, for example when they require that raw materials and processing of the product have to originate from the same place (WIPO, 2015b). The Lisbon System therefore "purports to benefit producers, consumers, and economic development of regions and countries by helping stabilize and maintain high prices for products, providing guarantees of quality and production to consumers, and benefitting local communities by promoting development of products within the area" (Dudding, 2015: 183).

But the Geneva Act has proven polemical and still lacks wide international support because of a major point of contention between the perspectives of the European Union and the United States about the genericisation of product names. For instance, the United States does not protect geographical names that it deems generic and any producer is free to use any geographical name (feta or gruyère for example) in the United States if it has been deemed generic (Dudding, 2015: 186). Similar issues can happen within the European Union, as when Denmark and Germany opposed the registration of the name "feta", aguing that it had become generic. As a result, the Court of Justice of the European Union ruled in 2005 (C-465/02 and C-466/02) that Feta was indeed a valid appellation of origin or Protected Designation of Origin and that it should not be considered a generic term.

In fact, the genericisation of foreign geographical names goes against one of the fundamental principles of the Geneva Act that requires that its members protect all appellations issued by all members according to their individual criteria: it is up to each and every member to protect its geographical names and no other member can decide that such a name is generic. It is one reason why appellations of origin are the strictest geographical protections there are and why they are considered by some countries to be an obstacle to free trade (Dudding, 2015). The main difference between geographical indications and appellations of origin is the extent to which the quality or characteristics of a product are attributable partly (GI) or exclusively (AO) to a geographical area, which is also a question of geographical source (GI) or origin (AO). As such, appellations of origin protect the historic producers of a traditional product by restricting the use of their product name to a product with strict characteristics, something that geographical indications fail to do.

It is important, however, to understand that while appellations of origin protect the characteristics of a product, they do not prevent its imitation. Instead, they protect the name of a product made in a delimitated area according to precise rules: only products originating in the concerned geographic area, provided that they are produced according to strict specifications, can bear the name in question. An appellation of origin is an indication of where and how the characteristics of a given product were first achieved and what recognition and benefits that region and its inhabitants deserve. One of the great advantages of an appellation of origin is that it protects a name both inside and outside a production area as nobody inside that area can use the name without complying with local specifications and regulations: as such, an appellation of origin protects not only producers but also the very existence of a product with specific characteristics.

Therefore, by protecting a name and certifying the characteristics and quality of a product, an appellation of origin also protects a terroir, its agroecosystem and its agrobiodiversity, by encouraging collective defense and promotion of place. By doing so, it values the geographical,

[11] WIPO, *Lisbon Agreement for the Protection of Appellations of Origin and their International Registration (1958)*. https://www.wipo.int/wipolex/en/text/285856 Accessed on 22 March 2024.

[12] WTO, *Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), Part II — Standards concerning the availability, scope and use of Intellectual Property Rights (1994)*.https://www.wto.org/english/docs_e/legal_e/27-trips_04b_e.htm Accessed on 22 March 2024.

[13] WIPO, *WIPO-Administered Treaties. Contracting Parties: Lisbon Agreement.* https://www.wipo.int/wipolex/en/treaties/ShowResults?search_what=C&treaty_id=10 Accessed on 22 March 2024.

[14] WIPO, *WIPO-Administered Treaties. Contracting Parties: Lisbon Agreement: Geneva Act (2015)*. https://www.wipo.int/wipolex/en/treaties/ShowResults?search_what=A&act_id=50 Accessed on 22 March 2024.

historical, and cultural origins of a product by moving it "from the sphere of the singularly worthless to that of the expensive singular" (Kopytoff, 1986: 80), away from the Fordist-based approach of standardisation and consistency (Augustin-Jean, Ilbert, Saavedra-Rivano, 2012), something that classic intellectual property rights cannot protect (as exemplified by the Feta case). In that matter, products that are worthy of an appellation of origin, very much like the terroir products to which they are essentially related, differ intrisically from regular commodities, or from branded products in general.

Such is the case of Moroccan hashish, a terroir product (Chouvy, 2022, 2023b) whose existence depends upon that of its terroir and the *kif* landrace. If Moroccan hashish were legal in its own country, it could very well be granted an appellation of origin as the Cherifian kingdom is party to the TRIPS Agreement (actually signed in Marrakesh) and has already registered a number of appellations of origin based on a definition very much inspired from that of the Lisbon Agreeement (to which Morocco is not a party): "the geographical name of a country, region or locality that serves to designate a product originating therein, of which the quality, reputation or other specified characteristics are due exclusively to the geographical environment, including natural factors and human factors".[15]

As terroir product and landrace, Moroccan hashish and kif could be protected by an appellation of origin

Hashish is a psychoactive product made by compressing the resin made up of the trichomes (glandular hairs) that mostly cover the flowers of female *Cannabis* plants. This resin contains, among other cannabinoids, tetrahydrocannabinol (THC), its main psychotropic substance, and cannabidiol (CBD), a much more mild psychotropic substance. Moroccan hashish, the focus of this article, refers to the resin that has been produced since the 1960s in the impoverished northern Rif region of Morocco, the mountainous region bordered by the Mediterranean Sea to the north and the Atlantic Ocean to the west.

Moroccan hashish production quickly replaced that of smoking *kif* and as a result the *kif Cannabis* cultigen evolved out of modified selection processes. Since the 1980s, both Moroccan hashish and the recently-evolved *kif* cultigen have become uniquely characteristic of the Rif, their region of – arguably relatively recent – origin. As we will see, both Moroccan hashish and *kif* are characteristic to the point of being typical and distinctly original, which explains why Moroccan hashish can qualify as a terroir product and why the *kif* cultigen can be referred to as a landrace (Chouvy, 2023b).

Both a terroir and a landrace are the product of a geographical system where physical and cultural characteristics interact and, as such, make geographical origin the key determinant of the specificity and originality of a produt or good, i.e. a terroir product. An appellation of origin being the legal expression of the concept of terroir, it is ideally suited to protect not only the producers of a terroir product – by legally protecting its name and guaranteeing its origin and sourcing – but also the consumers of the said product as they can be certain of consuming a product of given characteristics, quality, and origin (the opposite of what genericisation achieves).

Being both an ecological and a cultural reality, a terroir is a delimited geographical space where a historical and collective knowledge of production – based on a system of interactions between physical, biological, and cultural environments – confers a specificity, a typicity, and a reputation to a good originating from this geographical area (Casabianca et al., 2006). Like that of *terroir* (1246), *typicité* is a term first coined in France (1993) to refer to the global characteristics of wine, which makes sense considering that terroir was also initially used to refer to wine (Chouvy, 2023c).

Typicity is consubstantial of terroir for it refers to the property of an agricultural product "belonging to a type, which is distinguished and identified by a reference human group whose types of knowledge are distributed among the different actors of the agricultural sector: knowledge to establish, knowledge to produce, knowledge to evaluate, knowledge to appreciate" (Casabianca et al., 2006: 5). Typicity, or how a product can be distinguished by its aspect, taste, aroma, and even effects (at least for cannabis whose different chemical profiles provoke different "highs"), is a key concept in that it refers to a type as opposed to the conformity to a standard, including that of a branded product (trademark). As such, a terroir product is the opposite of a standardised or uniform product as it implies variations within a type (Chouvy, 2023c).

Moroccan hashish is therefore clearly a terroir product, because the Rif is a delimited geographical area where a human community (mainly Berber tribes) has built up, over the course of its history, a collective knowledge of production (common agricultural practices) based on a system of interactions between a physical and biological environment (rainfed cultivation, terraces, originally organic manure), and a set of human factors (consumption traditions, colonial and post-colonial history, demography, etc.). The sociotechnical itineraries thus brought into play reveal a specificity, confer a typicity (taste, smell, effect) and lead to the reputation of a hashish whose geographical origin is hardly in doubt, even when examined by non-specialists (Chouvy, 2023b).

What makes Moroccan hashish so distinctive and so original is its typicity, which is the defining characteristic of any terroir product (Chouvy, 2023c). Moroccan hashish is best described in terms of typicity as dry and powdery, often brittle (it is pressed into bricks), greenish to brown, very aromatic and smooth, and much less spicy (easy on the throat) than hashish from other countries. It produces short uplifting effects ("high") due to rather mild concentrations of THC. As such, it differs clearly from Afghan hashish and Lebanese hashish, the other cannabis resins to which it can more easily compare since they are also obtained by similar techniques (sifting). In fact, Moroccan, Afghan and Lebanese hashish actually differ so clearly that they can be distinguished based on their smell alone (Chouvy, 2023b).

In the case of a plant-based terroir product such as hashish, which is issued from crop cultivation, the other major element that determines typicity is the cultigen itself since a terroir best expresses itself through a local cultigen, and vice-versa (Chouvy, 2023c). Indeed, there are strong indications that "terroir expression at specific sites might be maximized by choosing appropriate plant material in relation to soil and climate", therefore acknowledging the ideal symbiosis that exists between terroir and local cultigens, and especially landraces (Van Leeuwen et al., 2020: 985).

A landrace can be defined as "a cultivated, genetically heterogeneous variety that has evolved in a certain ecogeographical area and is therefore adapted to the edaphic and climatic conditions and to its traditional management and uses" (Casañas et al., 2017: 1). It is therefore difficult not to think of terroirs when considering landraces, and vice versa, as they are both defined in terms of environmental and human interactions and equilibrium, as well as of spatial limits. In the same way that a terroir is defined by the typicity of its products, a landrace is characterised by the phenotypic diversity of its population: indeed, landraces are populations, not individual plants, and are therefore not uniform or stable as hybrids or other stable and uniform cultivars are supposed to be. This is a characteristic shared by both terroirs and landraces: a terroir product differs from a standardised product (for it implies variations within the type) and a landrace differs from a standardised and true-to-type cultivar. In the end, typicity, with its variations within a type, is a common characteristic of both terroir products and landraces.

What actually gives more credence to the Moroccan hashish being a terroir product is the fact that the *kif* cultigen is a landrace. *Kif* is a landrace because it has been cultivated in the Rif for a sufficiently long time (maybe since the 15th century) and according to a given and stable

[15] Moroccan Office of Industrial and Commercial Property, *Geographical Indications and Designations of Origin*. http://www.ompic.ma/en/content/geographical-indications-and-designations-origin Accessed on 22 March 2024.

sociotechnical itinerary that has only changed from the 1960s on when the development of hashish production slowly affected the landrace (mainly by selection choices and hybridisation with allochtonous landraces) (Bellakhdar, 2013; Chouvy, 2023c). The *kif* cultigen is a landrace because it has adapted to the natural (edaphic and climatic characteristics) and cultural (cultivation techniques and selection for particular uses) environment of the Rif, in part due to the region's relative geographical isolation. *Kif* is indeed characterised by: the high tolerance of its population (a function of its genotypic heterogeneity) to the biotic and abiotic stresses of the region; its open pollination and mass selection; its average but stable yields over time; and its low need for inputs (Chouvy, 2023c).

These are all defining characteristics of a landrace (Zeven, 1998). Which explains why, being heterogeneous plant populations, landraces are not suited for a UPOV-style plant variety protection that requires varieties (in fact, cultivars[16]) to be not only new – that is, invented or created – but also uniform and stable. Terroirs and landraces therefore also share that they cannot be invented or created. They can only be inherited because they result from long sociocultural technical itineraries. As a consequence, they also never stop evolving, to the point, of course, that they can disappear, notably if they are not protected: this is clearly a risk for the *kif* landrace and the Moroccan hashish terroir product.

We thus now have a rather recent terroir product, Moroccan hashish, which is produced from a landrace that has considerably evolved along with the emergence of hashish production and the shaping of its terroir. Yet, as is the case with tradition, change does not necessarily compromise the status of a terroir product or that of a landrace, as neither should be considered in fixist terms or, worse, "musealized" through strict conservation approaches (Bauer, 2009; Casañas et al., 2017). Much to the contrary, terroir products and landraces inevitably continue developing and evolving throughout history and modernisation, which implies that typicity also evolves. While hashish production was imported together with the threshing/sieving production technique, as were presumably the allochtonous landraces (probably from the Near or Middle East: Bellakhdar, 2013) that modified the autochthonous *kif* landrace by transfer of genetic material between cultigens (introgression), the typicity and specificity of Moroccan hashish and of the *kif* landrace remain undeniable to this day.

Therefore, what makes Moroccan hashish unique and original, what makes its typicity distinct, is its origin, that is, its terroir: the fact that it is produced in a geographically unique region from a unique cultigen, the *kif* landrace, whose distinctiveness is directly determined by its biogeographic and cultural environment. Here, the landrace is of paramount importance as the switch from the *kif* landrace to modern hybrids that has taken place since the mid-2000s in the Rif (Chouvy, Afsahi, 2014) has resulted in the production of a very different hashish that is of Moroccan provenance or source (where it is produced, geographically) but definitely not of Moroccan origin (where it is from, historically and culturally). While the Moroccan hashish made from the *kif* landrace is undoubtedly a terroir product, due to its typicity, its origin, and its production environment (both physical and societal), the new types of hashish produced in Morocco are clearly not (Chouvy, 2023b). As a consequence, only hashish made traditionnally from *kif* would deserve an appellation of origin: Moroccan hashish can only be one very specific product.

With hashish as with many other agricultural products, geographic origin is of paramount importance. This is actually made very clear in the Rif where the mass introduction of modern hybrid *Cannabis* cultigens prompted a change of name of the landrace from *kif* to *beldiya*, a term that means "from the country" (*balad* in Arabic) and is applied to everything that is exclusively (at least in theory) "local" and "indigenous" (Rachik, 1997; Simenel, 2010; Chouvy, 2023b), whether it is chicken, red pepper, or most recently, *Cannabis*. Quite significantly, the terms used in Moroccan Arabic (*Darija*) to designate "territory", but also "terroir" and "landrace", all derive from the Arabic etymon *balad,* revealing the semantic links that logically exist between the different concepts and how terroir and landrace are semantically related (Chouvy, 2022).

Why an appellation of origin is the best protection for both Moroccan hashish and the kif landrace

As a terroir product that is produced from an autochthonous landrace, Moroccan hashish needs protection if it is to last. It needs not only legal protection but also ecological protection, as hashish production is the economic mainstay of many in the impoverished Rif region and as the economic and ecological threats to that economy are quickly worsening (Chouvy, Macfarlane, 2018). Using an appellation of origin to protect hashish of Moroccan origin as the terroir product that it is would imply protecting not only intellectual property rights associated with the product itself, but also the agroecosystem upon which the terroir depends – which is exactly the type of protection that appellations of origin offer. Yet, while this kind of protection suits the specificity of Moroccan hashish, the fact that the production and export of this product is illegal in Morocco – and that importing it and selling it in the European Union or in the rest of the world is currently illegal – makes such legal protection problematic, at least for the time being.

However, since the *Cannabis* plant is not listed in the schedules of the 1961 Single Convention on Narcotic Drugs, legally protecting the *kif* landrace with an appellation of origin would prove less problematic than protecting the cannabis resin made from it. In fact, *Cannabis* cultivation for uses other than recreational (pharmaceuticals, fibres, oils, etc.) is legal in Morocco since 2022 and foreign *Cannabis* hybrid cultivars have since been legally cultivated in the Rif. Since the *kif* landrace could be legally used for non-recreational uses (as it has been traditionally, notably for its fibres), it could very well end up being protected by an appellation of origin and the fact that its cultivation for pharmaceutical use was eventually (2024) included in the list of authorised cultigens bodes well for its horticultural future (Chakir Alaoui, Mannan, 2024).

Yet, the *kif* landrace still needs to be protected, if only for the sake of agrobiodiversity, and it should eventually benefit from an appellation of origin as it is the only protection that can benefit a landrace. Indeed, in the case of landraces it is close to impossible for applicants to the UPOV plant variety protection to provide "the botanical finger prints by which the plant may be identified and distinguished from other varieties", something that is all the more difficult when the distinct or "novel characteristics of the plant lay in its odour, flavour, or taste." (Sherman, 2008: 562) More importantly, the conditions for legal protection established within the UPOV Code strictly applies to "new varieties" or cultivars (provided that they are distinct, uniform and stable) and not, obviously, to landraces for they are inherited and clearly not new: "Farmers' varieties typically can neither satisfy the UPOV nor the patent eligibility criteria for protection" (Medaglia et al., 2019 : 14).

The other problem that legally protecting landraces raises is that there is "no taxon equivalent to 'landrace' in the International Code of Nomenclature for Cultivated Plants" and that a landrace is not technically a cultivar, which is by definition "an assemblage of plants that has been selected for a particular attribute or combination of attributes, and

[16] According to the UPOV (article 1.iv: https://www.upov.int/edocs/pubdocs/en/upov_pub_221.pdf, a variety is "a plant grouping within a single botanical taxon of the lowest known rank" (form being the lowest such rank, below that of variety), that is, a cultivar according to the International Commission for the Nomenclature of Cultivated Plants. For instance, in 1969 the chair of the ICNCP wrote that "the implementation of the measures [set forth by the UPOV] depends on the correct naming of cultivars (varieties)" and that he was "glad to record that the provisions under the 1961 Code have, to a great extent, guided legislation in which cultivar (variety) names are involved" (Sherman, 2008: 580). Also see Sherman about how botanical and horticultural classifications differ.

that it is clearly distinct, uniform and stable in its characteristics and that, when propagated by appropriate means, retains those characteristics" (Sherman, 2008: 580). Indeed, landraces differ very much from cultivars such as defined in the Cultivated Plant Code in that they can be distinct (which is where part of their value lies) but they are neither necessarily uniform nor regularly stable (Halewood, 2008). Also, all landraces "are the result of exchanges and contributions by many cultures and communities that carried the crop to new environments, used it in different ways, and managed it according to the preferences embedded in their cultures and food habits" (Halewood, 2008: 185). As such, they inevitably imply shared property rights, something obviously difficult to establish historically and phylogenetically (biological evolutionary history), but also technically or horticulturally.

Indeed, according to Halewood et al. (2008: 199), creating *sui generis* intellectual property protections for landraces is extremely difficult if not impossible, because of "the conditions under which it would be possible to identify and protect a landrace pursuant to the looser *sui generis* conditions for protection". As a consequence, the authors "recommend that it would perhaps be more fruitful, for those interested in pursuing intellectual property-related approaches, to investigate *sui generis* options that are more closely analogous to appellation of origin laws, where history and patterns of use and production by the people of the region are more the focus than the biological limits of a particular plant population".

If legal protection of the *kif* landrace by other means than an appellation of origin is technically impossible, as it is for most landraces, the question of the protection of Moroccan hashish by other means than an appellation of origin also proves problematic. Indeed, legally protecting hashish or any terroir product outside of an appellation of origin would involve protecting a recipe or a list of ingredients by resorting to a patent or to a trade secret, which, considering that nothing about Moroccan hashish is new, original, or non-obvious to the average person in the field (conditions for applying for a patent in the United States for example), is clearly not an option. While patent laws differ throughout the world and notably between the United States and the European Union, a patent is recognized everywhere as a legal title that can be granted for "any invention having a technical character provided that it is new, involves an 'inventive step', and is susceptible to industrial application".[17] Such criteria clearly do not apply to traditional goods or products, including hashish.

Also, in the European Union, and notably in France, where the concepts of terroir and of typicity were invented, and where cooking recipes hold a tremendous cultural value, neither flavours nor recipes can be granted copyright protection.[18] In fact, the only way to protect recipes efficiently, whether in the United States or the European Union, would be by protecting them as trade secret, which implies of course to keep ingredients or preparation processes confidential, something that applies only to industrial recipes and not, for example, to the high gastronomic world (chefs publish their recipes). In any case, protecting a hashish recipe or production techniques via patent law would only make sense insofar as they would be innovative and guarantee the taste, aroma, or even effects of a given hashish. While this is not the case for Moroccan or any other traditional hashish, such recipes would be hardly eligible to protection since they are mostly obvious and have been widely known for decades if not centuries. In addition, such knowledge is held by communities, not by secretive individuals, and is usually transmitted orally. In fact, whether in the United States or in the European Union, a recipe passed down for generations cannot be patented because the applicant has to be the inventor of the food or recipe.

In any case, the typicity of Moroccan hashish is less attributable to a particular recipe or specific ingredients (there is, ideally, only one ingredient: trichomes) than to the geographic origin and the choice of the *Cannabis* cultigen. As explained earlier, what makes Moroccan hashish unique is its geographic origin, since both its terroir and its landrace are determined by geographical and cultural specificities. Therefore, an appellation of origin would be the best if not the only intellectual property protection available for a terroir product made from a landrace, such as Moroccan hashish. A horticultural and even chemical description of the *kif* landrace would be still be needed but it would not need to fit the various requirements needed for a formal registration of the cultigen as a variety in the UPOV acception of the term. An appellation of origin would also be valuable because it would protect the very geography that confers Moroccan hashish its typicity: it would be an incentive to protect the ecology of the Rif, the socio-technical itinerary of cannabis cultivation and hashish production, and or course the *kif* landrace itself.

Conclusion

I have argued, on the basis of the treaties and conventions governing international property rights and plant variety protection, but also on the basis of the concepts of terroir and landrace and their definitions, that appellations of origin have the unique advantage of protecting the name of terroir products that cannot be protected by a patent or a trademark, and thus of protecting the terroir product itself and, by extension, the cultigen from which it is derived. Indeed, for a product to be protected by an appellation of origin, it must meet certain quality criteria and specifications, and these criteria and specifications are ultimately guaranteed and protected by the appellation of origin itself. This protection therefore also extends to the traditional culture and knowledge that make production possible: when an appellation of origin protects a terroir product, it also protects its terroir, i.e. the social and physical conditions of production. It then also protects the cultivated plant from which the terroir product is derived, most especially in the case of a landrace that is difficult or impossible to protect legally.

Indeed, in addition to the aforementioned legal and technical difficulties, intellectual property rights other than appellations of origin are ill-suited to protect terroir products. This is mostly because what needs to be protected is not innovation and individual ownership, as in with classic intellectual property rights, but tradition and collective ownership, which is typically the focus of appellations of origin (basically collective intellectual property rights). Also, appellations of origin allow for the protection of *Cannabis* terroir products that are produced by indigenous people whose local traditions and techniques impart a distinctive quality to their product. Of course, appellations of origin are not originally conceived to protect indigenous knowledge as their focus is on place rather than on identity or community. Indeed, strictly speaking, appellations of origin are bound spatially, not ethnically or culturally (at least not directly). Yet they still are very well suited to protecting indigenous knowledge because it is local knowledge and because terroir products depend to a great extent on the "knowledge to produce, the knowledge to evaluate, and the knowledge to appreciate" (Casabianca et al., 2006: 5).

As such, appellations of origin and other geographical indications "reward traditional cultural values and knowledge" and are "able to accommodate group rights" (Sherman, Wiseman, 2016: 489). They offer a unique protection to landraces, terroir products, and related traditional knowledges, one that no treaty or convention can offer, not even the often-mentioned Nagoya Protocol, the supplementary agreement to the 1992 Convention on Biological Diversity that is not concerned with plant variety protection but with "the fair and equitable sharing of benefits derived from the utilisation of genetic resources", notably of plants. Indeed, the Nagoya Protocol, which also applies to traditional knowledge and to the benefits arising from the utilisation of such

[17] European Commision, *Internal Market, Industry, Entrepreneurship and SMEs*. https://single-market-economy.ec.europa.eu/industry/strategy/intellectual-property/patent-protection-eu_en Accessed on 22 March 2024.

[18] Alatis, *Protecting recipes using intellectual property law*. https://alatis.eu/en/actualites/protecting-recipes-intellectual-property/ Accessed on 22 March 2024.

knowledge, covers not plants *per se* but their genetic resources when these are "utilized" within the definition of its Article 2(c), meaning "to conduct research and development on the genetic and/or biochemical composition of genetic resources, including through the application of biotechnology" (Nagoya Protocol, 2010 : article 2c ; UEBT, 2017; Medaglia et al., 2019 : 4–5).

Appellations of origin are therefore clearly best suited to protect terroir products because, in the same way that "indigenous innovation is place-based innovation" (Drahos, 2011: 235), indigenous originality and distinctiveness is place-based originality, whether indigenousness is relevant or not and whether innovation is only tradition in progress. In the Rif, the heritage of *Cannabis* cultivation is claimed by different Berber tribes, something that makes intellectual property rights other than appellations of origin more difficult to grant, because of the "fallacy of universality" (Gibson, 2004: 281) of course, but also because of the "invidualistic and author-centric nature" (Van Caenegem, 2015: 294) of such rights (this is even more problematic when more than one ethnic, tribal, or linguistic group is concerned). It should moreover be reminded that because "intellectual property [other than geographical indications] is not concerned with preservation of tradition but with novelty, inventiveness, originality", it is about "adding to the sum of knowledge and expression rather than preserving and perfecting what is known and accepted" (Van Caenegem, 2015: 295).

Ultimately, one of the difficulties in granting an appellation of origin to Moroccan hashish would lie in the choice of the name to be protected. What geographic or local names could be associated to the generic term hashish to specifically designate Moroccan hashish? Most names will prove controversial if not polemical in the Rif or even, on a larger scale, in Morocco. Is it legitimate, for instance, to speak of Moroccan hashish when referring to the resin produced in the Rif region by autochthonous Berber tribes who have made the conservation of the *kif* landrace possible, notably despite the antidrug laws and repressive actions of the Moroccan state? Would it be better to call it Rifian hashish, since any subregional name, such as *Ketama* hashish for example, would be contested by Berber hashish producers from other areas and tribes? To add more complexity to the matter, it is worth mentioning that out of the various local *Cannabis* cultigens of the Rif, only the *ktami* cultigen, cultivated around Ketama and reportedly renowned throughout the country since at least the 17th century, has possibly reached us (Chouvy, 2023b)? In any case, the fact that there are no Berber terms for hashish or even for cannabis (*kif* is an Arabic loanword used by all Berber tribes: Chouvy, 2023b) raises questions about the adequate terms of a hypothetical appellation of origin.

However, such questions strengthen rather than weaken the argument in favour of an appellation of origin, since the decisive and even discriminating criterion turns out to be that of the spatial limits of hashish typicity, not spatial limits of ethnicity. In the same way as there are spatial limits beyond which the hashish typicity differs (determined by typicity thresholds or limits), there are horticultural criteria (to be determined by way of morphotypes and chemotypes) according to which the *kif* cultigen ceases, according to different criteria, to fit the *kif* landrace type. These are the few questions that the granting of an appellation of origin will have to answer if and when such intellectual property rights are granted in the future.

Yet it is clear that granting Moroccan hashish an appellation of origin would have a number of direct and indirect advantages in terms of preserving its quality and characteristics : protection of an agro-ecosystem and its agrobiodiversity and therefore their sustainability, but also economic development linked to the creation of added value and a niche market, that of a labelled terroir product. In short, an appellation of origin is an all-encompassing protection that has the unique advantage of going beyond mere legal protection to include cultural and environmental conservation but also rural economic developement. As such, an appellation of origin would benefit both producers and consumers as the origin and quality of Moroccan hashish would be officially guaranteed : consumers would be assured that they were buying a product whose characteristics and quality had been imposed on the producers claiming the appellation of origin in question.

CRediT authorship contribution statement

Pierre-Arnaud Chouvy: Writing – original draft.

Declaration of competing interest

The authors declare there is no conflict of interests.

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