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Concentration despite competition: The organizational ecology of technical assistance providers

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Abstract
When international organizations expand and proliferate, why do they fail to spread more evenly in their policy sphere? To answer this question, this article builds on organizational ecology theory, which was recently introduced into the study of international organizations. However, rather than studying each population separately, as previous studies have done, this article investigates how distinct populations with overlapping niches shape each other's evolution. It argues that when inter-population competition occurs, the first population to occupy its niche at a high density limits the long-term development of other populations. This is the case even if emerging populations may temporarily enjoy a higher growth rate. The argument is illustrated by a study of the relations between four populations of technical assistance providers in the field of intellectual property. By doing so, the article brings for the first time inter-population relations in the study of international organizations and provides an explanation for the persistent concentration of international organizations in specific areas of the governance space.

Keywords Organizational ecology · Intellectual property · Technical assistance · Capacity building · World intellectual property organization

JEL classification O34 · D23 · D79 · F53 · F55 · L33 · O19

1 Introduction

The last few decades have seen a remarkable proliferation of international organizations (Raustiala 2012). An ever-increasing number of public and private organizations are internationally active and carry out governance functions. In some issue-areas, these

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new international organizations have contributed to creating dense "regime complexes", defined as "an array of partially overlapping and nonhierarchical institutions governing a particular issue area" (Raustiala and Victor 2004: 279).

Competition between international organizations operating in the same regime complex intensifies as their population density increases (Gehring and Faude 2013). This is particularly the case for operational organizations that provide governance goods, such as humanitarian aid, financial loans, statistical data, policy advice or technical assistance.[1] Operational organizations supply governance goods in exchange for resources, including monetary payments, political influence, media exposure, or social recognition. As these resources are limited, operational organizations compete to provide governance goods. While barriers to entry often limit competition between regulatory organizations, operational organizations of various sizes and types, including public and private organizations, can offer similar governance goods.

In principle, the intense competition between operational organizations can make a regime complex more fluid and innovative (Vaubel 2008; Keohane and Victor 2011: 17). However, competing operational organizations often provide similar governance goods, instead of differentiating themselves from their competitors. Like gas stations or banks, which are often located next to their direct competitors, competing providers of governance goods may remain concentrated within a limited area of their governance space (Clarke 2018). This concentration can persist even if their competition intensifies, and even if consumers of their governance goods are spread across a larger space, which means that some would welcome a more diversified supply. For example, in global health, new donors are inclined to provide even more funding for tuberculosis and malaria, rather than neglected tropical diseases (Bhutta et al. 2014). In the field of climate change, despite the continuous growth of transnational initiatives, climate mitigation continues to receive more resources than climate adaptation (Bulkeley et al. 2012). In the case of intellectual property (IP) – which is the empirical focus of this article – some developing countries benefit from growing investment in technical assistance to the point of congestion, while other potential recipients seldom receive any assistance at all.

This article examines this puzzling concentration of operational organizations in limited areas of the governance space. Why do competing organizations remain clustered when they increase in number, instead of spreading in response to heterogeneous demand? Why does the arrival of new operational organizations fail to lead to a more even and diversified distribution of the governance goods that they provide?

Organizational ecology theory provides clues to this puzzle. It is particularly useful for explaining the behavior of a group of organizations, such as their simultaneous concentration and growth. It does not offer an all-encompassing alternative to existing theories; instead, it provides a middle-range complement to traditional explanations.[2] More specifically, organizational ecology theory asserts that several organizational populations of varying density can coevolve in an organizational ecology. By building on this proposition, this article argues that the first population to occupy its niche at a

[1] Providing governance goods is a governance function (Frey 2008). Governance goods include physical goods and intangible services. They can be public, private, common or club goods.

[2] The purpose of this article is not to discard traditional explanations, but to focus attention on processes that have been overlooked. As Abbott, Green and Keohane have argued, traditional theories "are incomplete because they fail to pay systematic attention to the organizational environment" (2016: 250

high density leaves little opportunity for subsequent populations to develop. This may explain why organizations that populate an ecosystem remain concentrated within a limited area of the governance space.

This article is divided into six parts. The first presents organizational ecology theory. The second part details three hypotheses derived from this theoretical framework. The third part introduces the empirical case of technical assistance in the field of IP. The fourth, fifth and sixth parts focus, respectively, on the successive stages of the emergence, development and stabilization of inter-population competition. The conclusion discusses how the ecological analysis of global governance could be taken a step further.

The second level of complexity in organizational ecology

Organizational ecology theory emerged in organizational studies in the 1970s under the impulsion of scholars, such as Michael Hannan and John Freeman (1977). Its primary interest lies in the fact that it shifts the analysis of organizations to the level of their populations. Organizational ecology considers whole populations of organizations, not merely individual organizations.

In organizational ecology, a population is a group of organizations that rely on the same combination of resources to sustain and reproduce themselves. Examples of resources include funding, media exposure, expertise, members, political connections, and problems to solve. The specific set of resources that a population of organization requires is the population's "fundamental niche", conceptualized as a multidimensional space, which varies in size depending on the diversity of the potential resources that a population could consume. As all members of a given population share the same fundamental niche, environmental changes affect them in a similar way. According to organizational ecologists, this gives populations their unitary character (Hannan and Freeman 1977: 45).

Shifting the level of analysis from organizations to populations changes the way evolution is conceptualized. Organizational ecologists do not consider individual organizations to be highly adaptable. In fact, they suggest that they are relatively inert, with a stable repertoire of actions and a slow responsiveness to environmental change. Organizational ecologists argue that adaptation is the result of a selection process, where new organizational forms emerge and unfit organizational forms vanish. In other words, populations adapt to their environment as a consequence of organizational selection (Hannan and Freeman 1977: 6).

The main adaptive reactions studied in organizational ecology are growth and decline (Hannan and Carroll 1992: 5), which can be intensive or extensive. Intensive growth refers to the expansion of existing organizations, while extensive growth refers to an increasing number of organizations. These two types of growth do not necessarily occur simultaneously or in the same direction. However, the literature on organizational ecology remains largely focused on extensive growth, presumably because it is easier to collect data on the number of organizations than on the internal expansion within organizations.

Organizational ecology suggests that the growth rate of a population is a function of its density, i.e. the number of organizations that make up the population in relation to a given amount of resources. According to organizational ecologists, legitimation and competition are the two main processes that link density to growth (Hannan and Carroll 1992). First, density conveys legitimation: when a population increases in density, its

organizational form acquires a taken for granted status. In turn, increased legitimacy facilitates the establishment of new organizations, which has a positive effect on growth. Second, density increases competition between the organizations within a population. In contrast to legitimacy, competition has a negative effect on growth because it increases pressure on the pool of available resources. Organizational ecology predicts that legitimation increases with density at a decreasing rate, whereas competition increases with density at an increasing rate. Beyond a certain density threshold, density does not significantly increase the legitimacy of an organizational form, but it continues to intensify the level of competition. Thus, if we assume that the amount of available resources remains constant, the growth rate of a population is expected to follow a bell curve.

This theoretical approach has only recently been applied to international organizations (Stokke 2013; Gehring and Faude 2014; Nemeth 2014). Among the pioneers are Abbott, Green and Keohane, who rightly argue that organizational ecology is a useful complement to traditional actor-centered approaches (2016). In international relations, as in business studies, various organizations compete for the same resources. Abbott, Green and Keohane also adjust the classical measurements used in organizational ecology so that they are more congruent with the specificities of world politics (2016: 258). When assessing a population's vital rates, they do not consider the actual establishment or dissolution of international organizations. Instead, they consider their entry or exit in terms of a particular governance function. Consequently, extensive growth in international relations does not necessarily involve the creation of new international organizations. It can occur when existing international organizations diversify their activities and enter a new issue-area. Adjusting the original theory in this way is necessary because, unlike local businesses, the international organizations that populate world politics rarely die. Instead, they frequently take on and withdraw from governance functions.

Abbott, Green and Keohane use this revised version of organizational ecology to explain the growth rate of two populations of international organizations in the field of climate change: private transnational organizations and intergovernmental organizations. They observe that private transnational organizations are multiplying faster than the latter. They explain this variation by the fact that the two populations are at different stages of development. Transnational private organizations are a relatively recent phenomenon. Consequently, they face little competition and can still benefit from a legitimacy boost, compared with the already well-established population of intergovernmental organizations. The work conducted by Abbott, Green and Keohane is an important first step towards the application of organizational ecology to international organizations.

The next step is to study inter-population dynamics. Studying relations between populations is what Hannan and Freeman refer to as the second level of complexity in the ecological approach to organizations (1989:14). While the first level concerns the demography of organizations and compares populations' vital rates – as in the case of Abbott, Green and Keohane's article – the second level "concerns the ecology of populations and attempts to link vital rates between populations" (Hannan and Freeman 1977: 14). Studying inter-population relations more specifically entails looking at how the density of one population affects the growth rate of another population.

As a result, this second level of complexity brings structural power into organizational ecology theory. In fact, the neglect of power was one of the early criticisms of the first generation of organizational ecology, which analyzed populations independently from each other (Perrow 1986). This criticism encouraged organizational ecologists to develop a second level of complexity and embark on inter-population analysis. If one population's density restrains the growth of another population, it implies that the former has some power over the latter. This type of power is structural (Barnett and Duvall 2005). It does not depend on how a population of organizations interacts directly with another population. Instead, it depends on what a population is in relation to another. More interactive types of power, such as coercion or persuasion, are inappropriate in the context of organizational ecology. As a group of organizations, a population is not an actor: It does not have an intentional character and cannot strategize its actions towards other populations. Nevertheless, if a population has greater density than an overlapping population, it enjoys a form of structural power. As such, considering how the density of one population affects the growth rate of another population constitutes a significant analytical development in organizational ecology theory, one that has not yet been applied to the study of international organizations.

2 Hypotheses on inter-population relations

This article takes the second analytical step in organizational ecology and introduces inter-population dynamics to the study of organizations active internationally. It argues that relations between populations of organizations are structurally constrained by their density. This effect is expected to be apparent at three different stages in the evolution of a population: 1) initial emergence; 2) short-term growth; 3) and long-term development. As illustrated in Fig. 1, one hypothesis is introduced for each of the three different stages in the following paragraphs. When combined, the three hypotheses provide insight into why organizations that occupy an ecosystem often remain concentrated in a limited area of the governance space.

In the first stage, a new population can emerge when the established population is highly concentrated in a section of its governance space. This is likely to be the case

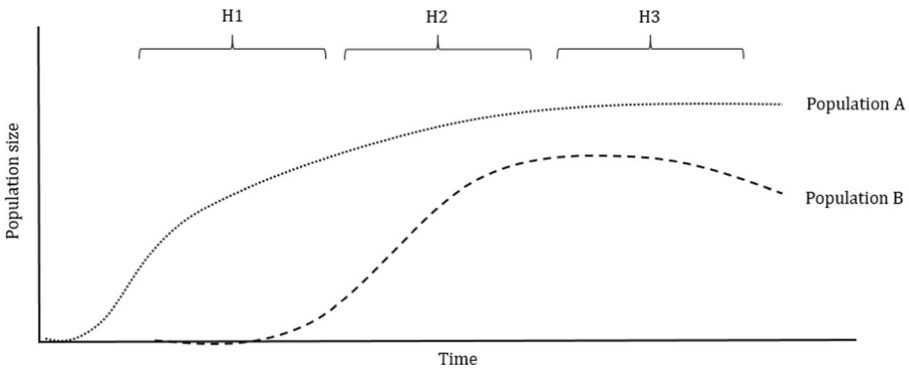

Fig. 1 Three hypotheses on inter-population relations

when the established population is composed of generalist organizations. According to Hotelling's law (1929), generalist organizations typically concentrate their activities at the center of a resource space. As they compete directly for the same resources, the best strategy for each generalist organization to capture its fair share of resources is to coalesce at the center of the resource space. If the center is already crowded, smaller newer organizations are more likely to survive if they innovate and specialize at the periphery, where they occupy a narrower space but enjoy reduced competition. The emergence of specialized organizations in a distinct resource space is called "resource partitioning". If they evolve and expand their niche away from the cluster of established generalists, specialized organizations may form the basis of a distinct new population, which only partially overlaps with the more established population. In other words, specialized organizations do not automatically constitute a population that is distinct from generalists. Their specialized character is not an intrinsic feature of their population. It is a strategy for resource consumption at the organizational level. However, specialization enables organizations to expand their niche away from generalist organizations, and this distinctive new niche can constitute the defining basis for a new population. This phenomenon of differentiation has been observed in biology and business, but it has not yet been reported in international studies (Singh and Lumsden 1990: 169; Freeman and Audia 2006: 152).

> H1. The denser a population of generalist organizations, the more likely it is that a distinct population of specialized organizations will emerge at the periphery.

In a second stage, the emerging population and the established population have fundamental niches that partly overlap. When one population partially or completely occupies the overlapping area, it necessarily limits the resources available to the other population. This constrains the latter's potential growth (Hannan and Freeman 1977: 50). Organizations can avoid direct inter-population competition by abandoning the overlapping area and concentrating their activities in areas beyond the other populations' reach. The limited area where a population actually consumes its resources is known as a "realized niche". Yet, even in the absence of direct competition in the overlapping area, inter-population competition intensifies intra-population competition, by restricting the size of the realized niche. Consequently, the intensity of inter-population competition, experienced by a given population, depends on the relative size of the non-overlapping area of its fundamental niche and the number of organizations within that area. A population with fewer organizations outside the overlapping area is structurally less vulnerable to inter-population competition and is expected to grow faster in the short term. Thus, high population density is not the only limiting factor for population growth: When niches overlap, the high relative density of other populations reduces growth further.

> H2. When two populations partly overlap, the one with the lowest density in the non-overlapping area is more likely to experience rapid growth in the short term.

In a third stage, as a population continues to expand, it increases in density. Assuming that the amount of available resources remains stable or diminishes, population growth intensifies the level of intra-population competition, which reduces the population's

growth rate. At some point, two populations with overlapping niches may reach a similar level of density and compete directly for their overlapping niche area. In this situation, the population that comprises older organizations can compete more easily. Old organizations have had time to develop a dense web of relations, experiment with various operational procedures, develop their general expertise and accumulate organizational slack. This gives them an advantage when it comes to competing with younger populations. In the organizational ecology literature, the propensity for younger organizations to have a significantly higher failure rate is known as the "liability of newness" (Stinchcombe 1965; Carroll 1984; Hannan and Freeman 1977: 81; Singh and Lumsden 1990: 168). This implies that the first population to grow and occupy an overlapping niche area is ultimately more likely to outcompete the more recent, less dense, less connected and faster growing population. Even if an emerging population grows extensively and some of its organizations enter the overlapping area, established organizations are likely to grow intensively and push the more recent organizations out of the overlapping areas. Established organizations are notably better placed for developing mutually beneficial cooperative arrangements with organizations from other populations. This is because they occupy the center of the governance space and share more overlapping areas with emerging populations than is the case for emerging populations. In this situation, some organizations from the less competitive emerging population could increase their chances of survival by collaborating with the larger more established population at the center of the governance space. The remaining organizations will exit the governance space or retreat into a narrow realized niche until such time as an exogenous shock increases the amount of available resources or a disruptive innovation destabilizes the dominant population.

> H3. When two populations compete, the first population that occupies the overlapping niche area at a high density is more likely to have the lowest failure rate in the long run.

Although these three hypotheses are independent, they can occur sequentially because they concern population emergence, initial growth and long-term development, respectively. The high density of one population can give rise to the emergence of a second population at the periphery of the crowded center. The second population may briefly experience a higher growth rate than the first. However, the first population has the advantage of being the first to occupy the shared niche. Consequently, in the event of competition with an emerging population, it is structurally privileged and is likely to remain more populous. Organizational ecology is not deterministic, but it highlights the importance of the historical context when it comes to explaining population growth.

The historical context is particularly useful for explaining the prevailing concentration of organizations, despite their proliferation and increasingly fierce competition. A population of well-established generalist organizations can remain clustered to maximize their resource consumption, leaving little room for competition from emerging organizations. This is similar to the classic market failure that occurs in microeconomic situations when several suppliers (for example, radio stations) offer similar goods (pop music), despite consumers' heterogeneous preferences. The population of pop music stations was the first to densely occupy their ecosystem. Their resulting dominance leaves few resources (radio frequencies, listeners, ad revenue, etc.) for alternative

populations of radio stations. Studies based solely on the demand for alternative stations would not be able to explain their small population size without taking into account the competition between partly overlapping populations of radio stations (there is some overlap between jazz and pop music radio stations) and the dominance of the initial population. Although the established population may eventually be sidelined, it tends the have the upper hand when competing with emerging populations. Thus, organizational ecology offers a supply-side explanation as to why the supply continues to be homogenous despite the increase in the number of suppliers and the heterogeneous demand.

Nonetheless, consumer preferences are not always stable and the pool of available resources in an ecosystem can fluctuate. This may be due to factors that are exogenous to the ecosystem or because one population has actively expanded its niche and created a demand for itself (Clarke 2018). It is unrealistic to assume that the prevailing ecological conditions always remain constant. Arguably, fluctuations in the pool of available resources can have more impact on the growth of a population than its density or the density of overlapping populations. This article and organizational ecology, more generally, does not suggest that demand-side explanations are unimportant. Instead, it shows that focusing on the demand side alone, including on the fluctuations in the amount of resources available to a population, is insufficient to explain the outcome.

3 Populations of technical assistance providers

This article illustrates the theoretical arguments presented above by examining populations of organizations that provide technical assistance in the field of intellectual property (IP). Technical assistance is becoming an increasingly important element in global governance and it has not yet received the scholarly attention that it deserves. In the field of global IP issues, in particular, technical assistance has arguably become a stronger driving force for policy diffusion than treaty negotiations (May 2004; Morin and Gold 2014). Since the end of the 1990s, multilateral negotiations on IP have met with failure, regardless of whether their aim was to strengthen international IP standards (e.g. the failed Anti-Counterfeiting Trade Agreement) or relax them (e.g. the failed Treaty on Access to Knowledge and Technology).[3] As a result, players from all sides are now trying to convince foreign policymakers to adopt their favored IP norms unilaterally. The current IP battle is being fought in the field of ideas, and providing technical assistance has become a weapon of choice. As the US government states, "perhaps the most important of the remaining tools is our ability to offer technical assistance" (2004).

A diversity of organizations provide technical assistance on IP to developing countries, including chambers of commerce, companies, patent offices, industrial groups, universities, intergovernmental organizations, ministries of culture, as well as NGOs. They organize seminars, training courses and workshops to strengthen the capacity of developing countries in the field of IP. Technical assistance may also take the form of a commentary or advice on draft regulations. On the basis of data collected

[3] One of the rare exceptions is the Marrakesh Treaty to Facilitate Access to Published Works for Visually Impaired Persons. Nevertheless, its adoption required considerable effort despite its modest scope.

for this article, at least 168 different organizations have provided IP technical assistance to developing countries since the early 1990s.[4]

Despite the proliferation of these actors, technical assistance activities are by no means evenly distributed. Some judges and policymakers in least developed countries are unsure how to interpret and implement the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs) for the specific context of their country (Deere 2008). In the meantime, Geneva delegates are showered by technical training courses and workshops (Deere Birkbeck and Roca 2011: 182). A report commissioned by the World Intellectual Property Organization (WIPO) deplored the fact that there is "evidence of duplication and overlap with other actors" (Deere Birkbeck and Roca 2011). A UK Government Commission on IP claimed "there is a great deal of scope for improvement in the delivery and coordination of assistance in the IP field" (2002: 151). According to observers of IP technical assistance, the overlap generates "a waste of resources" (Pengelly 2005: 37) and means that assistance is "skewed towards a few countries" (Saggar 2006: 42).

This article argues that the incongruity between the suppliers' proliferation and concentration occurs because of the asymmetrical relations between distinct populations of providers of IP technical assistance. The niches occupied by these populations partly overlap. They are all looking for recipients for the technical assistance that they provide, as well as funding to cover the cost of their activities. However, one population of providers of IP technical assistance is denser and more established than the others. This asymmetry structures the emergence, growth and long-term development of more recent populations.

Following the tenets of organizational ecology, this article does not map populations on the basis of observations relating to resource consumption. Actual consumption does not reveal the full range of resources that a population could potentially use. This is particularly true if limiting factors are removed, such as competition with other populations. Moreover, defining a population in terms of its behavior would make it difficult to formulate falsifiable hypotheses. Instead, as Hannan and Freeman point out, population taxonomy should be based on the stable characteristics of the organizations within the population (1989: 45, 59).

Two stable characteristics stand out in the literature. The first builds on the classic distinction made in organizational ecology between public (including governmental organizations and IGOs) and private organizations (including businesses, NGOs, law firms, consultancies, university centers and foundations). Public and private organizations have different missions, funding opportunities, expertise, bureaucratic cultures and time-horizons. For example, public organizations can collect patent fees and cultivate expertise in patent examination but private organizations can't. In organizational ecology, public organizations are often assumed to be slow-but-stable, while private organizations are deemed rapid-but-fragile (Abbott et al. 2016: 260). Obviously, there are many instances where public organizations behave like corporations and private organizations sometimes have activities that resemble public organizations.

[4] If two organizations have separate technical assistance programs, I consider themas distinct and autonomous organizations for the purpose of this article, even if they are part of a shared institutional structure and have overlapping membership. For example, I consider the development agency and the patent office of the same government as two distinct organizations if they offer distinct technical assistance programs to developing countries.

However, most observers and stakeholders in global IP politics recognize and reproduce this classic distinction.

The second stable characteristic distinguishes organizations in relation to their ideological inclination. This is a stable characteristic, which is key to an organization's identity and provides a strong basis for population differentiation (Freeman and Audia 2006: 151). For the purpose of this article, we distinguish between organizations that hold relatively maximalist views (for whom the more IP protection there is, the better) and those with relatively minimalist views (for whom IP protection should be kept to a minimum). These types of organization have access to different resources. Maximalist organizations are more likely to be actively supported by IP holders and their agents, while minimalist organizations are more likely to be supported by public-interest organizations. Although stakeholders in IP politics do not spontaneously use the terms "maximalist" and "minimalist",[5] they readily acknowledge the existence of the two ideological camps, as does the existing academic literature on IP politics (May 2004; Sell and Prakash 2004; Helfer 2004; Muzaka 2011; Dobusch and Quack 2012; Morin 2014).

These characteristics serve as the basis for a two-dimensional taxonomy of technical assistance providers. Table 1 shows examples of IP technical assistance providers from the four different populations. Given their different organizational structure and ideological orientation, there is only a partial overlap between the organizations' fundamental niches. Nevertheless, there is sufficient overlap to create inter-population competition for resources, such as funding from development agencies and policymakers in need of advice on IP. This article studies a myriad of different types of actors, including governments, intergovernmental organizations, NGOs and business organizations. However, it does not neglect their different organizational structure and ideological orientations.

To study relations between these populations, this article relies on a data collection strategy, which differs from the one favored by the pioneers of organizational ecology. According to Hannan and Carroll, organizational ecology "requires only counting, albeit in a very comprehensive way" (1992: 17). At the time, this method greatly facilitated cross-case analysis, which was considered essential for testing the theory's claims to generality (Hannan and Carroll 1992: 38). However, these arguments are now well established and provide the basis of organizational ecology. This case study seeks to stretch the boundaries of organizational ecology theory, by applying hypotheses on inter-population dynamics to international studies.

To achieve this, the article relies on a combination of quantitative and qualitative data. First, various websites, reports and databases were used to identify 168 different providers of technical assistance in developing countries in the field of intellectual property (see Appendix 1 for a list of organizations).[6] Agencies that are part of the same government, such as the United States Patent and Trademark Office (USPTO) and the United States Agency for International Development (USAID) are considered as distinct providers of technical assistance and they are not necessarily assumed to be part of the same population. The 168 providers were classified in the four populations

[5] These terms may seem perorative and over-simplistic. They are used here for solely heuristic reasons. Individuals and organizations have more complex and nuanced viewpoints.

[6] Data from our 57 interviews suggest that our list of 168 providers is quite comprehensive.

Table 1 Examples of IP technical assistance providers

	Private	Public
Maximalist	Motion Picture Association of America, Arab Society for IP, International Federation of Pharmaceutical Manufacturers and Associations, etc.	French Ministry of Culture, United States Patent and Trademark Office, Interpol, etc.
Minimalist	Médecins Sans Frontières (MSF), Creative commons, Electronic Frontier Fondation, etc.	United Nations Conference on Trade and Development, International Development Research Centre, Andean Community, etc.

described above: public maximalists (69 organizations), public minimalists (12 organizations), private maximalists (27 organizations) and private minimalists (33 organizations).[7] We also used various websites, reports and databases to collect information on the technical assistance provided by the different organizations in developing countries since 1990, including where, when, with whom and for whom.

This demographic data is complemented by 57 semi-structured phone interviews with individuals working for organizations that provide technical assistance (see Appendix 2 for a list of interviewees, the institutional affiliation and the date of the interview). We asked interviewees questions related to the historical evolution of their technical assistance program, their targeted recipients and their relations with other technical assistance providers. While quantitative demographic data is mainly used descriptively to identify trends over time, perceptions expressed during interviews inform us about the causal processes driving demographic trends. This mixed strategy is thought to provide a solid foundation for introducing inter-population dynamics into the study of international studies.

4 H1: The emergence of specialized technical assistance providers

The first hypothesis presented in this article states that the higher the density of a population of generalist organizations, the greater the likelihood that a distinct population of specialized organizations will emerge. In the field of IP technical assistance, the emergence of specialized populations did not occur until the end of the 1990s. When the World Trade Organization's TRIPs Agreement was adopted in 1994, the number of organizations providing IP technical assistance to developing countries was still relatively small. Of the 168 different providers of technical assistance identified for this study, only 18 were operating in 1993. The primary reason for this small population size was that the niche itself was limited. Before the TRIPS agreement, few developing countries requested this type of assistance and few sponsors were interested in funding this type of

[7] The ideological agenda of 27 providers is unclear. Rather than forcing them into a category (minimalist or maximalist), they were considered as indeterminate and were excluded from some quantitative comparative analyses.

activity. Given this restricted environment, it was only possible for a handful of generalist organizations to develop activities involving technical IP assistance.

The early technical assistance providers were public organizations with maximalist views. They included a few patent offices, notably the United States Patent and Trademark Office (USPTO) and the European Patent Office (EPO), as well as intergovernmental organizations, including WIPO and the World Customs Organization (WCO). At that time, these public maximalist organizations were the only ones with sufficient resources and expertise to provide technical assistance to developing countries. They held a "policy monopoly" over IP, thanks to their exclusive understanding of this arcane and highly technical field of law (Sell 2003: 99). Yet, since the demand for technical assistance was limited, their assistance was often provided on an ad hoc basis and few of them had a stable technical assistance program.[8] They provided assistance on various topics to various audiences using various formats, depending on demand.

The adoption of the TRIPs Agreement in 1994 significantly expanded the resource base of the established population of public maximalist organizations. Several developing countries started seeking technical assistance because they had to implement a comprehensive and intricate agreement in a relatively short period of time (Deere 2008). One seasoned interviewee suggested that "most developing countries didn't know what they signed and most of them were really confused about many of the obligations". Yet, domestic laws and regulations had to be designed and bureaucratic administrations and enforcement mechanisms had to be set up. A wide range of professionals required training, including policy advisors, right holders, patent examiners, lawmakers, customs officials, law professors, police officers, prosecutors and judges. As Peter Drahos notes, "what was being demanded of developing countries through TRIPS standards was a large-scale institution building exercise" (2010: 264). TRIPs negotiators themselves acknowledged the magnitude of the task. Article 67 of the TRIPs Agreement states that developing countries should receive assistance to draft regulations and establish agencies.

Data obtained from interviews and official documents reveal that several technical assistance providers responded to this call and benefited from the opportunity for growth. The adoption of TRIPs was referred to as the "trigger" for IP technical assistance by one senior interviewee. The established population of public maximalist organizations, in particular, grew intensively following the adoption of the TRIPs Agreement. Interviewees working for various governmental or intergovernmental organizations confirm that they consolidated and expanded their technical assistance activities in the mid-1990s, often by creating "IP academies".

WIPO is a prime example of a public maximalist organization's intensive growth. In the 5 years following the entry into force of the TRIPs Agreement, WIPO invested its own human and financial resources in technical assistance, in addition to the trust funds provided by member states specifically for this purpose (Deere Birkbeck and Marchant 2011: 106). WIPO set up its own academy in 1998 to run various programs, including distance learning and executive, educational and professional development programs. It also positioned itself strategically as the main provider of TRIPS-related technical

[8] This situation is analogous to a thick market effect, in which a low frequency of transactions creates volatility and inconsistency.

assistance, by signing joint technical cooperation agreements with the WTO. From 1994 to 1999, it provided assistance for the preparation of no fewer than 136 draft laws from 78 different developing countries and commentaries on a further 130 draft laws (WIPO 1999).

WIPO's rapid opportunistic reaction after the adoption of the TRIPs Agreement might appear counterintuitive. Indeed, large old bureaucratic organizations like WIPO, whose institutional roots date back to the nineteenth century, are not known for their rapid adaptability to environmental changes. In fact, at other times in its history, WIPO's failure to adapt swiftly to its changing environment caused internal crises and led to missed opportunities. This occurred in the early 1970s at the time of the New International Economic Order and in the mid-1980s on the eve of the Uruguay Round (May 2006). However, in both instances, WIPO's adaptation would have required a shift in its normative maximalist orientation. If WIPO succeeded in benefiting from the implementation of the TRIPs Agreement, it is because this opportunistic move was tantamount to doing more of the same, i.e. developing and expanding its existing technical assistance activities. It grew intensively without having to adapt by changing its orientation.

Moreover, the WIPO academy and other similar academies set up by public maximalist organizations offer roughly the same type of training (week-long legal courses) and target the same audience (primarily patent examiners and IP policymakers) in developing countries. This overlap does not appear problematic for these organizations. As one interviewee explains: "We might offer similar products to the same people. It is like antique shops in some cities, all in the same area. It creates an antique district. Is it something bad? No, because the supply creates some visibility".

Yet, as WIPO and other public maximalist organizations grew intensively, other populations of technical assistance providers slowly emerged (See Fig. 2). These newcomers included health activists, development-oriented think tanks, private foundations, university research centers, religious groups and consumer associations (Sell and Prakash 2004; Helfer 2004; Muzaka 2011; Dobusch and Quack 2013; Morin 2014). Ironically, the political opportunity structure, which allowed private minimalist organizations to proliferate, was created in an attempt to impose a maximalist interpretation of the TRIPs Agreement. In 1998, 39 pharmaceutical companies filed a lawsuit against South Africa over its bill amending the patent act for public health motives. The pharmaceutical industry wanted to send a strong signal to all WTO members that were attempting to implement the

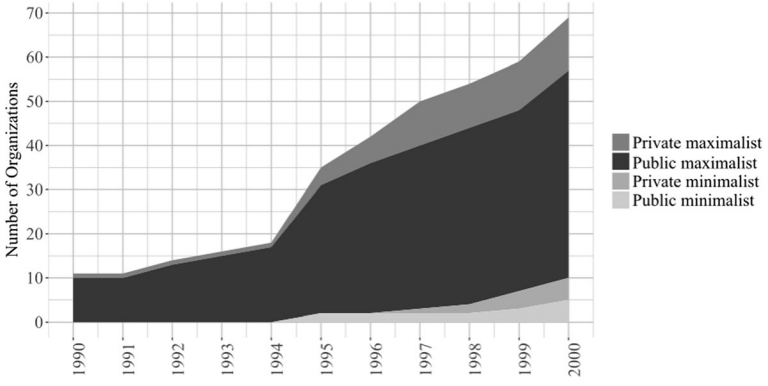

Fig. 2 The growth of populations of IP technical assistance providers (1990–2000)

TRIPs Agreement on a domestic level. In response, a group of civil society organizations, including the Consumer Project on Technology and Médecins Sans Frontières, developed a global campaign over access to medicines, while privately they were providing advice to the South African government (Sell and Prakash 2004). After the pharmaceutical companies dropped their lawsuit in April 2001, the victory boosted the minimalist technical assistance providers and they continued advising an increasing number of developing countries. As the organizational ecologists Hannan and Freeman noted, successful collective actions help create boundaries for emerging populations, in this case private minimalist populations (1989:59).

Other private and minimalist technical assistance providers emerged and expanded by creating specialized niches. Several interviewees explain how they strategically isolated themselves from competition by providing a "unique", "specific" or "different" type of technical assistance, which nobody else offers. One interviewee explains that the intensive growth of the traditional public maximalist organizations forced her organization to specialize: "We don't try to compete with WIPO or WHO because we don't have the resources to compete". Another interviewee explains: "If you look at the whole area of IP training for developing countries, it's huge. […] So, what [we have tried] to do is identify a very specific area, what I call a niche area, where [we] can have a value-added." In fact, six interviewees spontaneously described their organizations as having a specific "niche", without being prompted by the interviewer to use the term.

Some organizations conduct surveys on the existing competition to identify an unfulfilled need. Some organizations monitor other organizations' activities or exchange information on a regular basis. This has enabled them to maintain the specificity and uniqueness of their technical assistance activities. One interviewee, for example, describes how his private organization strategically selected its area of specialization after realizing that "this is one area that we don't see enough training being done by WIPO or WTO or national patent offices".

Several interviewees explain how they specialized by building on their natural competitive advantage. In many cases, this is linked to a location in a specific part of the world or to a common language shared with recipient countries. In some cases, an organization's natural competitive advantage is related to its specific expertise. The nature of an organization's mandate, which may be related to agriculture, security, health, books, Internet, pharmaceutical products, trade or the environment, generally determines its capacity to provide specialized technical assistance on a specific aspect of IP. In some organizations, their main assets are membership and connections, which facilitate the search for funding and participants.

To compare the degree of specialization of emerging populations with the more traditional public maximalist populations, a measure of specialization was developed. This measure is calculated for each of the 168 technical assistance providers identified. It is based on five indicators of the diversity of recipients of their technical assistance: 1) how many of the three categories of developing countries are covered by the provider's technical assistance (low-income, lower middle-income and upper middle-income economies, as defined by the World Bank); 2) how many of the six world regions are covered by the provider's technical assistance (East Asia, Central Asia, Latin America, Middle East and North Africa, South Asia and Sub-Saharan Africa, as defined by the World Bank); 3) how many of the six main language categories are

covered by the provider's technical assistance (English, French, Spanish, Portuguese, Arabic and Russian, as defined by the recipient countries' official language); 4) how many of the three main targeted audience groups are covered by the provider's technical assistance (lawmakers and policymakers, administration and enforcement officers, and non-state actors); 5) and how many of the five main IP rights are covered by the provider's technical assistance (copyright, trademarks, geographical indications, patent and other rights). These five indicators are given equal weight and are aggregated in a single measure, ranging from 0 to 1, where 1 corresponds to the highest degree of specialization.

Using this measure, the three most generalist organizations appear to be public maximalists who have offered IP technical assistance for more than 2 decades, namely the WIPO (with a low specialization score of 0.01), the WTO (0.06) and the USPTO (0.09). In the top-10 group are five other public maximalist organizations. At the opposite end of the spectrum, the most specialized organizations include private organizations, such as Time Warner (0.97) and the International Federation of Pharmaceutical Manufacturers (0.91), as well as minimalist organizations, such as CIEL (0.91) and the Quaker United Nations Office (0.91). Overall, the average specialization score for public maximalists is 0.40, while the scores for public minimalists, private maximalists and private minimalists are 0.45, 0.53 and 0.72, respectively. It is not particularly surprising that public organizations, especially intergovernmental organizations, are generalists and have a wide range of technical assistance recipients. However, it is worth noting that maximalist organizations, whether they are public or private, are less specialized than minimalist organizations. Private minimalists are by far the most specialized. In organizational terms, their population is the most dissimilar to the established group of public maximalists. It is also the most recent population to have emerged. These results provide further evidence to support the hypothesis that new populations, especially the population of private minimalist organizations, emerged from a dense and competitive environment, by specializing in areas where the population of established generalist public maximalists was sparse.

5 H2: The rapid growth of emerging populations

The second hypothesis put forward in this article is that populations with low density in the non-overlapping area are more likely to experience rapid growth, thanks to reduced competition. In the early 2000s, the low density populations of IP technical assistance providers were comprised of private and minimalist organizations. They created niches for themselves, where competition was reduced because they were sufficiently distant from generalist organizations.

However, private and minimalist organizations were not entirely beyond the reach of generalist organizations. WIPO, which has provided technical assistance to more than 160 countries over the last 25 years, competes with all other technical assistance providers. Nevertheless, inter-population competition is less intense than intra-population competition. As several interviewees point out, recipients of technical assistance are fully aware of the orientation and expertise of the various technical assistance providers. As a result of differentiation efforts by emerging providers, interviewees describe recipients as "very astute" and "conscious of who is going to

give what type of advice". The specific identify of emerging populations partly shielded them from traditional technical assistance providers.

One measure of the degree of competition is the average number of other organizations that have delivered technical assistance in the same countries to the same audience type (law- and policymakers, administration and enforcement officers or non-state actors) since 1994. Using this measure, Oxfam appears to have the lowest mean number of competitors (3) and the Australian Federal Police Organization has the highest average number of competitors (64) among the technical assistance providers examined in this study. In total, the average number of competitors is 24.7 for public maximalist organizations, 14.8 for public minimalist organizations, 25.2 for private maximalist organizations and only 12.9 for private minimalist organizations. Since the initial population was made up of maximalist organizations, the market for maximalist technical assistance was saturated more rapidly. Minimalist organizations were apparently able to segment the market for technical assistance and enjoyed reduced competition levels. Private minimalist organizations, in particular, face less direct competition than private maximalist organizations, despite the fact that they have formed a larger population.

With reduced competition, populations of private and minimalist organizations grew extensively. Despite the fact that the number of public maximalist providers increased during this period, the entry rate of populations of private and minimalist organizations exceeded the entry rate of public maximalists. According to demographic data collected for this article, less than 10% of technical assistance providers were private organizations in 1994, when the TRIPs Agreement was adopted. By the end of the 2000s, they represented more than 30%. As one interviewee put it, "there has been a diversification and an increase on all fronts". This extensive growth is illustrated in Fig. 3.

This extensive growth enabled the population of private minimalist organizations to increase their influence over developing countries (Sell and Prakash 2004). This influence first became apparent during the negotiations leading up to the WTO ministerial conference in Doha. During the negotiations, private minimalist organizations were "particularly successful in helping developing countries translate their specific public policy concerns into coherent and concrete negotiating positions"

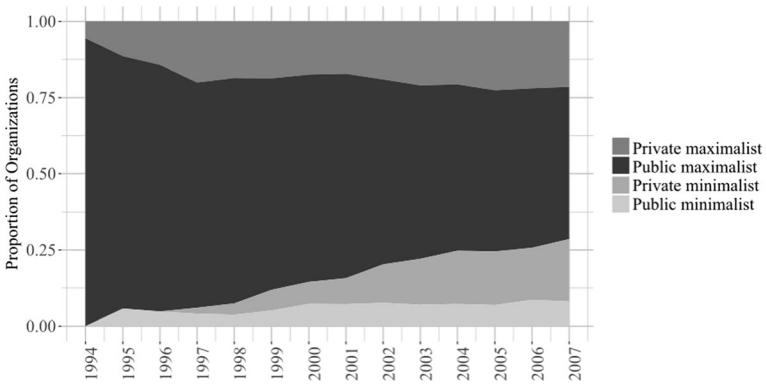

Fig. 3 The share of populations of IP technical assistance providers between the TRIPs Agreement (1994) and the Development Agenda (2007)

(Vivas-Eugui and Bellmann 2004: 9). These efforts led to the Doha Declaration on Public Health in November 2001 (Sell and Prakash 2004).

In turn, the Doha Declaration created new opportunities for minimalist organizations to expand their niche and provide even more technical assistance. It explicitly acknowledged that the TRIPs Agreement could be interpreted and implemented in a way that supported the needs of developing countries. This generated a demand for the identification of so-called "TRIPs flexibilities" and the design of laws and policies tailored to take advantage of this flexibility. For example, one of these "TRIPs flexibilities" is article 6, which provides that "nothing in this Agreement shall be used to address the issue of the exhaustion of intellectual property rights". If interpreted in a manner favorable to developing countries, this provision allows WTO members to authorize the "parallel importation" of patented goods first sold in a foreign country and resold domestically, without the consent of the patent holder. Such parallel importations enable consumers to take advantage of patent holders' price discrimination strategies and to import patented products from the country where they are sold at the lowest price. However, several developing countries do not take advantage of the "flexibility" allowed by the TRIPs agreements, as their patent laws do not authorize parallel importations (Deere 2008). By acknowledging the flexibility of the TRIPS agreement, the Doha Declaration invited developing countries to revise their domestic IP law in order to take full advantage of the TRIPs flexibilities. In turn, these legal reviews require technical expertise. Several interviewees from minimalist organizations underline the fact that their technical assistance programs were set up or expanded in the wake of the 2001 Doha Declaration. This illustrates the feedback loop, which links the provision of technical assistance by minimalist organizations to developing countries. It also shows the influence that minimalist organizations have over developing countries.

In line with the organizational ecology prediction, minimalist organizations were gradually recognized as legitimate technical assistance providers. Their acquired legitimacy meant they were able to sustain their growth, at least initially. In the early 1990s, it was easy to question the civil society organizations' expertise on IP law. However, by the 2000s, they had gained recognition and were able to speak authoritatively on IP matters (Sell and Prakash 2004). Today, the WTO and the WIPO regularly invite minimalist organizations to speak at public conferences and training activities. In fact, many interviewees acknowledge that intergovernmental organizations can no longer legitimately invite representatives from maximalist organizations, without also inviting representatives from civil society organizations that express minimalist views. As one interviewee from a population of minimalist organizations put it, their status is now "totally different than it was in 2001".

H3: The traditional population's long-term advantage

The third hypothesis presented in this article is that the oldest population is more likely to prevail in the long run when it competes with emerging populations. All populations studied for this article remain active in IP technical assistance. However, the number of minimalist and private organizations peaked in 2007, while the number of public maximalists is still increasing.

The long-term prevalence of public maximalists does not reflect a decline in interest in the expertise provided by minimalist organizations. On the contrary, by the end of the 2000s, after a decade of growth in the minimalist populations, the demand for their expertise remained high. Some minimalist organizations were aspiring to enter the

niche areas traditionally held by public maximalists. They actively criticized WIPO technical assistance for being too maximalist. In 2007, a window of opportunity opened when, after much heated debate, the WIPO General Assembly adopted a decision formally known as the "Development Agenda of WIPO". This decision includes a set of 45 recommendations to make WIPO more attentive to the needs of developing countries. The first of these recommendations is to make WIPO's technical assistance "development oriented, demand driven and transparent, taking into account the priorities and the special needs of developing countries […]" (WIPO 2007).

The adoption of the WIPO Development Agenda had unexpected effects on the population ecology of technical assistance providers. A call for more development-oriented technical assistance could have led to the expansion of the minimalist organizations' niche, but that did not happen. Interviewees report that the Development Agenda did not provide minimalist organizations with more funding, partnerships or awareness. Instead, interviewees refer to the WIPO Development Agenda as the "high point for civil society organizations", after which their technical assistance activities started to decline.

The evidence suggests that the niche expansion created by the WIPO Development Agenda was primarily captured by the intensive growth of public maximalist organizations. Key public maximalists, such as WIPO and WTO, created programs on development-related aspects of IP. According to one interviewee, their technical assistance activities "continue to rise". Another interviewee working for a private minimalist organization explains that WIPO "started doing things that NGOs were doing, like working on flexibilities, but they had more money, more capacity, more experts." Another interviewee even describes WIPO competition as a "tsunami" for smaller technical assistance providers: "If you go to the WIPO website, you will see the tons of stuff they do all the time in all different countries. I think there is no way for one NGO, even if we had more NGOs, to match that."

The 2007 WIPO Development Agenda may have improved the legitimacy of private and minimalist technical assistance providers slightly. However, the 2001 Doha Declaration and the subsequent proliferation of minimalist organizations had already legitimized development-oriented technical assistance. Thus, the marginal increase in legitimacy provided by the Development Agenda was insufficient to counterbalance the effect of inter-population competition and did not lead to the emergence of more minimalist organizations. As a result, the primary consequence of the WIPO Development Agenda was to intensify competition for private and minimalist organizations.

Several interviewees emphasize that competition was fierce at the end of the 2000s. As one of them observes, "You have now so many publications, so much capacity building, so much raising of awareness!" Eight interviewees gave different examples of a developing country, which received similar technical assistance from various providers within a matter of weeks or even days. This situation is a clear sign that, as interviewees put it, "there is a proliferation of supply", "the field is crowded", "too many people are involved" and "the space is getting narrower".

This fierce competition restricted resource availability for some organizations. One interviewee explains that technical assistance providers compete for two types of resources: "There is competition for […] donors and there is the competition for clients, which are the beneficiaries." The acute competition created a race for donors

and participants. As a result, some providers did not have sufficient resources to continue. According to several interviewees, there was a "lack of funding" and the impression that "there are not enough resources". Further specialization would have meant traveling to remote areas or developing highly specialized expertise, making technical assistance even more resource intensive. As one interviewee describes, "now we find that you get situations where you would have 10 people for the training course, but really to run it viably we need about 25".

In addition to the increased density of technical assistance providers, competition was heightened by a reduction in available resources, which diminished their environment's carrying capacity.[9] The reduced availability of resources was the result of exogenous factors. The 2008 financial crisis, in particular, restricted the funding provided for IP technical assistance by funders such as the Rockefeller Foundation, the MacArthur Foundation and the UK Department for International Development.[10] One interviewee echoed the view of many by stating that "there is less funding than there used to be". Unsurprisingly, with the increased supply of technical assistance, combined with a diminished resource pool, the number of technical assistance providers stagnated.

For the purpose of this article, it is important to point out that the population of private minimalist organizations was the most severely impacted by the competitive environment. Several interviewees revealed that private minimalist organizations "started to disappear" or were "out of the game" or "not on the radar anymore". Organizations, such as the International Centre for Trade and Sustainable Development, the Center for International Environmental Law and the Quaker United Nations Office, once active providers of IP technical assistance, have drastically reduced their IP programs or exited this field of activity altogether. No other organization has taken up the torch and offers the same type of technical assistance as these organizations offered. This effect on private minimalist organizations is further supported by demographic data, as illustrated by Figs. 4 and 5. Their population has actually declined as a result of a reduced entry rate and an increased exit rate.

Several technical assistance providers that have exited the IP field since 2007 were recent entrants, with an average of only 2.7 years of experience in IP technical assistance. Most are also involved in other activities. In fact, organizations that focus predominantly on issue-areas other than IP have an exit rate that is three times higher than organizations specializing in IP alone. One interviewee explains how providing IP technical assistance was "just a small product in the big supermarket; […] just one product of many categories". Thus, some private and minimalist organizations simply reoriented their activities away from IP technical assistance. Their organizations still exist despite the fact that they are no longer part of this ecosystem.

In contrast, the traditional population of public maximalist organizations was less affected by the intense inter-population competition. Their growth rate remained positive, even when their entry rate was low. Their exit rate over the period was 0%, compared with 34.5% for private minimalists. Some public maximalist organizations actually continued to expand intensively. The US government's Global Intellectual

[9] Competition is a function of organizational density and resource abundance (Hannan and Carroll 1992: 39).
[10] The reorientation for key funders is apparently exogenous to IP politics. Interviewees mention shifts in government and the 2008 financial crisis as two key explanations.

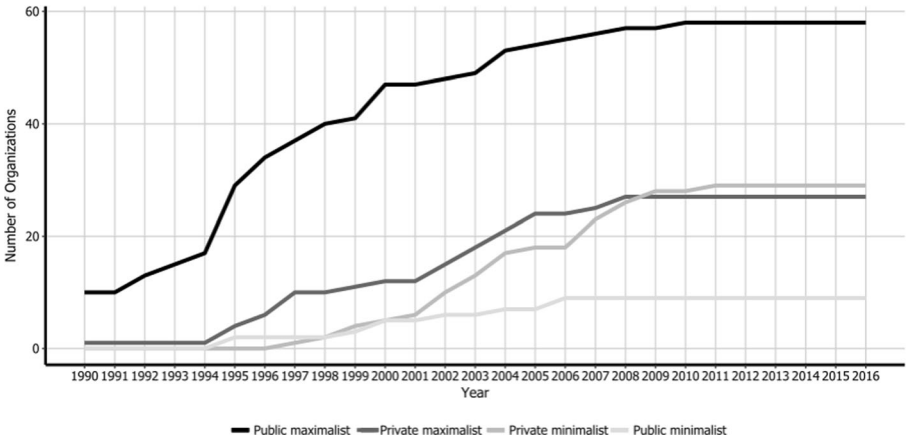

Fig. 4 Cumulated number of organizations for four populations

Property Academy, for example, now provides training for more than 9000 foreign officials each year (USPTP 2016). The Academy of the World Intellectual Property Organization had as many as 50,000 course participants in 2016 alone (WIPO 2016).

The persistence of the traditional population of public maximalist organizations is not due to reduced competition. On the contrary, demographic data suggest that on average, public maximalists actually have more competitors than other populations. This finding is supported by interviewees who refer to competition for turf, recognition and influence between enforcement agencies, intergovernmental organizations and patent offices.[11] Of course, several public organizations benefit from stable revenue streams, such as patent fees, which make them less vulnerable to competition. However, this revenue does not necessarily have to be channeled to technical assistance, which remains a peripheral activity for most public maximalist organizations. Any public organization can end its technical assistance program and allocate funds to other activities.

The continuous intensive growth of public maximalist organizations is instead the result of their privileged localization. Positioned at the center of the governance space, they were able to establish a dense web of mutually beneficial cooperation around them, including with more isolated organizations from other populations. Here, cooperation refers to the joint provision of technical assistance to a recipient party. It is a way of sharing resources, organizational strengths, connections or expertise, and ultimately to increase provision of technical assistance. The US Patent Office and the European Patent Office, for example, frequently cooperate with business and industrial groups to provide technical assistance (Matthew and Monuz-Tellez 2006).

The information made available by technical assistance providers suggests that public organizations have a greater number of cooperative arrangements than organizations from other populations. Consequently, the average degree of centrality, i.e. the number of cooperative relations between two technical assistance providers, is 11.10 for public maximalists, compared with 9.88 for public minimalists, 4.88 for private

[11] Drahos explains that patent offices compete for the provision of technical assistance because they help build organizational trust, which can lead to the provision of other patent-related services (Drahos 2010: 134–137).

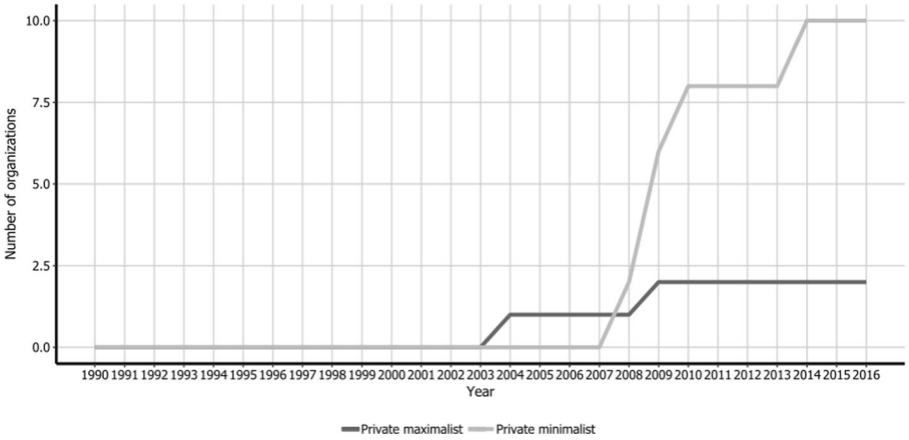

Fig. 5 Cumulated number of exits

maximalists and 4.58 for private minimalists. Moreover, the propensity of an organization to collaborate with organizations from their own population is much lower among public maximalists, with an assortativity score of −0.12, compared with 0.11 for public minimalists, 0.07 for private maximalists and 0.01 for private minimalists. This suggests that public maximalists tend to form partnerships with organizations from other populations. These trends are clearly shown in Fig. 6.

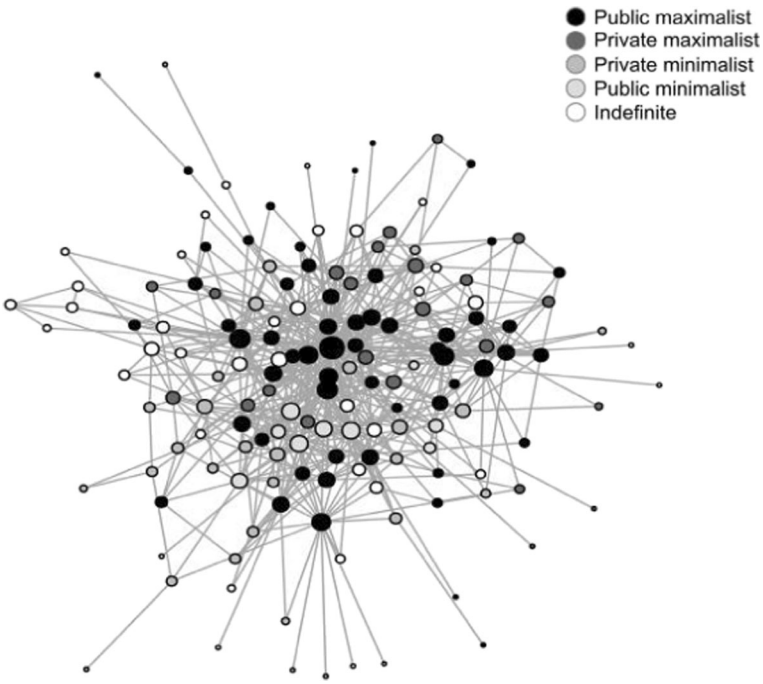

Fig. 6 *The network of technical assistance providers*

WIPO occupies the most central position in the network of technical assistance providers. It cooperates with a large number of governmental, intergovernmental and private organizations. Although it has more connections with maximalist organizations, it has been increasingly involved with minimalist NGOs since the adoption of the Development Agenda in 2007 (Deere Birkbeck and Roca 2011: 186). WIPO occupies a "structural whole" in the network of technical assistance providers, which allows it to exploit and combine relations with different populations. Yet, even when WIPO is removed from the analysis, the observation that public maximalist organizations have a higher degree of centrality and a lower degree of homophily (relation with other organizations from the same population) than other populations remains robust.

One of the reasons why public maximalist organizations have a high degree of centrality in the network of technical assistance providers is because they hold a central position within the governance space. Public maximalist organizations are generalists. They occupy the overlapping area with different populations. Thus, they have more opportunities to cooperate. Specialized organizations may have a greater need when it comes to cooperating with organizations that provide complementary expertise. However, demographic data suggest that the degree of specialization is actually negatively correlated to the degree of centrality. For example, an NGO that provides assistance on geographical indication in West Africa may be unable to find an alternative partner to the WIPO. Data suggest that this is the case for several organizations, as an increase of 0.1 on the specialization measure presented above decreases the degree of centrality by 17.7%.

In addition, the traditional population of public maximalist organizations has had more time to build partnerships over the years. The older an organization, the more partnerships it is likely to have developed. In bivariate analysis, an additional year of age increases the number of partnerships by 2.3% on average. Conversely, the more partners an organization has, the less likely it is to end its technical assistance activities. Increasing an organization's degree of centrality from 10 to 20 reduces the probability of it exiting the field from 10 to 0.03%. These findings are consistent with the idea that the first population to occupy a niche area has a strong competitive advantage and is likely to prevail when it comes to competing with more recent populations.

Competition affects populations' growth and push certain organizations to move in different corners of their niche. However, each population has a fixed fundamental niche and organizations remain relatively stable. Several interviewers highlighted the fact that, even though WIPO now uses the language of development and works on access to knowledge, it remains fundamentally a maximalist organization (see also May 2006). It does not offer the same type of technical assistance that the Center for International Environmental Law or the Quaker United Nations Office were offering in the early 2000s. Public maximalist organizations have only partially overlapping niche with private minimalist organizations.

Therefore, the distribution of operational organizations – and by extension, the distribution of the governance goods that they provide – does not spread in the ecosystem over time, even when they expand and proliferate. Established organizations tend to remain focused at the center of an ecosystem to enhance their competitiveness. They also tend to outcompete other emerging populations in the peripheral niches. In terms of the distribution of governance goods, greater decentralization only occurs temporarily, when the growth rate of the emerging populations outpaces that of the

established organizations. However, this stage is generally short lived. Large, central and old organizations, which are typically generalists, tend to outcompete specialized populations in the long run.

6 Conclusion

This article explains how providers of governance goods remain clustered in the governance space, despite their proliferation. It builds on the recent introduction of organizational ecology theory into international studies (Stokke 2013; Gehring and Faude 2014; Abbott et al. 2016). The article goes beyond the first level of complexity in organizational ecology, which explains a population's growth rate in relation to its density. It considers the second level of complexity and examines the relations between populations of organizations active internationally or transnationally. It argues that distinct populations with overlapping niches are affected by each other's density, which creates inter-population competition. In this situation, the oldest more established population enjoys significant advantages in the long run due to its central location in the governance space. It is ultimately more likely to outcompete emerging populations trying to differentiate themselves by providing alternative governance goods. This is the case even if, temporarily, emerging populations have a faster growth rate. Hence, institutional proliferation does not necessarily go hand in hand with institutional diversification. This explains that several organizations active in the same governance space end up providing similar governance goods.

The article illustrates the theory by studying four populations of IP technical assistance providers. So far, existing literature on technical assistance in the field of IP has focused on the work of public and maximalist organizations, such as WIPO, EPO and USPTO (May 2004; Vivas-Eugui and Bellmann 2004; Matthews 2005; Pengelly 2005; Matthews and Munoz-Tellez 2006; Deere 2008; Morin and Gold 2014). This article provides the first system-level analysis of IP technical assistance, which factors in the diversity of providers, including private and minimalist organizations, as well as their relations. However, instead of concluding that the influence of WIPO, EPO and USPTA is diluted in a broader ecosystem, the article presents evidence showing that public maximalist organizations have structural power over the entire ecosystem. Although populations of private and minimalist organizations benefit in the short term from a positive feedback loop between their provision of technical assistance and their influence over developing countries, this positive feedback generates decreasing returns and is short lived. Indeed, the public maximalist organizations, rather than minimalist organizational forms, benefited the most from the WIPO Development Agenda, despite the fact that the latter called for more minimalist assistance. Organizational ecology provides an explanation for the counter-intuitive observation that there is an oversupply of certain types of technical assistance, but a persisting shortage of other types. The central population of public maximalist organizations is simply better positioned than other populations to exploit available resources and it outcompetes alternative technical assistance providers.

The distinction of different stages in inter-population competition is not a deterministic argument. Three main factors contribute to the complexity and the indeterminacy of organizational ecology. First, the argument introduced in this article focuses solely

on the supply side of the equation. Dynamics fueling the demand for governance goods are equally complex and interact with dynamics among providers. For example, the entry into force of the TRIPs Agreement in 1995 and the adoption of the 2001 Doha Declaration on Public Health in 2001 increased the demand for technical assistance and expanded the pool of available resources for all populations of technical assistance providers, favoring their growth. Second, ecosystems are open systems and exogenous events can affect competition among populations. As discussed in the above section, the 2008 financial crisis restricted the funding available for IP technical assistance, affecting some populations of technical assistance providers more than others. Third, disputing organizations can completely destabilize an ecosystem by introducing new technologies. This is often how large organizations go out of business. However, no organization equivalent of Netflix or Uber has so far disrupted the ecosystem of IP technical assistance. Disruptions occur more frequently in some ecosystems than in others, but they remain rare events.

This article's organizational ecology argument has implications for other issue-areas. Different regime complexes are witnessing the rapid proliferation of new organizational forms, such as informal clubs, boundary organizations, international NGOs, parliamentary associations, international courts, city networks, business associations and public-private partnerships. The new organizational forms often grow faster than traditional organizations. They are also generating some enthusiasm among those disillusioned by intergovernmental organizations, particularly regarding the provision of governance goods (Raustiala 2012; Abbott et al. 2016). However, this article provides a theoretical argument and an empirical illustration, which suggest that the new organizational forms are unlikely to remove traditional intergovernmental organizations from their privileged position at the center of the governance space. The rise of these new organizational forms may create the temporary illusion that traditional intergovernmental organizations are being sidelined. However, positioning a new organizational form at the center of governance space is no easy matter. It would require more than quantitative proliferation and serious encouragement, but also an exogenous shock or a disruptive technology to destabilize the established structure on which existing populations of intergovernmental organizations are based.

Two major questions still require further investigation in the field of international organizational ecology. First, organizational ecology approaches can be discarded by arguing that a population's relative growth rate depends on the population's intrinsic features (e.g. the agility of private organizations or the resilience of public organizations), rather than on their density level. In order to address this claim, the intra-population argument presented by Abbott et al. (2016) and the inter-population argument developed here should be tested in cases where private organizations are abundant and well established and where intergovernmental organizations are scarce and only emerging. Situations of this type may be rare and perhaps non-existent in international relations. However, testing these arguments by considering "least-likely cases" is necessary to establishing more firmly that the observations made by Abbott, Green and Keohane and by this article can be attributed to population density level.[12]

[12] The case discussed in this article features four populations, including an established population of public maximalist organisations and an emerging population of public minimalist organizations. Consequently, the intrinsic features of public organizations can be partially controlled.

A second line of inquiry involves moving the analysis to the third level of complexity used in the ecological approach. This implies studying not only competing populations with overlapping niches, but also the interactions across the entire range of populations in an ecological community. In the field of technical assistance, for example, this would mean studying relations between the providers that deliver the assistance, the recipients that receive it and the donors that fund it. The empirical analysis presented in this article focuses solely on providers, but populations of recipients (policymakers, judges, patent examiners, etc.) and funders (private foundations, development agencies, intergovernmental organizations, etc.) also compete with each other and interact in different ways with providers (Dezalay and Garth 2002). By shifting the analysis to the community level, the types of inter-population relations are likely to expand to include symbiosis, predation and co-optation, in addition to competition (Johnson 2016). These other types of relations are also likely to affect populations' growth. In fact, at this level of analysis, the dependent variable may no longer be the growth of a specific population, but diversity within the entire ecological community. The literature on international organizational ecology is still in its infancy.

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Appendix 1: List of providers of technical assistance in the field of IP

ACP Group
Agence française de développement
American Bar
American Institute of Indian Studies
Andean Community
Asia-Pacific Economic Cooperation
Arab Society for IP
Afrian Regional Intellectual Property Organization
Asian Development Bank
Australian Attorney-General's Department
Australian Department of Foreign Affairs
Australian Federal Police
Austrian Patent Office
Baltic Institute of Finland
Belgium IP office
Benelux Trademarks and Design Offices
German Federal Ministry for Economic Cooperation
BSA The Software Alliance
Bulgarian Patent Office
Development Bank of Latin America

Centre d'études internationales de la propriété intellectuelle
Central American University Council
Centro Regional para el Formento del Libro en América Latina y el Caribe
Chalmers University of Technology
Chatham House
Chinese University Hong Kong (CUHK)
Center for International Environmental Law
Canadian Intellectual Property Office
CIRAD (France)
International Confederation of societies of authors
Cognac Interprofessional Bureau (BNIC)
Centre for Trade Policy and Law
Czech Republic Industrial Property Office
Danish IP Office
UK Department for International Development
Direction generale des douanes et droits indirects
Direction generale du travail
German Patent and Trademark Office
Electronic Information for Libraries
Electronic Frontier Foundation
Environmental and Social Studies Group
European Commission
European Patent Office
Food and Agriculture Organization
Finnish Copyright Society
Finnish Custom Authorities
Finnish Ministry of Education and Culture
Finnish Ministry of Foreign Affairs
Finnish Ministry of Trade and Industry
Ford Foundation
French Ministry of Culture and Communication
French Ministry of Foreign Trade
German Federal Patent Court
German Foundation for International Legal Cooperation
Getulio Vargas Foundation
German Development Agency
Global Affairs Canada
GRAIN
Guizhou University
Health Action International Africa
Helsinki University of Technology
Hungarian Patent Office
International Anticounterfeiting Coalition
International Chamber of Commerce

iCommons
International Centre for Trade and Sustainable Development
International Development Research Centre
Institut européen entreprise et propriété intellectuelle
International Federation of the Phonographic Industry
International Federation of Pharmaceutical Manufacturers
International Federation of Reproduction Rights
Instituto Interamericano de Cooperacion para la Agricultura
International Intellectual Property Alliance
International Intellectual Property Institute
International Lawyers and Economists against Poverty
International Labour Office
Institut national de l'origine et de la qualité
Institut national de la propriété industrielle
Institute of Economic Affairs
Instituto Technologico de Santo Domingo
Inter American Development Bank
International trademark association
Interpol
IP Australia
IP Watch Association
Italian Custom Agency
Italian Ministry of Foreign Affairs
International Trade Centre
International Telecommunication Union
International Union for Conservation of Nature
Japan Ministry of Agriculture
Japan Ministry of Finance
Japanese Copyright Office
Japan International Cooperation Agency
Japan Institute of Invention and Innovation
Japanese Patent Office
Knowledge Ecology International
Korean Intellectual Property Office
Korean International Cooperation Agency
Latin American Research Corporation on Intellectual Property for Development
Lawyers Collective
Light Years IP
LirneAsia
Lithuanian State Patent Bureau
Ministère de l'Agriculture (France)
MacArthur Foundation
Magic Lantern Foundation
Max Planck Institute

Motion Picture Association of America
Médecins sans fontières
National Board of Patents and Registration (Finland)
National Institute of Industrial Property (Brazil)
Netherlands IP Office
Netherlands Ministry of Justice
Network for Development, Education and Society
NIPA (Korea)
NORCODE
Norway IP Office
Norwegian Ministry of Culture
Norwegian Ministry of Foreign Affairs
Organisation africaine de la propriété intellectuelle
Organisation for Economic Cooperation and Development
European Union Intellectual Property Office
Organisation international de la Francophonie
Open A.I.R.
Open Society Foundation
OriGIn
OXFAM
Pharmaceutical Research and Manufacturers of America
Public Interest Intellectual Property Advisors
Polish Ministry of Culture and National Heritage
Portugal Copyright Office
Portugal Industrial Property Office
Swedish Patent and Registration Office
Public Knowledge
Queen Mary University of London
Quaker United Nations Office
Royal Canadian Mounted Police
R&D Based Pharmaceutical Association Committee
Rockefeller Foundation
Saana Consulting
Southern African Research and Innovation Management
Secrétariat d'État à l'économie (Swiss)
Swedish International Development Cooperation Agency
State Intellectual Property Office (China)
Slovenian IP Office
Software & Information Industry Association
South African San Institute
South Centre
Spanish International Cooperation Agency
Spanish Ministry of Education and Culture
Spanish Patent and Trademark Office

Stockholm Environment Institute
Swedish Biodiversity Centre
Swiss Customs Authorities
Swiss IIP
Swiss Ministry of Foreign Affairs
Third World Network
Tides Center
Time Warner
UK Intellectual Property Office
Joint United Nations Programme on HIV/AIDS
United Nations Conference on Trade and Development
United Nations Development Program
United Nations Environmental Program
United Nations Economic and Social Commission for Asia and the Pacific
United Nations Educational, Scientific and Cultural Organization
United Nations Framework Convention on climate change
United Nations Industrial Development Organization
Université de Cocody (Ivory Coast)
Université de Thiès
Université Ouaga 2
University of Alicante
University of Buenos Aires
University of São Paulo
University of Technology (Jamaica)
University of Turin
University of West Indies
International Union for the Protection of New Varieties of Plants
United States Copyright Office
United States Department of Commerce
United States Department of Justice
United States Department of State
United States Immigration and Customs Enforcement
United States Agency of International Development
United States Patent and Trademark Office
United States Trade Representative
World Customs Organization
World Health Organization
World Intellectual Property Organization
World Bank
World Trade Institute
World Trade Organization
Yale University

Appendix 2: List of interviewees

Name	Organization	Title	Date
Nan Warner	Open A.I.R.	Project manager	2016–06-30
Jostein SANDVIK	Norwegian IP office	Director of Legal and International Affairs	2016–07-04
Arturo Mora	IUCN	Senior Program Officer	2016–07-07
Sebastien Levan	Institut national de la PI	Responsable de l'offre de formation	2016–07-08
Christian Nilsson	Swedish IP Office	Director of IR (2008–2015)	2016–07-12
Jean-Sébastien Roure	ITC	Senior Officer, Business & Trade Policy	2016–07-13
Matthew Smith	IDRC	Senior Program Officer	2016–07-14
Roberto Escarré	University of Alicante	Director of the International Projects Office	2016–07-14
Anders Aeroe	ITC	Director, Division of Market Development	2016–07-18
Andrew Bailey	SARIMA	Conference Chair	2016–07-20
Laurent Elder	IDRC	Program Leader	2016–07-25
Gabrielle Doyle	ITA	External Relations Associate	2016–07-25
Yuanqiong Hu	MSF	Legal and Policy Advisor	2016–07-28
Luciana Mermet	UNDP	Policy Specialist	2016–08-02
Olav Stokkmo	IFRRO	Secretary General	2016–08-04
Melissa Hagemann	Open Society Foundation	Senior Program Manager	2016–08-04
Nirmalya Syam	South Centre	Program Officer	2016–08-08
Jodi Lawler	IP Australia	Director, Patents Training Projects	2016–08-09
Philippe Vorreux	WCO	Director - IPR, Health & Safety (2014–2016)	2016–08-09
Martin Girsberger	Swiss IIP	Head of the Unit	2016–08-10
Kieran Power	IP Australia	Global IP Manager	2016–08-15
Viviana Munoz	South Centre	Coordinator or the IP Program	2016–08-15
Fernando Dos Santos	ARIPO	Director General	2016–08-18
Inger Dirdal	Norcode	Managing Director	2016–08-19
Ros Lynch	UK IPO	Copyright and IP Enforcement Director	2016–08-22
Peter Button	UPOV	Vice Secretary-General	2016–08-23
Martin Ekvad	UPOV	Chairman of the Legal Committee	2016–08-24
Ahmed Abdel Latif	ICTSD	Senior Programme Manager (2007–2015)	2016–08-26
Carlos Correa	University of Buenos Aires	Professor	2016–08-29
James Love	KEI	Director	2016–09-06
Antoine Rety	EPO	Administrator	2016–09-07
Susan Finston	Finston consulting	Consultant	2016–09-08
Natasha Chick	UK IPO	Deputy Director	2016–09-12
Piotr Stryszowski	OECD	Senior Economist	2016–09-12
Kiyoshi Adachi	UNCTAD	Legal Officer	2016–09-15
David Vivas	On his own capacity		2016–09-15
Stephane Passeri	FAO	Project Coordinator	2016–09-19

Name	Organization	Title	Date
Victor Guizar Lopez	WIPO	Consultant	2016–09-20
Wilfrid Rogé	IRACM	Deputy Director	2016–09-20
Pedro Roffe	ICTSD	Senior associate	2016–09-21
Joe Miller	EU funded project	Project Coordinator	2016–09-21
Janet Chakarian Renouf	WTO	Counsellor	2016–09-26
Thiru Balasubramaniam	KEI	Geneva Representative	2016–09-27
Xavier Vermandele	WIPO	Senior Legal Counsellor	2016–09-27
Mohammed El-Said	UCLAN	Reader	2016–09-30
Guilherme Cintra	IFPMA	Senior Manager	2016–10-05
Emilie Vandecandelaere	FAO	Project Officer	2016–10-05
Tenu Avafia	UNDP	Policy Adviser	2016–10-07
Mohamed Bdioui	WIPO Academy	Senior Counsellor	2016–10-11
Christoph Spenneman	UNCTAD	Legal expert	2016–10-13
Kongolo, Tshimanga	WIPO	Acting Deputy Director	2016–10-13
Teresa Hackett	IFL	Program Manager	2016–10-14
Peter Beyer	WHO	Lawyer, Senior Advisor	2016–10-14
Nagahashi Yoshihiro	JICA	Chief AD for IPR Project	2016–10-18
Carlos Passarelli	UNAIDS	Senior Expert Treatment	2016–10-24
Roger Kampf	WTO	Counsellor	2016–12-19
Deere Birkbeck, Carolyn	On his own capacity		2016–05-29

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