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The Internet as a global public good and the role of governments and multilateral organizations in global internet governance

A Internet como Bem Público Global e a participação de governos e organizações multilaterais na Governança Global da Internet

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Abstract

The Internet presents social and economic attributes of a global public good, requiring governments and multilateral organizations to play central roles in Internet governance. This article examines the Internet as a global public good, identifies the roles of governments and multilateral organizations in global Internet governance, describes the current status of multi-stakeholder governance, and proposes guidelines to enhance international cooperation.

Resumo

A Internet apresenta atributos sociais e econômicos de um bem público global, exigindo que governos e organizações multilaterais desempenhem papéis centrais na governança da Internet. Este artigo examina a Internet como um bem público global, identifica os papéis dos governos e das organizações multilaterais na governança global da Internet, descreve o estado atual da governança multissetorial e propõe soluções para aprimorar a cooperação internacional.

Keywords: Global public goods; International cooperation; Internet governance; International public policy

Palavras Chaves: Bens públicos globais; Cooperação internacional; Governança da Internet; Políticas públicas internacionais

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Introduction

Kaul, Grunberg, and Stern (1999) and Kaul, Conceição, Goulven, and Mendoza (2003) argued that "the Internet is a global public good whose publicness has to be deliberately sought" (1999, xxix), that the Internet infrastructure is a human-made global common (1999, 454), and that the world would greatly benefit from the efficient provision of the Internet (2003, 169). Spar (1999)

affirmed that "the Internet undeniably has the makings of a public good" (348) and that "the architecture of the Internet is inherently nonexcludable and nonrivalrous" (351). Gurnstein (2012) proposed that the Internet should be viewed as a global public good "for the development of arrangements and mechanisms to ensure the continuity and development of the Internet in the *global public interest* [emphasis added]" (para. 8).

These statements are founded on the social and economic attributes that typify the Internet as a global public good (GPG). The definition of GPGs involves a broad social concept, and a narrow, technical economic concept. The broader social concept includes in the domain of GPGs goods that from an economics standpoint are not purely public (i.e., are only partially nonrivalrous and partially nonexcludable), but are supplied as public goods due to their high, intrinsic social value, and to societal demands (Kaul et al. 2003, 81-87; Ocampo 2013, 2-8). Education and health for example are rival and excludable goods, thus not public in an economic sense, but both are supplied as public goods due to their high social value. The same reasoning can be applied to the Internet.

From a narrow, technical economic perspective GPGs require government intervention and international cooperation to overcome market failures and achieve efficiency and equity in their allocation and provision. The Internet presents several economic attributes of a GPG, including nonrivalry in consumption, nonexcludability, market failures such as a free rider problem, a global underuse and undersupply, and significant transnational positive (e.g., increased productivity and knowledge) and negative (e.g., cybersecurity threats) externalities.

The social and economic attributes of the Internet as a GPG produce two consequences that underpin the policymaking role of governments and multilateral organizations (MOs) in Internet governance. First, they create a strategic *incentive* for governments and MOs, sparked by their respective constituencies, to maximize Internet development, provide Internet access as a public good, and bridge the digital divide within and among countries. Second, they reveal a strong *need* for policymaking and multilateral cooperation to address the Internet's nonrivalry and nonexcludability; to correct market failures; to enhance (mitigate) the Internet's positive (negative) externalities; and to achieve a welfare-maximizing global supply of the Internet.

This article examines the social and economic attributes of the Internet as a GPG, the roles of governments and MOs in Internet governance, the current status of multi-stakeholder Internet governance, and proposes a framework for international cooperation.

The social attributes of the Internet as a global public good (GPG)

Kaul et al. (2003) affirmed that "the defining characteristics of many public goods are not inherent and are often socially endogenous" (86), meaning that any good, regardless of its economic attributes, can be provided as a public good if it presents certain social attributes, such as *high social value* and/or *societal demands* for its provision as a public good. The Internet presents both.

The high social value of the Internet pertains to its role as a fundamental enabler of other public goods, merit goods, and human rights, such as knowledge, data, education, the arts, health, equity,

peace, security, democracy, freedom of opinion/expression, and freedom of association. Additionally, global studies and surveys show a growing vision by society of the Internet as a merit good and a human right itself, thus eligible for provision as a public good/service. Both of these attributes are examined in the following sections.

These social attributes underlie the conclusion that ultimately governments benefit from and are responsible before society for an efficient and equitable provision of the Internet. The World Bank (2016) in fact concluded that "achieving universal and accessible Internet is a legitimate public policy goal" (204), emphasizing the role of governments in Internet governance.

The Internet as an enabler of other public goods

Stiglitz (1999, 309) made the case for knowledge as a GPG and observed that there may be significant transaction costs associated with the acquisition and use of knowledge, but once these marginal costs are covered, knowledge becomes a nonrivalrous good. The importance of the Internet for the dissemination of knowledge lies in its potential to reduce to zero the marginal costs of the acquisition and use of knowledge. The Internet, for instance, precludes the need for public libraries and print books for the dissemination of knowledge. Stiglitz affirmed that "The Internet is proving to be a tool of immense power in sharing knowledge" (309). Stiglitz also highlighted the power of the Internet in reducing the global knowledge and education gap when he noted that "Today a child anywhere in the world who has Internet access has access to more knowledge than a child in the best schools of industrial countries did a quarter century ago" (309). The International Task Force on Global Public Goods (ITF 2006) concluded that generating knowledge is one of the six priority global public goods (xviii) and that "digital information technologies [including the Internet] have created new global opportunities for accessing and disseminating knowledge" (66).

Similar cases have been made by several authors and publications for the Internet as an enabler of other public goods, merit goods and human rights (DeNardis 2014, 231; Kaul et al. 1999; Kaul et al. 2003; La Rue 2011, para. 85; Nye Jr. 2011, loc. 1893; Sandler 1999, 106; UN 2003; WHO 2010). In conclusion, governments have powerful incentives to foster/supply and regulate the provision of Internet access because it enables, facilitates, democratizes, and enhances the provision of fundamental public goods, merit goods, and human rights.

The Internet as a basic human right

Three global surveys reflect the general public's opinion that the Internet should be considered a basic human right. Table 1 summarizes the results of surveys conducted by the BBC, the Internet Society (ISOC), and the Centre for International Governance Innovation (CIGI). The ratio of people that consider the Internet a basic human right increased from 79 percent to 83 percent from 2010 to 2014. These results imply that the majority of people view Internet access as a public good, consequently highlighting government's responsibilities and obligations in the provision of the Internet.

Table 1. Global public opinion surveys on Internet access as a human right

Institution	Year	Respondents	Countries	Regions	Yes, Internet access is a human right (%)
BBC	2010	27,973	26	All except the Caribbean	79%
ISOC	2012	10,789	20	All except the Caribbean, Oceania and Central America	83%
CIGI	2014	23,376	24	All except the Caribbean	83%

Fonte: eleaboração do autor.

Several countries have approved various degrees of legal rights to Internet access in recognition of its intrinsic social value as a public good and its importance to socioeconomic development. In 2011 Frank La Rue's report to the UN Human Rights Council highlighted several developments on this topic. La Rue's report noted the legislation passed by the parliament of Estonia in 2000 that approved Internet access as a basic human right; the Supreme Court rulings in Costa Rica and France that declared Internet access a fundamental right; and Finland's approval of broadband Internet access as a human right (La Rue 2011, para. 65). Moreover, Greece (2008) amended its constitution to ensure the right of every person to take part in the information society; Spain (2011) imposed universal and affordable broadband Internet access as a legal obligation to the incumbent telecommunication provider; and Brazil (2014) approved Law 12965 (Civil rights framework for the Internet, article 4) that ensures the right to Internet access for all.

The approval of the right to Internet access creates a legal foundation for the provision of Internet access as a public good/service, much like telecommunications in most countries, requiring the enforcement of regulatory measures on Internet provision such as contractual obligations on telecommunication operators to provide fixed and mobile Internet access in remote, rural, and unprofitable areas. For example, Estonia launched public Wi-Fi connections after approving the legal right for Internet access. In Finland and Spain, telecommunication providers are obliged to provide Internet access at broadband speeds (i.e., above 1 Megabyte per second). In 2016, New York City went a step further and engaged in a public-private partnership with several private firms to provide free Wi-Fi access (i.e., the "LinkNYC" initiative) through hi-speed totems installed across the city. In New York City, the right to high-speed Wi-Fi Internet access for all is being provided as a public service regardless of the existence of specific laws on the issue.

In addition to noting the results of the BBC survey (2011, para. 65), La Rue's report concludes: "Given that the Internet has become an indispensable tool for realizing a range of human rights, combating inequality, and accelerating development and human progress, ensuring universal access to the Internet should be a priority for all States" (para. 85). Governments, as duty-bearers of human rights, are ultimately responsible for the universal and equitable provision of the Internet, and therefore play a key role in global Internet governance.

The economic attributes of the Internet as a global public good (GPG)

Kaul et al. (1999, 2) argued that GPGs meet two basic criteria: first, their benefits have strong qualities of *publicness* – nonrivalry in consumption and nonexcludability; second, their benefits are universal in terms of countries, people, and generations. The Internet meets both criteria, and it also presents other typical economic attributes of a GPG, such as the existence of free riders and other market failures, a global undersupply and underuse, and significant externalities. This section examines these economic attributes.

Nonrivalry in consumption

Nonrivalry in consumption implies that the consumption of a good by someone does not preclude others from consuming the same good, or that, since the marginal cost of providing the good is zero, attempting to exclude someone from consuming that good is more costly than allowing free consumption (Stiglitz, 1999, 309). Nonrivalry in consumption of the Internet is sometimes contested because at peak times a high number of users can congest the Internet and temporarily prevent access to other users, and because there are indeed marginal costs in expanding the communications infrastructure to prevent these congestion problems. But these exceptions can be solved by technical development, economic efficiency, enhanced investments, and effective regulation.

The market for Internet provision, much like the market for telecommunications, presents typical characteristics of a natural monopoly such as high entry and sunk costs, large initial infrastructure investments, supply-side economies of scale, a limited number of suppliers, market power, concentrated competition, and *marginal costs tending to zero*. Hence, the Internet is theoretically nonrivalrous in consumption and produces supply-side economies of scale due to zero marginal costs in production. Eisenach (2015, 4) observed that the Internet also presents demand-side economies of scale, also known as network effects, which implies that the benefits of the Internet and its positive externalities grow with additional users.

As the number of users increase, Internet service providers (ISPs) benefit from gains in scale and reductions in the individual costs of service. Firms benefit from larger markets, and governments reach more people with public services delivered through the Internet. Eisenach added that "Governments often subsidize participation in industries with network effects through direct or indirect government subsidies" (5), therefore making the case for government intervention on Internet provision. Governments should promote the expansion of the Internet to enhance its economies of scale, network effects, and positive externalities, either indirectly through market regulation over private providers, or directly through public investment in infrastructure and public-private partnerships.

Nonexcludability and the free rider problem

Nonexcludability implies that no one can be excluded from the consumption of a good once it is provided. Internet access is not, by any means, free of charge: the fees charged by Internet service

providers (ISPs) and the costs of access and devices present significant access barriers, particularly in developing countries. However, access to the underlying Internet infrastructure and most contents is readily available to anyone with the basic technical and financial means. Kaul et al. (1999) added that "public goods are, at least partially, nonexcludable… yet barriers to access are different from excludability" (xxix), leading to the conclusion that access barriers do not typify a good as excludable.

The accessibility and affordability of Internet access and ICT devices is a matter of efficiency in supply and demand, sector development, public policies, and effective regulation. Hence, the Internet is theoretically nonexcludable and therefore gives rise to horizontal and vertical free riders.

Horizontal and vertical free riders

Due to its nonexcludability, Internet provision is affected by horizontal (i.e., within the content layer) and vertical (i.e., across the Internet's technology layers) free riders. One example of horizontal free riders are "pirate" sites that provide copyrighted content for free (e.g., music, movies, books), reducing the revenue of the creators of contents that would further compensate ISPs for the provision of Internet access. Another example is people that use the passwords of paying subscribers to illegally access paid content on the Internet. Governments are crucial in establishing and enforcing domestic and international policies to protect intellectual property rights and increase the affordability of Internet-based content services, to discourage piracy and illegal access, and to engage in international cooperation to constrain piracy, illegal access, and other free riding behaviours.

Vertical free riding involves the issue of net neutrality. Some ISPs claim that content providers (e.g., Google; Netflix) are free riders when they are not charged relative to the content they provide over the communications infrastructure. Content providers claim that ISPs would not have paying costumers if there was no content on the Internet; thus, they should not be considered free riders because they essentially create the demand for Internet access. Whichever side one partakes, a fact is irrefutable: ISPs must somehow be compensated to ensure continued investment in the physical infrastructure, to accommodate the ever-increasing demand for Internet coverage and bandwidth. Governments should clearly define who should finance the communications infrastructure: users, ISPs, content providers, and/or governments themselves; and should mediate a sustainable solution for the vertical free rider debate at the domestic and global level.

Governments should constrain free riding behaviour through market regulation, trade liberalization, and fair taxation. However, government intervention must be exercised with caution. As governments levy taxes to compensate for free riders and to subsidize universal service, the costs of services and devices increase for every user, firms earn lower profits, the Internet reaches less people, and the positive externalities of nonrivalry in consumption may be cancelled out.

The negative externalities of the Internet

The demand-side and supply-side economies of scale and the positive externalities of the Internet have been causing the migration of social and economic interactions to cyberspace. As more and

more interactions migrate to the Internet, negative externalities related to the use of the Internet arise, such as electronic waste (i.e., e-waste), the marginalization of information and communications technology (ICT) "illiterates" in job markets, and threats to cyber-security.

In economic theory, governments mitigate negative externalities by constraining and regulating supply, by compensating the affected parties, by establishing clear property rights` rules and the rule of law, and by facilitating negotiations among the affected parties so they reach mutually beneficial solutions by themselves. These objectives are achieved by legislation, market regulation, and taxation, all sovereign functions of governments and MOs. While it is true that the costs of cyber-security threats and other negative externalities have been internalized by providers of online services and firms operating on the Internet (Dourado and Brito 2012, para. 5), these costs may be passed on to the users, raising the prices of ICTs/Internet access, and reducing the reach of the Internet. Furthermore, the migration of socioeconomic interactions to the Internet and the rise of smart cities' and Internet-of-things` applications raises the public importance of the resilience, trust and confidence of ICT/Internet services and networks.

Internet usage produces both positive and negative externalities, thus the main policy challenge is enhancing the positive externalities and economies of scale while preventing the negative externalities, thus achieving net positive gains. Governments are in a privileged position to observe the overall effect of market interactions in society, to coordinate multi-stakeholder solutions, and to take actions that make society as a whole better off.

Threats to cyber-security are the foremost negative externality of the Internet. Cybercrime, cyber-warfare, cyber-terrorism, cyber-espionage and privacy breaches increasingly disrupt communications, businesses, finance, commerce, and public services, and present severe threats to global political stability. These threats undermine the use and supply of Internet by reducing trust in online services and increasing costs to people, businesses, and governments. If developing countries in particular do not effectively build strong foundations and institutions for the provision of the Internet and for the mitigation of cyber-threats, they may become the main sources of attacks and global threats to cyber-security.

DeNardis (2014) summarized the importance of cyber-security: "No less than economic security, modern social life, culture, political discourse, and national security are at stake in keeping the Internet globally operational and secure" (17). Governments play a key role in restraining threats to cyber-security by upgrading national legislation that addresses undesirable behaviour in cyberspace; promoting regulations and institutions that increase the resilience and stability of networks; and engaging in international cooperation for the establishment of a harmonized and cooperative global framework to improve cyber-security and constrain cyber-crime and other criminal online activities.

The role of multilateral cooperation in Internet governance

Due to its social and economic attributes as a GPG, the Internet requires government intervention and international cooperation to achieve an optimal level of provision. The principle of subsidiarity

defines the level at which intervention is most efficient in the provision of GPGs, dictates the jurisdiction of the issues surrounding Internet governance, and highlights the role of governments and MOs.

The principle of subsidiarity

Andersson (in ITF 2006) defined the principle of subsidiarity as "the idea that problems should be solved closest to where they occur" (103). In Kaul et al. (1999) subsidiarity equates to "moving decision-making on priorities and implementation as close to the local level as possible" (xxviii). Bryant (in Kaul et al. 1999) explained that the intention of subsidiarity is to "reduce information problems, promote peer reviews, facilitate more diversified policy advice and ultimately create better-fitting solutions" (477).

Sandler (2004) added that "the political jurisdiction should coincide as closely as possible with the region of spillovers so that those affected by the public good determine its provision decision" (85). Sandler clarified the economic importance of subsidiarity in the provision of GPGs: when the coordinating jurisdiction reaches beyond the range of the public good spillovers, there is a possibility of oversupply; when the coordinating jurisdiction does not reach all affected agents, there is a possibility of undersupply. Another economic reason for the principle of subsidiarity is that it reduces transaction costs by reducing the number of participants in coordination to just those with a stake in the activity.

Based on these economic reasons, Ocampo (2013, 2-8) advocates for the application of strong subsidiarity principles in achieving the three basic objectives of international cooperation with respect to the provision of GPGs: (i) managing the interdependence among nations; (ii) fostering the adoption of common social standards and providing a minimum level of services; and (iii) reducing inequalities among countries. These three objectives are examined with respect to their roles in Internet governance.

Managing the interdependence among nations

The first objective of international cooperation is managing the interdependence among nations in the provision of GPGs. Ocampo attributes to this objective the efficient provision of GPGs with regards to addressing their economic attributes, that is, with a view to achieving a welfare-maximizing global supply of goods that are nonrivalrous in consumption and nonexcludable in consumption, or that generate significant externalities. He further includes in the domain of the first objective two additional issues: the management of global/regional commons; and the management of shared infrastructure and networks (e.g., telecommunications and the postal system).

The Internet meets all four criteria proposed by Ocampo for a GPG requiring the management of the interdependence among nations. The Internet's architecture is inherently nonexcludable and

nonrivalrous (Spar 1999, 351); it presents significant positive and negative externalities; it is a human-made global common (Spar 1999, 454); and it functions over a globally shared communications infrastructure. As discussed, the Internet's nonrivalry produce transnational supply-side and demand-side economies of scale; therefore, international cooperation aims to maximize these positive externalities by connecting every country and their people to the Internet. Nonexcludability gives rise to transnational free riders; therefore, international cooperation aims to constrain free riding behaviour and include every nation and users as active contributors to the provision of the Internet's infrastructure and services.

Nations are interdependent in the provision of Internet access because the information exchanged on the Internet is transmitted through globally standardized transport, routing, and application protocols over the globally harmonized radiofrequency spectrum and the interconnected and interoperable global communications infrastructure. The Internet is a seamless, uniform, and open global network of computers because all stakeholders cooperate to make its architecture, networks, services, and devices interoperable across borders. International cooperation serves to establish global standards and agreements that enable seamless interoperability and interconnectivity. These global standards and agreements are achieved through international cooperation at the multi-stakeholder (i.e., involving nonstate actors) and multilateral level. Hence, subsidiarity in the interdependence among nations in Internet governance determines that *policymaking and/or binding agreements should take place at the international level*.

The role of governments in the management of the interdependences is to negotiate and approve international agreements for the interoperability and interconnectivity of the global communications infrastructure at MOs. Governments internalize global regulatory/technical standards into national legal and industrial frameworks, and develop domestic policies to prevent national spillovers from affecting the global provision of the Internet (Kaul 2013, Box 2.3, 55).

Barrett (2007, 20, Table I.1) proposed a taxonomy of GPGs based on how they are supplied, highlighting the importance of the principle of subsidiarity in managing the interdependence among nations in the provision of GPGs. GPGs are supplied through five main channels:

- a *single best effort* from a country or a collection of countries;
- the enforcement of compliance to global standards by all actors, but particularly by the *weakest links*;
- an *aggregate effort* involving all countries;
- the enforcement of *mutual restraint* on all countries; and
- by *coordination* that ensures countries abide by the same rules and do the same things.

The provision of the Internet and all its elements encompasses all five of these supply channels at the international level. Table 2 clarifies the central role of MOs in Internet governance, by providing examples of the scope of policy making on Internet issues, the incentives for international cooperation, the key stakeholders involved, or the status of financing and cost sharing, and the international organizations where cooperation takes place.

Table 2. Barrett's taxonomy of Global Public Goods applied to Internet governance

Supply channel	Single best effort	Weakest link	Aggregate effort	Mutual restraint	Coordination
Supply depends on...	Single best unilateral or collective effort	The weakest individual effort	The total effort of all countries	Countries not doing something	Countries doing the same thing
Barrett's example	Asteroid defense	Disease eradication	Climate change mitigation	Non-use of nuclear weapons	Standards for the measurement of time
Internet's example	Transactional protocols (e.g., TCP/IP)	Combating cybercrime	Bridging the digital divide	Non-use of cyber-warfare	Radiofrequency spectrum allocation
International cooperation needed?	Yes, to define universal standards	Yes, to establish basic rules and frameworks for cooperation	Yes, to provide technical/ regulatory expertise and financial aid	Yes, to agree on what countries should not do	Yes, to ensure interoperability of devices across borders
Incentives for international cooperation	Companies at the technology frontier build the best protocol standards	Attacks can be launched from any country, but particularly from countries with lackluster cyber-security frameworks	Maximizing global demand-side economies of scale	Protection peace, security, and human rights	Maximizing global supply-side economies of scale
Primary (and secondary) stakeholders	Private sector (governments)	Governments (private sector)	Governments (private sector)	Governments (civil society)	Governments (private sector)
Financing and cost sharing needed?	Yes (e.g., promoting international cooperation)	Yes (e.g., building localized response and monitoring centers)	Yes (e.g., rich countries building infrastructure in poor countries)	No	Yes (e.g., promoting international cooperation)
International institutions for provision	IETF, W3C	UN, ITU	ITU, Development banks	UN	ITU

Fonte: eleaboração do autor.

Addressing the social attributes of the Internet through international cooperation

Ocampo acknowledges that non-economists have expanded the application of the concept of "publicness" to those goods that society defines as of public interest due to their inherent social rather than economic attributes, which he labels as Global Social Goods (GSGs). According to Ocampo, the second objective of international cooperation is the provision of GSGs, understood as common social standards and a minimum level of social services for all world citizens.

This broader concept relates to the social attributes of the Internet as a GPG. As discussed previously, the Internet has intrinsic social value for two reasons: it enables and enhances the provision of fundamental merit goods and human rights; and it has been increasingly considered a basic human right itself. Society has defined that Internet access is a common social standard, thus, Internet access should be provided as a GSG by governments and through international cooperation. Internet provision suffers from several constraints reflected in its economic attributes as a GPG; in the gaps in infrastructure, investment, and quality of service; and in the affordability of Internet devices, access and services. As sections 2 and 3 demonstrate, these constraints fall under the domain of governments, and are mostly addressed by domestic public policies. The role of international cooperation is to agree on benchmark strategies; to transfer expertise, knowledge, and procedures; to establish technical, regulatory, social, and economic standards; and to define basic common rules to be respected by all stakeholders.

Reducing the inequalities among countries

Ocampo's third objective of international cooperation is the reduction of international inequalities, in particular of different levels of economic development among nations. International cooperation aims to mitigate the asymmetries that characterize the international economic system, such as the technical and productivity gaps between rich and poor countries. In the case of the Internet, these asymmetries are reflected in the pervasive digital divide that potentially enhances income inequalities within and among countries.

International cooperation is fundamental for the reduction of the global, regional, and national digital divide in three main ways. First, through official development assistance (ODA) and the direct transfer of technology, technical and regulatory expertise, and capital. This mode of cooperation enables poor countries to leapfrog stages of development and overcome technical, financial, regulatory, and institutional gaps. Second, through the reduction of the information and knowledge asymmetry between rich and poor countries, enabling poor countries to establish benchmarks policies and regulatory frameworks for the efficient provision of the Internet. Third, through the establishment of rules that creates preferences for developing countries, such as the trade principle of "special and differential treatment", and the sustainable development principle of "common but differentiated responsibilities". In the case of the Internet this could translate, for example, to facilitated access to and transfer of new technologies, notwithstanding the existence of intellectual property rights.

Multi-stakeholder Internet governance: the UN consensus versus the reality

The social and economic attributes of the Internet as a GPG produce challenges and transnational externalities that are of global public interest, thus international cooperation is crucial for Internet governance. Such international cooperation involves governments, private companies, civil society, intergovernmental organizations, international organizations, and the academia in a comprehensive, complementary manner, each in their own competence and contributing with specific expertise, capabilities, and functions. Multi-stakeholder governance is a key principle of the Internet, and fundamental for its provision as a GPG.

The UN's World Summit on the Information Society (WSIS) recognized the importance of multi-stakeholderism in Internet governance and enshrined it in a multilateral, consensual outcome. The "Tunis Agenda for the Information Society" (UN 2005, para. 35-6) established the role of each stakeholder, taking into account their normative functions, their legal competencies, and the principle of subsidiarity. In summary:

- governments have the sovereign right of policymaking in Internet-related public policy issues;
- the private sector should promote the technical and economic development of the Internet;
- civil society should act at the community level;
- multilateral organizations (MOs) should facilitate the coordination of Internet-related public policy issues;
- international (i.e., non-governmental or multi-stakeholder) organizations should promote the development of Internet-related technical standards and relevant policies;
- the academic and technical communities should contribute with the above stakeholders to the evolution, functioning, and development of the Internet.

These roles are confirmed by the vast literature available on the subject (e.g., DeNardis 2014; Drezner 2004; ITF 2006; Kaul et al. 2003; Mueller 2010; Nye 2011). Every stakeholder plays a fundamental role in Internet governance, and the absence of any stakeholder presents a gap that cannot be fulfilled by the others. The roles identified by WSIS for governments and MOs should be particularly emphasized. As discussed, governments and MOs are essential to address the social and economic attributes of the Internet as a GPG. Governments and MOs are also fundamental enablers and facilitators of the work of the other stakeholders and the overseers of compliance. They lay the legislation, institutions, and common rules and standards to be observed by the private sector, civil society, international organizations, and the academic and technical communities. They also enforce the compliance of all stakeholders with the rule of law.

Yet as a result of the Internet's historic technical development, early private success, and international power struggles, Internet governance has been conducted as a bottom-up, multi-stakeholder process strongly resistant to the involvement of governments and MOs in the roles identified by WSIS. Nonstate actors undeniably play a crucial role in Internet governance through their expertise, agenda-setting abilities, and power to monitor and enhance accountability, however, Edwards and Zadek (2003) illustrated the problems with the sole involvement of nonstate actors in international cooperation for the provision of GPGs.

First, nonstate actors lack legitimacy to represent society as a whole: they represent the interests of their immediate constituents, and are accountable only to these constituents. Second, global nonstate networks are asymmetrical and often dominated by organizations based in developed countries. Third, the quantity and diversity of businesses and civil society groups make it impossible for each one to participate equally. Fourth, different types of nonstate actors have different mandates, interests, and characteristics, and thus there is no common, shared role for nonstate actors in securing global public goods. Fifth, corporations may try to undermine public policies that enhance the delivery of global public goods (e.g., going against market regulations on telecommunications and Internet provision). Sixth, the sheer number of nonstate actors presents practical problems in terms of the logistics for their participation in multi-stakeholder meetings, and in the efficiency of decision-making processes involving hundreds if not thousands of stakeholders. Edwards and Zadek (2003) summarize the issue as follows:

> the role of nonstate actors is not to replace governmental or intergovernmental decision-making but to complement it. Nonstate actors can present and deliberate on policy positions, but it is up to elected governments to balance different interests and arrive at policy decisions. Nonstate actors have a right to a voice but not necessarily to a vote in global governance. (216).

These problems are amplified in the case of Internet governance, since most developed countries, Internet firms, and the civil society view the participation of governments and MOs as detrimental to Internet provision. But given the social and economic attributes of the Internet as a GPG, it is necessary to enhance the Internet governance framework by duly recognizing and empowering all governments and MOs.

Drezner (2004, 482-90) provides important insights on the reasons why governments and MOs are marginalized in global Internet governance. He claims that global governance has a higher chance for success if great powers have converging interests. In cyber-security, for example, there are converging interests in constraining cyber-crime and cyber-terrorism, but there are diverging interests in the establishment of rules for cyber-warfare and data privacy. Some nations (i.e., the owners of hard power with means for cyber-warfare and data surveillance) are favoured by fewer regulations, while others are favoured by stricter regulations. Therefore, in the absence of consensus between great powers, there is no international coordination and the global community resorts to private solutions.

Another example is content censorship. Every nation exerts content censorship to various degrees, despite protests from other nations, corporations, and civil society. In 2011, Egypt shut down the country's entire web domain for five days to repress the Arab spring. In 2015-16, court rulings in Brazil shutdown the "Whatsapp" instant messaging application in the entire country for days, disrupting users and businesses. The United States blocks child pornography. France blocks Nazi memorabilia. These examples support Drezner's argument (2004, 498) that it is the nation-states' prerogative to let private actors take the governance lead, but nation-states will intervene

to advance their desired end. Furthermore, there are policy areas that fall under the strict competence of governments, such as legislative power, taxation, trade policies, and enforcing the rule of law, and these areas are crucial for the efficient provision of the Internet.

There are numerous international multi-stakeholder organizations that engage in Internet governance, but they basically reflect the power struggles and asymmetries that take place in MOs. Great powers are able to actively participate in both multi-stakeholder organizations and MOs, but in the absence of consensus among governments, great powers favour multi-stakeholder organizations where they exert influence over the outcomes directly and/or through their nonstate actors. This presents a problem for developing countries, which do not have financial or human resources to participate in these nongovernmental organizations, and therefore do not influence the harmonization of global standards and do not benefit from international cooperation. Nongovernmental organizations are important and helpful, but as Dervis (2005) noted, "the role and power of nongovernmental organizations is not sufficiently comprehensive or even legitimate to substitute for real reform" (61).

It is paradoxical that governments have for decades agreed on the importance of cooperation for economic development and have established intricate frameworks to achieve this goal, but Internet governance, as essential as it is for economic development and social inclusion, is still a very contentious field with meagre multilateral consensus. It is also paradoxical that developed countries have promoted larger, decentralized, bottom-up multi-stakeholder frameworks for Internet governance, while they have turned to smaller, focalized multilateral elite governance frameworks (e.g., G7/8, G20) in search of facilitated decision-making processes for other crucial global issues.

But it is not surprising. Internet governance is a field where developed countries strongly manifest their political agendas and private interests, similarly to their stances on free trade. They own the largest corporations, civil society organizations, and latest technologies, thus they favour fewer regulations and are resistant to transferring technology and surrendering their comparative advantages. Developing countries, however, need to impose larger regulation to mitigate market inefficiencies, and benefit from the transfer of technology, financial resources, and expertise to develop their own industries. As developing countries constitute the majority of votes in MOs and therefore favour MOs, rich countries turn to informal, private solutions.

Both sides should aim for compromise solutions. Developed countries should empower MOs as relevant venues for Internet governance, thus increasing the legitimacy of Internet governance through the larger representation of developing countries. Developing countries should aim to conciliate their views with the concerns of developed countries, to achieve consensual agreements that produce mutual benefits. Nonstate actors should continue to provide their crucial expertise, agenda-setting abilities, and monitoring functions at the national level and in multi-stakeholder organizations and MOs. Multi-stakeholder organizations, in turn, should continue to provide valuable technical inputs to MOs. And MOs should effectively use the inputs provided by non-state actors and multi-stakeholder organizations to enhance the legitimacy, reach, and efficiency of their decisions and outcomes. But the crux of the issues is the empowerment of MOs, as these are the favoured venues for the great majority of governments, particularly the developing ones.

Achieving effective multi-stakeholderism in Internet governance

As a GPG, achieving an optimal global governance of the Internet depends on the establishment of an efficient and inclusive multi-stakeholder system, with empowered governments and MOs. Ocampo (2013) proposed six criteria for rethinking the global structure of international cooperation for the provision of GPGs: (i) strong subsidiarity principles; (ii) reliance on a dense network of global, regional and national institutions; (iii) reliance on small but representative decision-making bodies that help overcome the tension between inclusiveness and effectiveness; (iv) equitable participation of developing countries in decision making; (v) effective instruments of monitoring international commitments; and (vi) guaranteeing the coherence of the system. These criteria are applicable to the Internet governance system.

Edwards and Zadek (2003, 200) presented two key challenges to the provision of GPGs: (i) effectively involving nonstate actors; and (ii) "ensuring that non-state involvement is structured to avoid the dangers of special interest politics" (200), to prevent stalemates and behaviours that favours one group over another. They added that "These two tasks must be approached together and will require a radical overhaul of the rules of global governance to ensure that state and nonstate capacities are combined effectively" (200). The measures to implement this "radical overhaul" in the scope of Ocampo's six criteria for global cooperation with respect to Internet governance are presented as follows.

First, subsidiarity ensures that decision-making reaches all relevant stakeholders, so they effectively contribute to Internet governance. As the Internet is a GPG, the resources critical to its provision should be managed in the international domain. The management of the Internet's domain names system (DNS), generic top-level domains (e.g., .com; .edu), and country code top-level domains (e.g., .br; .uk; .fr) is performed by ICANN, a non-profit organization based in the United States. ICANN markets itself as a multi-stakeholder organization, but governments and MOs are under-represented. The Governmental Advisory Committee (GAC) of ICANN, composed of governments, acts as an advisory body to the ICANN board, but its decisions are non-binding and the board can decide to disregard them. ICANN's current structure harms Ocampo's principles of subsidiarity and of equitable participation by developing countries. ICANN should be internationalized; it should be bound to international law; and governments and MOs should have an active role in policymaking along with other nonstate actors.

Second, the existing network of regional and international nongovernmental and MOs must be reviewed, to foster greater collaboration and the official exchange of outcomes. The importance of both types of organizations should be mutually recognized, and channels for participation provided. Nongovernmental organizations should recognize the importance of governments and MOs and allow them to participate in their decision-making processes. MOs (e.g., UN, ITU, World Bank) should adapt to the new reality of more influential and participative nonstate actors in Internet governance, and provide opportunities for non-state actors to clarify whom they represent and how they are held accountable to their constituents. MOs should provide open and inclusive channels for the inputs of

nonstate actors to the policy debates among governments. These may take the form of online public consultations and physical multi-stakeholder meetings the day(s) before official intergovernmental meetings and conferences. Finally, MOs should hold multi-stakeholder forums that "encourage honest debate among governments, business, and civil society organizations around the same table, without fear of co-optation" (Edwards and Zadek 2003, 217). These forums should provide official outcome documents as inputs for intergovernmental policy making meetings and conferences. For example, the UN and the ITU hold several multi-stakeholder forums related to Internet governance, such as the Internet Governance Forum (IGF), the WSIS Forum, and the Regional Development Forum, but only the last two provide official outcome documents for policy making bodies. The IGF should provide recommendations and consensual outcome documents as official inputs to decision-making multilateral conferences and summits. These conferences and summits should formally contain agenda items for discussions on the official outcomes of legitimate, recognized multi-stakeholder forums and organizations.

Third, the policymaking process should be streamlined to increase efficiency and produce consensual decisions. As discussed, multi-stakeholderism holds several practical problems in terms of logistics and the large and increasing number of relevant non-state actors. Consensus among thousands of stakeholders is simply not realistic and practical; neither is to expect that sovereign nation-states will accept the participation of corporations and civil society on an equal footing to governments. Therefore, consensus should be a gradual and continuing process, starting from bottom-up regional multi-stakeholder organizations whose outcomes feed into regional and global intergovernmental policy making bodies such as the UN, the ITU, WTO, and the World Bank.

Fourth, it is imperative that developing countries are assured an equitable participation in policymaking, as these are the countries where the Internet is most undersupplied. However, the multi-stakeholder model presents several difficulties to the implementation of this principle. Most active non-state actors are based in developed countries, thus, allowing their participation on an equal footing results in the over-representation of the interests of developed countries. While the interests of nonstate actors may translate to gains for society as a whole, and their ideas may be applicable in several circumstances, their participation reduces the availability of time in meetings and conferences for developing countries to have an active voice. Nonstate actors should present their views in separate, dedicated forums that produce official outcomes to be discussed by governments in MOs on an equal footing. To foster the participation of developing countries, it is crucial that final policymaking take place at MOs.

Fifth, the creation of effective instruments to monitor international commitments is crucial to ensure compliance in issues related to the interdependence among nations. Countries that host critical infrastructure elements and resources, such as submarine fibre optics cables and satellites, must ensure the resilience and interconnectivity of the Internet's global infrastructure. The future discussions on global policies for cyber-security and data privacy will require a strong monitoring framework to ensure compliance to cyber-security standards, mutual restraint on cyber-warfare and cyber-espionage activities, and international collaboration to curb cybercrime and cyber-terrorism.

Finally, ensuring the coherence of the global Internet governance system is important to avoid duplication of efforts, to strengthen coordination, and to enhance the collaborative efforts of non-state actors, non-governmental organizations, governments, and MOs.

Conclusion

The Internet presents social and economic attributes of a global public good. The social attributes reflect society's recognition that the Internet is a fundamental driver of socioeconomic development, and therefore should be provided for everyone. Governments should promote the efficient provision of the Internet as a public good at the national level, to foster economic growth and social inclusion, and at the international level, to establish common standards and a minimum level of Internet access for all, and to reduce the digital divide.

The economic attributes manifest themselves in the global underuse and undersupply of the Internet, in the inequality in access, in market failures, in the existence of free riders, and in transnational positive and negative externalities. Governments and multilateral organizations are essential to address the nonrivalry and nonexcludability of the Internet, enhance the global supply-side and demand-side economies of scale, correct market failures, enhance (mitigate) the positive (negative) externalities, and build strong foundations for the equitable development of the Internet within and among countries.

All stakeholders share the common goal of promoting universal Internet access, but the social and economic attributes of the Internet as a global public good puts governments and multilateral organizations at the centre stage of policymaking in global Internet governance. The transnational features of the Internet as a global public good accentuate the importance of international cooperation and the roles of multilateral organizations in the management of the interdependencies among nations.

An efficient global provision of the Internet can only be achieved if governments and multilateral organizations are empowered to fulfil their roles in a coherent global Internet governance system. Such a system is a factor of the application of Ocampo's six criteria for successful international cooperation in the provision of the Internet as a global public good.

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