To improve this Governance

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Abstract

The decisions that have been and are being taken regarding what the WSIS called the 'International management of the Internet' constitute an interesting case to analyze the Governance phenomenon. (WSIS-05/TUNIS/DOC/6(Rev.1)-E). Our aim is to give *a priori* probable future scenarios that are likely to be derived from decisions regarding governance. The modelization of the Internet Governance Forum as a complex system provides some clues about the difficulties to be overcome in order to arrive to a "multilateral, transparent and democratic" Internet Governance.

Keywords: Governance, Complex Systems Analysis

Abbreviations used: ICANN -Internet Corporation for Assigned Names and Numbers-**; ICT** –Information and Communication Technologies-**; IGF** - Internet Governance Forum-**; NGO** - Non-governmental organization-**; SME** – Small and medium enterprises **-; WSIS** -World Summit on the Information Society-**.**

1. Introduction

> "A vast literature has developed over the last few years that theorizes and empirically studies novel forms of governing the economy that rely on collaboration among non-state actors (firms, civil organizations, NGOs, unions, and so on) rather than on top-down state regulation. … From this viewpoint, the solution lies neither in the state nor in the market, but rather in a third type of organizational form -collaborative networks involving firms and secondary associations-" (de Souza Santos-Rodríguez Garavito).

The concept of 'governance' is not new, and means "the process of decision-making and the process by which decisions are implemented (or not implemented)" (UNESCAP), but "current use does not treat governance as a synonym for government", it rather "signifies a *new* process of governing; or a *changed* condition of ordered rule; or the *new* method by which society is governed" (Rhodes, 1996). Note the emphasis in the social and political aspects involved in the 'governance' the quotation shows. This is a relevant fact to be considered when the problem we are handling has, at least, two different aspects, one social –the Information Society-, and the other, not only technological, but also linked with significant corporate interests – the management of the Internet-. The decisions that have been and are being taken regarding what the WSIS called the 'International management of the Internet'

constitute an interesting case to analyze the Governance phenomenon. (WSIS-05/TUNIS/DOC/6(Rev.1)-E).

Our aim here is to give *a priori* probable future scenarios that are likely to be derived from decisions regarding governance. In order to do so we have used a multiagent (so called prey-predator approach) system, much worked model taken from statistical physics to investigate the case in Sect. 3.

2. The Internet Governance

From a theoretical viewpoint, it is unconceivable that the Internet, being a global network, should be submitted to the national state regulation of each connected country. Neither should it be submitted to the national state regulation of one given country. In fact, Internet would be an ideal example of an institution that can only be ruled by international law; but it is not. Neither scientific nor political significant efforts are being made in this direction (Yen, 2001; Elkin-Koren, 2004).
In the Tunis phase of the WSIS -November 2005-, governments asked the UN Secretary-General to convene a Forum, with the mandate to discuss the main public policy issues related to Internet Governance in order to foster the Internet's sustainability, robustness, security, stability and development. (WSIS-05/TUNIS/DOC/6(Rev.1)-E). It is clear that the paragraph is referred to the technological aspect pointed above.
Leaving aside the current discussion on state or non-state regulation (de Souza Santos-Rodríguez Garavito, 2005), there is no doubt that there must be some kind of regulation regarding the Internet, and that such a task demands

> "… the full involvement of governments, the private sector, civil society and international organizations" (WSIS, Tunis Agenda, 2005, 2).
> "In addition, there is a need to consider the following other issues, which are relevant to ICT for development and which have not received adequate attention: …Activities on ICT-related institutional reform and enhanced capacity on legal and regulatory framework" (WSIS, Tunis Agenda, 23, j).
> "Other points covered the relation of governments to ICANN and whether is was appropriate for the Government Advisory Committee (GAC) to have only an advisory role as opposed to fuller powers in terms of international public policy. While one panellist argued that the participation of governments in the GAC was one of ICANN's most important features, another put forth that the current model with GAC as part of ICANN was not a stable model" (Second Meeting of the IGF, Forum Chairman Sérgio Rezende's summary).

2.2.a Introducing Non-State Actors

> "The international management of the Internet should be multilateral, transparent and democratic, with the full involvement of governments, the private sector, civil society and international organizations" (WSIS, Tunis Agenda, 2005, 29).

This is merely one of several similar paragraphs that can be found in WSIS documents. Such seemingly horizontal and democratic statements hide the fact that, apart from state and market, only the elites (Rhodes-Bevir, 2003)or members of the middle-class with the economic and cultural capital shall be stakeholders in the Internet Governance (de Ortúzar-Olivera-Proto, 2007).

3. Mathematical modelization of the Internet Governance

A mathematical modelization would help us to visualize the influence of policies in the behaviour of agents in a social system. In order to attain this purpose we have chosen a multiagent (prey-predator-like) model.

3.1 The Lotka-Volterra model

To give a more concrete exemplification of the discussion on state or non-state regulations, and particularly to enhance the importance of the participation of non-state actors, it is adequate to appeal to a simple semiempirical modelization of the problem at hand, (Maurer - Huberman, 2000, Caiafa - Proto, 2006). The set of N differential equations (Maurer - Huberman) of the model is the following:

$$\frac{df_i}{dt} = \alpha_i f_i (\beta_i - f_i) - \sum_{i \neq j} \gamma_{ij} f_i f_j$$

where $\frac{df_i}{dt}$ means the time derivative of f_i, and indexes *i, k = 0, 1, . . . , N −1.* The f_i is the *weight of the i agent opinion*, at time *t*, with summation the f_i equal 1. The parameters of the model are: α_i, the growth rate of the agent *i*, β_i, the saturation value of the agent *i* -agent. In order to introduce the effect of the 'size' of the agents we have modified the growth rate parameter α_I according to Economo et al (2005) as:

$\alpha_i = \left(\frac{a}{b_i} \right)^4$ where a is the *selection pressure* which is, for simplicity hereby taken to be equal for all the agents living in the same environment (here the Information Society) and b_i is the parameter which reflects the *inverse of agent competitiveness*, or 'cost to do something' (Porter, 1980). In our case, the competitiveness should be understood as the cost imposed to the agent's ideas/interests to be accepted in the regulation of the Information Society. This modification of the growth makes it possible to take the agent's 'size' into account as suggested by Economo et al (2005).

3.2 The Internet regulation as a multiagent system

In our model we have introduced two kinds of agents:

a) The 'well-established in the Information Society agents': they are e.g. ICANN, software companies, Internet providers and NGO which presently lead the '*de facto'* management of the net. Most of them are fully committed with the development of the Internet because of direct or indirect economic interests. We call them Old (O), or 'stakeholder'.
b) The agents that are trying to find a seat in the Information Society Governance. These are 'civil society agents', like NGO, individuals, SME and the like. We can also include in this category several governments that still haven't definite policies about Information Society, or more specifically for an egalitarian Knowledge Society. We call them New (N), or 'participant'.

3.3 Simulation results

For the present work, in order to illustrate the analysis, we consider only 16 agents, and set $\alpha = 1/f_i(0)$ + noise, with noise a random number, n, $(0 < n < 1)$ for each agent. This means that we assume that all agents, living in the Information Society, are supporting a different *selection pressure,* inversely proportional to its f_i **(0)** the

initial ***weight of the i agent opinion***. So, we accept that, even ideally, all the agents have the same rights as regards the *policies for the sustainability of the Information Society*, although they are not so 'equal'. For simplicity we keep $\beta = 1$. The γ_{ij} values are taken as in Maurer–Huberman, always positive, with a gaussian random distribution (chaotic behaviour could be possible), as well as the initial conditions have also been randomly taken. So, all the agents are in a competitive scenario: the $f_i(0)$ value defines if the agent is a stakeholder or a participant (always keeping summation the f_i equal 1). In figs 1 and 2 two different cases are shown: for sake of clarity only the long term temporal evolution of the 'more heavy' agents, are plotted and the α values for each agent vs the agent number are identified. It is easy to see that below some α-minimum value, which is of course dependent on the initial conditions, the ***i agent opinion weight*** is very low or even irrelevant. However, as α is inversely proportional to f_i those which initially could appear as stakeholders may or may not remain under that condition at least in a full competitive scenario.

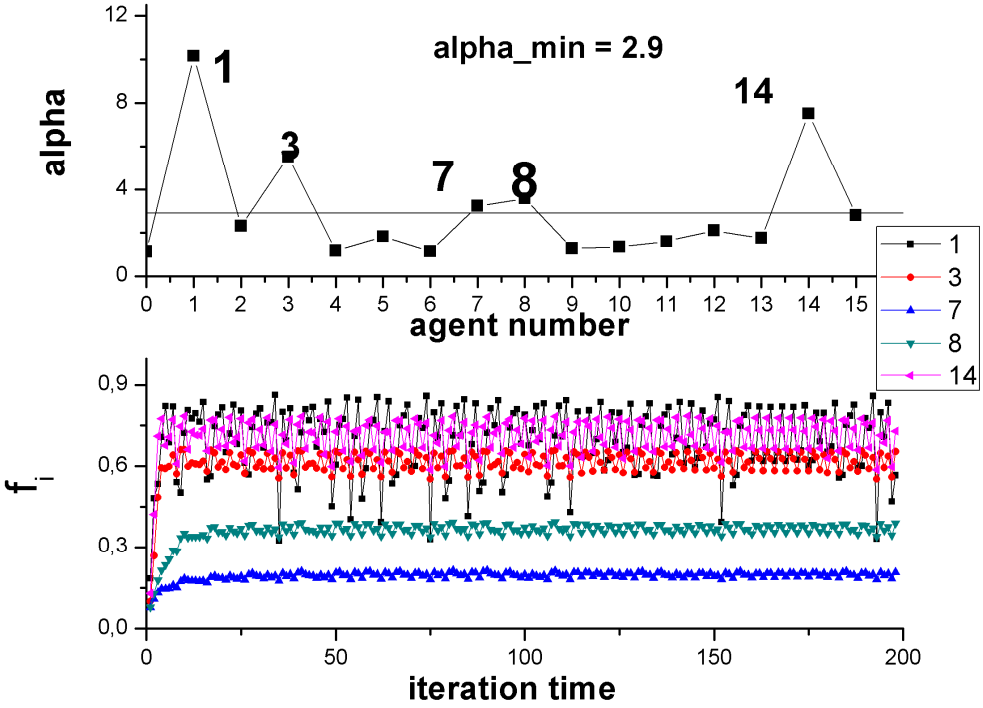

Fig.1

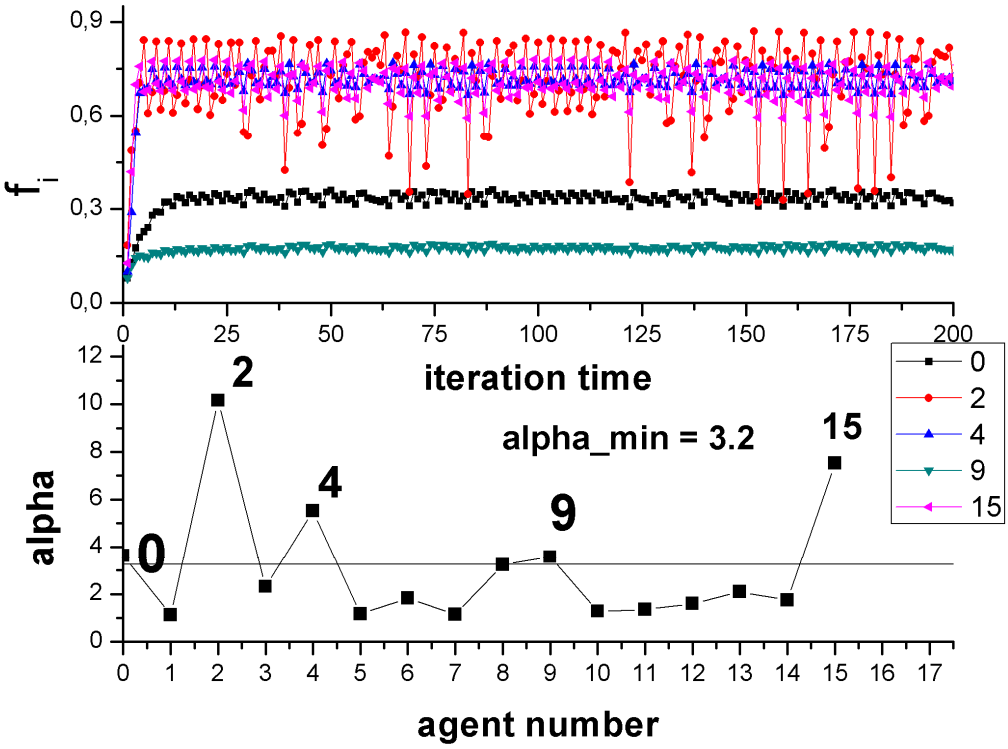

Fig.2

The simulation shows that, notwithstanding the quantity of 'light' and 'heavy' attendees at the meeting, the real 'stakeholders' among them are those that are able to remain or become 'heavy', when a full competitive scenario with instabilities in the interaction term due to the Gaussian distribution introduced in the γ_{ij} parameters is considered.

This effect can be obtained taking into account the agent weight associated to the initial conditions. So, when the f_i (0) is big (near 1) the agent can be considered an 'initial stakeholder'. It has to deal, however, both with its competitors, other stakeholders, and its own α fluctuations. The cases plotted in Figs. 1 and 2, with only 16 agents make this point evident. However, when more agents are considered, the initial conditions are increasingly similar among them and the fluctuations in α and γ_{ij} become more important, giving rise to unexpected final states.

3.4 The discourse at the light of the simulation results

Coming back to the Internet Governance context, in the Chairman's Summary quoted above we also read:

> "There was a clear convergence of views that governments had an important role to play in creating a solid regulatory framework and making sure that the rule of law was well established and respected".

We can ask convergence of whose views? And, looking for an answer, revise the figures above and wonder whether it was a convergence of views of 'stakeholders', 'participants' or mere 'attendees'. We can also question in whose benefit has such a demand been posed?

Conclusion

Through the multiagent system, we arrive to the conclusion that to attain an active role in the Information Society, and therefore participate in policy decisions, the agents need to be constantly aware in order to survive. Moreover, the competitive scenario like the one simulated here leads to a division between stakeholders and participants, no matter the starting point of each agent.
Simulation results lead to solutions which are clearly equivalent to the consequences that some social scientists have forecasted, in terms of theoretical explanation of phenomena that are actually comparable to those that are taking place within the Information Society.
In summary, the modelization of the Internet Governance Forum as a complex system provides some clues about the difficulties to be overcome in order to arrive to a "multilateral, transparent and democratic" Internet Governance (WSIS, Tunis Agenda, 29).
Up to now, all the simulations we have done suggest that, notwithstanding the 'Governance' scenario, there shall always be 'rulers' and 'ruled', and that the 'rulers' are on the side of the 'O' agents. This might be considered enough with respect to the mandate to "promote and assess, on an ongoing basis, the embodiment of WSIS principles in Internet governance processes". It might also be posed that "a people-centred, inclusive, development-oriented and non-discriminatory Information Society" (WSIS, Tunis Agenda, 31) is not likely to be achieved through rules that merely grant the participation on fully free basis.

References

Caiafa C. - Proto A. N. (2006), Dynamical emergence of contrarians in a 2-D Lotka – Volterra lattice, *International Journal on Modern Physics C*, Vol. 17 385-394

de Ortúzar M. G., Olivera N. and Proto A. (2007), Justice and Law in/for the Information Society, *Actas de CollECTeR Iberoamérica 2007*, Argentina, 297-304.

de Sousa Santos B. and Rodríguez-Garavito C. A. (2005) Law, Politics and the Subaltern in Counter-Hegemonic Globalization. *Law and Globalization from Below*, Cambridge Studies on Law and Society, Cambridge University Press.

Economo E.P., Kerkhoff, A.J. & Enquist, B.J. (2005), Allometric growth, life-history invariants and population energetics. *Ecology Letter*, 8, 353-360

IGF Internet Governance Forum (2007) Chairman's Summary Second Meeting, Rio de Janeiro, http://www.intgovforum.org/Rio_Meeting/Chairman%20Summary.FINAL.16.11.2007.pdf

IGF (2006) Provisional List of Participants, http://info.intgovforum.org/PL.php

IGF (2007) Provisional List of Participants, http://info.intgovforum.org/PLP_2IGF.php

IGF (2008) Provisional List of Participants, http://www.intgovforum.org/cms/index.php/component/content/article/385-hyderabad-provisional-list-of-participants

Lotka A.J. (1925), *Elements of Physical Biology*. Williams & Wilkins, Baltimore.

Maurer S. M. and Huberman, B. (2000) A Competitive Dynamics of Web Sites. *Xerox Palo Alto Research Center* CA94304

Porter M. (1980) *Competitive Strategy*, New York:Free Press

Rhodes R.A.W. (1996) The New Governance: governing without Government, *Political Studies*, 44, 1996: 652-67

Rhodes R.A.W. and Bevir M., Searching for Civil Society: changing patterns of governance in Britain' (2003) Public Administration, 81/1, 2003: 41-62.

Rhodes R.A.W. (2007) Understanding Governance: Ten Years On, *Organization Studies*, Vol. 28, No. 8, 1243-1264

UNDP (1997) *Governance for sustainable human development*. A UNDP policy document, New York, 1.2. http://www.unescap.org/pdd/prs/ProjectActivities/Ongoing/gg/governance.asp

UNESCAP (2009) What is Good Governance? http://www.unescap.org/pdd/prs/ProjectActivities/Ongoing/gg/governance.asp

Volterra V. (1931) *Leçons sur la théorie mathématique de la lutte pour la vie*. Gauthier-Villars, Paris.

World Summit on the Information Society http://www.itu.int/wsis/index.html

Yen A. C. (2001) Western Frontier or Feudal Society? Metaphors and Perceptions of Cyberspace. *Boston College Law School Faculty Papers*, USA.