



- Tornar antieconômica qualquer remoção de vegetação nativa através de impostos e multas significativas. Isso deveria diminuir o *dumping* ambiental que favorece essencialmente o agronegócio.

- Reforçar os órgãos de controle ambiental.

- Criar um observatório permanente da “economia verde”, com o intuito de analisar seu real conteúdo ambiental e social.

- No plano internacional, contribuir para a construção de uma governança fundiária global. Começar a jogar as bases da partilha mundial dos recursos e do conhecimento

Painel 3 – Desafios para Políticas Públicas

3.1.7 - Jean-Pierre Briot

Instituição: Centre National de la Recherche Scientifique (CNRS), França

Cargo atual: Diretor, CNRS Brasil (Representação permanente do CNRS no Brasil)

e-mail: diretor@cnrs-brasil.org

Título: “Some Issues, Experiences and Directions for Governance and Public Policies – The Case of Protected Areas – Technique vs/and Participation ?

Regarding environmental governance and public policies, focusing here on the case of management of protected areas for biodiversity conservation, we believe there is some fundamental complementarity, as well as some tension, between the needs for participation of social actors involved (stakeholders, e.g., environmentalists, local communities, tourism operators, municipality...) and the needs for a minimal kind of technical expertise to help at evaluate management proposals and decisions. To shortly exemplify extreme risks, a pertinent decision taken without any consultation may not be well accepted by stakeholders because seen as too technocratic and autocratic. On the other hand, a completely democratic and consensual decision could be very inappropriate regarding the future of the protected area. We

Realização:



Parcerias:



Apoio:





ground our discussion on some experience of an interdisciplinary research project about the use of computer-based support for participatory management of protected areas for biodiversity conservation and social inclusion. This project explores the use of computer-supported participation for stakeholders as well as providing them with technical tools to self-evaluate the positioning and the viability of their proposals.

Initial steps for public policies were mostly technocratic. In the context we consider here (management of protected areas), the manager of the park is the technocrat decision maker (who may have an initial training in biology or/and in social sciences), and bases his decision on the evaluation of the situation, his technical expertise and experience. In 2000, the Brazilian legislation introduced the concept of management council associated to a protected area, whose members are representatives of the different stakeholders involved (see examples above), in order to introduce participation of the social actors involved (SNUC, 2000). Note that in the case of some types of protected areas, namely national parks, this council is only of consultative nature. The existence of such a council indeed is expected to improve social participation, awareness, legitimacy, the inclusion of stakeholders concerns and viewpoints, and hopefully to help at identifying and constructing potential strategies based on local knowledge and experiences (Irving, 2006).

That said, the technical tools for evaluation and decision making are still mostly in the hands of the park manager. The potential limits of participation is therefore that the discussion between members of the management council may reach some limits because of the difficulty to objectify and compare (commensurate) the pros and cons of their respective perspectives and proposals. This may lead to blockage and frustration. On a more epistemological and political perspective, we believe that pure participation with no means for some minimal grounded technical (objective) expertise raises the issue of the incommensurability of proposals (in other words, relativism), thus leaving unclear on what ground a decision could be finally taken (in extreme cases, force...).





What we propose therefore is to provide the stakeholders/participation with some access to technical tools to self-evaluate their viewpoints and proposals. Obviously, it is a very ambitious wish and it touches upon some fundamental educational issues. But we believe that with computer-supported recent advances, there are some ways towards empowering stakeholders with more technical expertise, and not let stay this technical expertise only in the hands of the decision makers.

Our experience and prospect is based on a research project named SimParc (which stands in French for “Simulation Participative de Parcs”) (Briot et al., 2011). Its objective is to help various stakeholders to collectively understand conflict dynamics for natural resources management and to exercise negotiation management strategies for protected areas. The computer-supported serious game SimParc prototype combines techniques such as: distributed role-playing games, support for negotiation between players, artificial intelligence and decision-theory-based decision agents, assistant agents, and viability expert agents. The role-playing game is based on a negotiation process that takes place within the park council, about the “zoning” of the park, i.e., the decision about a desired level of conservation for every sub-area of the park. Each player embodies the role of a member of the park management council (e.g., environmentalist, representative of local community, etc.) with its respective postures and objectives. He will try to influence the decisions about the type of conservation for each landscape unit. It is clear that conflicts of interest will quickly emerge, leading to various strategies of negotiation (e.g., coalition formation, trading mutual support for respective objectives, etc.) between players. A special role in the game is the park manager, as he is an arbiter and final decision maker. It is important to highlight that the SimParc game, as its present stage, is only used as an exploratory tool and training method, and not (or at least not yet) for decision support of an actual park management council.

Current SimParc prototype has been tested through different game sessions with domain expert players (Briot et al., 2011). The use of advanced interface and communication





techniques already showed their potential for facilitating discussion and negotiation. We also experimented with a prototype artificial decision maker (taking the role of the park manager) as a way to set up various configurations (e.g., park manager more or less open to participation and to social concerns) and to provoke awareness between players (Sordoni et al., 2010). Also assistant agents have been designed to assist players through the game, for instance about the compatibility or incompatibility of their proposals with proposals of other players.

We are now experimenting with more technical assistance of two kinds. One kind is based on (shallow) decision theory in order to provide players with information about their relative and global positioning within the collective decision process (e.g., relations of dominance and equity properties).

An even more ambitious kind is based on viability theory (Aubin, 1992), a mathematical formalism which allows to identify the policies that can retain or restore desirable properties of a dynamical system (biological, economical...). Our very first prototype of a viability expert agent aims at helping each player to define what he considers to be the desirable properties (constraints) of the park (to be viable), e.g., considering the survival of an endangered species, or the sustainability of an economical model of park visitation. The underlying hypothesis is that negotiation between stakeholders could more easily focus on the constraints rather than on direct management decisions. The objective is therefore to provide players with some technical evaluation of the impact of the constraints they define as well as the way they could enforce them. Technically speaking, the viability expert agent can compute the viability kernel (domain of viability) corresponding to the constraints defined by the player and also propose actions which allow to stay within this viability kernel. Therefore the viability expert agent can help the player at evaluating the feasibility of the constraints and objectives that he himself defines and wants to negotiate. Although still within an initial stage, a first prototype of the viability expert agent has already





been implemented tested on a first test case of a socio-ecological-tourism model for a park (Wei et al., 2012). Examples of constraints that were defined, evaluated and negotiated between players were about the preservation of environment and about limitations of tourism visitation. Although very preliminary, we believe that these very first experiments show some direction to explore.

Concluding this short presentation, we hope that such kinds of experiments may contribute to explore how combining participatory approaches for management of protected areas with the use of some technical and shareable expertise, within the participatory process itself.

Referências bibliográficas

- Aubin, J.-P. (1992). *Viability theory*. Modern Birkhäuser Classics. ISBN: 978-0-8176-4909-8.
- Briot, J.-P., Irving, M. A., Melo, G., Vasconcelos, J. E., Alvarez, I., Martin, S., Wei, W. (2011). A serious game and artificial agents to support intercultural participatory management of protected areas for biodiversity conservation and social inclusion. *2nd International Conference on Culture and Computing (Culture and Computing'2011)*, Kyoto, Japan, October 2011. ISBN: 978-1-4577-1593-8.
- Irving, M. A. (2006). *Áreas Protegidas e Inclusão Social: Construindo Novos Significados*. Rio de Janeiro: Aquarius.
- Irving, M. A., Oliveira, E. (2012). *Sustentabilidade e transformação social*. Rio de Janeiro: Senac Nacional. ISBN: 978-85-7458-312-9.
- SNUC. (2000). *Lei No 9.985, que institui o Sistema Nacional de Unidades de Conservação da Natureza (SNUC) e dá outras providências*, Presidência da República, Brazil, 18/07/2000.
- Sordoni, A., Briot, J.-P., Alvarez, I., Vasconcelos, J. E., Irving, M. A., Melo, G. (2010). Design of a participatory decision making agent architecture based on argumentation and

Realização:



Parcerias:



Apoio:





influence function – Application to a serious game about biodiversity conservation. *RAIRO – Operations Research*, Special Issue on COGIS'09, 44(4), p. 269-284, October-December 2010. ISSN: 0399-0559.

Wei, W., Alvarez, I., Martin, S., Briot, J.-P., Irving, M. A., Melo, G. (2012). Integration of viability models in a serious game for the management of protected areas. *IADIS Intelligent Systems and Agents 2012 Conference*, Lisboa, Portugal, July 2012. To appear.

Painel 5 – Geração e Difusão de Conhecimento

3.1.8 - Tania Maria de Freitas Barros Maciel

Instituição : Programa Eicos/IP/UFRJ

e-mail: taniabm@gmail.com

Título: “Sustentabilidade e Governança: Novos desafios para velhos problemas”

Desde a década de 70, quando o paradigma econômico começou a ser questionado, a humanidade vem se dando conta do limite dessa perspectiva, que não tem sido capaz de, sozinha, dar conta de alcançar o bem estar humano.

Brundtland, em 1987, definiu desenvolvimento sustentável como “aquele que atende às necessidades do presente sem comprometer a possibilidade de as futuras gerações atenderem às suas próprias”. Passados 25 anos, o conceito parece não dar conta da complexidade das questões ambientais postas atualmente. A sustentabilidade, conceito hoje discutido em todas as esferas da sociedade, sucinta a necessidade de se pensar um novo modelo de desenvolvimento e de reaproveitamento dos recursos naturais, sabidamente,

Realização:



Parcerias:



Apoio:

