

## Participatory Modeling: An Ideal Place for Interdisciplinarity?

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Participatory modeling seeks to engage a group of people in the design and development of a model. The ultimate goal is to better characterize a problem of concern and imagine collectively how to solve it.

In the field of environment in particular, participants from different disciplines and non-research stakeholders need to feel involved in the process, so they can express their own views, as well as better engage in collective decisions. Therefore, it is necessary to put the actors at the center of the research concerns, both in the model design and in the exploration of scenarios arising from the model.

In order to conduct such prospective approaches in a participatory manner, it is necessary to reduce the boundaries between disciplines, as well as between researchers and other stakeholders. Instead of accumulating and overlaying concepts, modeling can play a unique role in promoting interdisciplinarity. The model, gradually co-designed, becomes a mediation object that allows the participants to exchange viewpoints on the issue at hand and also to revise their own knowledge.

Agent-Based Modeling is particularly effective at enabling this mediation by representing a set of entities (agents), their relationships and the decision rules of the agents. Their subsequent implementation in a simulation tool allows the participants to examine ways of addressing the problem by pushing the decision rules to their extreme consequences.

In this way public policy options (for example) that would be too risky to implement in real life can be explored and their consequences assessed. For example, what would happen if agroecological practices were completely adopted by the farmers in a suburban area, or for another problem, what if land was redistributed from the rich to the poor? This in turn helps to question the knowledge being brought to address the problem and to understand how several viewpoints are linked. This design-evaluation-correction process promotes effective learning.

The design stage starts the dialogue between disciplinary experts and non-research actors. This stage must be tackled with simple and unambiguous graphical tools to bring the disciplines and other stakeholders closer. Furthermore, in this process, the modeler must also be a facilitator.

To enable collaboration between disciplines and between researchers and other stakeholders, it is necessary that all actors travel a part of the way that separates them. The main difficulty for researchers is to abandon the full complexity of their approach and agree to enter a collective process, especially when non-researchers are involved.

It is essential that everyone can speak in a language accessible to their partners, to fully understand the limits and possibilities of other approaches. In this context, the modeler must facilitate exchange and translate everyone's proposals into a coherent and understandable conceptual model.

Participatory modeling actually promotes mutual understanding of disparate viewpoints by trying to offer a synthesis that makes sense. But a posture of active listening and practical methods must still be provided to help the modeler guide this process of giving birth to ideas (the Socratic method or maieutics). In this way, being able to articulate folk knowledge and know-how as well as scientific knowledge is a promising approach for interdisciplinary. What do you think?

**Biography:** *Dr Pierre Bommel is a modeler scientist at CIRAD (French Agricultural Research Centre for International Development). As a member of the Green Research Unit, he contributes to promoting the Companion Modeling approach. Through the development of CORMAS, a Framework for Agent-Based Models, he has been focusing on the development and use of multi-agent simulations for renewable resource management issues. He was based in Brazil for several years and is currently based at the University of Costa Rica working on adaptation of agriculture and livestock to climate change. He is member of the Participatory Modeling Pursuit funded by the National Socio-Environmental Synthesis Center (SESYNC).*

**Associated Project:**

[Participatory Modeling](#) [2]

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**Links**

[1] [https://i2insights.org/2016/04/07/participatory-modeling-for-interdisciplinarity/#english-version\\_bommel](https://i2insights.org/2016/04/07/participatory-modeling-for-interdisciplinarity/#english-version_bommel)

[2] <https://www.sesync.org/project/enhancing-socio-environmental-research-education/participatory-modeling>