Summer School on Multi-Scale Integrated Analysis of Societal and Ecological Metabolism (MuSIASEM) for Participatory Assessment of Sustainability Issues

Organizers: The Scientific Society LIPHE4 and the Research Group of Integrated Assessment of the Institute of Environmental Science and Technology (ICTA) of the Autonomous University of Barcelona (UAB)

The summer-school: A 5-day Summer School will take place in the campus of Autonomous University of Barcelona (UAB), Barcelona, from **Monday 14th to Friday 18th of July 2008**.

The purpose of this summer-school: to provide an introduction to the theory, the methodological approach and practical applications of MuSIASEM to young researchers, advanced students, experienced practitioners. Several theoretical concepts derived from complex systems thinking: "holons", "multipurpose grammars", "sudoku effect", "multi-level matrices", "the fund/flow model of analysis for metabolic systems" (proposed by Georgescu-Roegen) will be presented since they are the building blocks of the MuSIASEM approach. Then the school with discuss the possible use of the MuSIASEM approach in the fields of:

**** Participatory Integrated Assessment*** - the choice, development and use of integrated packages of indicators across dimensions and scales of analysis when using science for governance;

**** Social Multicriteria Evaluation*** - how to handle the unavoidable presence of uncertainty (genuine ignorance) and the existence of legitimate but contrasting perspectives about what should be considered as an "improvement" in a process of decision making;

**** Spatial Analysis*** - how to deal with the ecological dimension of sustainability by analysing the interference that the characteristics of societal metabolism entail on the metabolism of natural ecosystems.

This summer school follows previous 4 summer school organised by the Scientific Society LIPHE4 in collaboration with other institutions (http://www.liphe4.org/school.html).

The team of resource persons includes:

Complex Systems Theory: ***Mario Giampietro, Roger Strand***
MuSIASEM approach: ***Mario Giampietro, Jesus Ramos-Martin, Gonzalo Gamboa***
Applications to Land Use/Spatial Analysis: ***Agustin Lobo***
Participatory Multicriteria Analysis: ***Bruna De Marchi, Gonzalo Gamboa***
Post-Normal Science: ***Silvio Funtowicz, Roger Strand***
Invited Plenary Speaker: ***Joan Martinez-Alier*** – President of ISEE

A preliminary program of the 5 days with the themes covered is attached.

Participants: Participants are expected to be able to communicate professionally in both written and spoken English, and to have an interest in learning about innovative approaches and ideas related to sustainable development, integrated assessment, resource use, science for governance. For logistic reasons (formation of working groups), the number of participants will not exceed 40 units. Participation to the classes is free of charge, although we are not able to provide any financial help for accommodation or logistics.
Participants are expected to cover by themselves accommodation and food, but there is the possibility of lodging at the campus of UAB, where there are restaurants at 5-10 € menu and available accommodation in July in one-week apartments at cheap prices for groups coming from the Summer School:
http://www.vilauniversitaria.com/indexENG.htm

How to apply: Applicants have to fill the attached application form explaining their current interests and projects (1 page) and their CV (1 page). We will make a selection in case the number of applications will exceed the limit of 40 participants.
Deadline for applications is on the 6th of June.

Applications must be sent to: **Tarik Serrano** through e-mail to: kirate@gmail.com

Selected applicants will be informed on the **10th of June**. Reading material will be provided to the participants before the school. Participants are expected to have read the material before attending the sessions.

liphe4

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Research Group on Integrated Assessment

5th Liphe4 Summer School on
Multi-Scale Integrated Analysis of Societal and Ecological Metabolism (MuSIASEM) for Participatory Assessment of Sustainability Issues

Program July 2008

MONDAY 14th – The epistemological breakdown

**** morning*** – general introduction to the issue of Quality Assurance in Science for Governance in view of Sustainability: the implications of complexity on the process of *choice, generation and use of indicators* for guiding policy. An overview of epistemological and technical problems faced by those willing to perform an Integrated Assessment of Sustainability (how to combine MuSIASEM and Participatory Multicriteria Assessment as proposed in the school). The basic concepts discussed in this session are: (i) the issue of scale (holons and holarchies), (ii) the building blocks required to have perceptions and representations: identity, types and instances of types; (iii) the semiotic process and the key distinction between perception (semantic/narrative) and representation (formal/model); (iv) evolution, emergence and complex time; (v) the modelling relation of Robert Rosen: implications for quantitative analysis; (vi) a wrap-up the challenges for Integrated Assessment

**** afternoon*** – general discussion of the topics dealt with in the morning; explanation of the format of the school, formation of working groups.

TUESDAY 15th – "and now for something completely different": replacing differential equations with SUDOKUS

**** morning*** – The concept of *Bioeconomics* as developed by Georgescu-Roegen and the *Multi-Scale Integrated Analysis of Social Metabolism* (MuSIASEM) as a possible implementation of such a concept; How to develop integrated packages of non-reducible models in relation to the impact on the social and ecological context by providing a quality control on both the semantic and the syntactic side. Applying concepts derived from Complex System thinking to Integrated Analysis of Sustainability: (i) the Fund-Flow model (how to go multi-scale); (ii) Multi-Level Matrices (how to bridge descriptions belonging to different disciplines); Impredicative Loop Analysis (how to tame chicken-egg paradoxes); Sudoku-effect (how to keep coherence in non-deterministic, semantically open methods of quantifications).

*** afternoon** – general discussion – working groups in action

WEDNESDAY 16th - Linking Societal Metabolism to Ecological Metabolism

*** morning -** Exploring possible utilization of GIS and land use analysis to establish a bridge between economic activities, biophysical processes and environmental impact at different scales. A few examples of applications are presented and discussed.

*** afternoon** – general discussion: working groups in action

THURSDAY 17th – when dealing with Post-Normal Science it is not the output of the analysis, but the quality of the process that matters

**** morning*** *– Post Normal Science/Science for Governance/Societal Multicriteria Evaluation.* Dealing with the issue of: (i) how to produce and use scientific information in a process of decision making facing the presence of uncertainty/genuine ignorance and legitimate contrasting perspectives about "what should be considered as an improvement"; (ii) how to search for useful narratives when moving in complex time (addressing the 'tragedy of change'). Presenting: (i) an application of a tool-kit for Multi-criteria Analysis and Conflict analysis; and (ii) an overview of procedures useful for structuring the participation and the involvement of social actors.

*** afternoon** – general discussion – working groups in action

FRIDAY 18th – Is it "SATORI" day?

**** morning***

→ *presentations of the results of the working groups* – the various working groups present their case studies in the morning.

→ *plenary lecture wrap-up:* Joan Martinez-Alier

*** afternoon**

→ discussion of the results and the work done in the various cases study

→ feed-back from the participants.

Reading material will be provided to the participants before the school, that **are expected to have read the material** before attending the classes.

Resource persons will lecture in the morning and assist the groups in their work in the afternoon.

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