

Editorial

Scientific research takes place in silos

Society & Materials – Selection of papers from the SAM-8 conference

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Abstract – Scientific research takes place in silos, especially as far as hard and soft sciences are concerned. Some of these silos are large and comfortable places where to conduct research. They cater to communities that present their work in specialized journals and congresses that tend to be closed on their own particular worldview. Bridges between worlds have been launched by application disciplines, like for example LCA, because of their more pragmatic bent. The present issue proposes a series of articles from the Society & Materials (SAM-8) conferences aiming to bring together the whole spectrum of scientists and thinkers interested in materials.

Key words: Sociology of materials / sociology of technology / material flow analysis / data collection and data quality / prospective LCA / prospective SA / energy & LCT / holistic life-cycle approach / LCA of glass mineral wool / LCA of car components / circular economy / recycling chains / new concepts and approaches to match materials and human needs / secondary raw materials from wood production

Résumé – La recherche scientifique se déroule dans des silos, en particulier quand on parle des sciences dures et des sciences molles. Ces silos sont des lieux vastes et confortables, où il est facile de faire de la recherche. Ils sont fréquentés par des communautés, qui publient leurs travaux dans des journaux et des congrès très spécialisés et sont refermées sur elles-mêmes et sur leur culture spécifique. Les disciplines appliquées, comme par exemple l'Analyse de Cycle de vie, ont lancé des ponts entre ces mondes et leur altérité, parce qu'elles ont une approche plus pragmatique. Ce numéro présente une série d'articles de la conférence « Société et Matériaux » SAM-8, dont l'objectif est de rassembler les chercheurs et les penseurs qui s'intéressent aux matériaux au travers des prismes de nombreuses disciplines.

Scientific research takes place in silos. Some of these silos are large and comfortable places where to conduct research. They cater to communities that present their work in specialized journals and congresses that tend to be closed on their own particular worldview. The quality of their production is, in part, measured by their ability to fit into the community's culture and so is the carrier of individual researchers. This is fine and this is one reason why science has continued to be productive and creative, lately.

However, hard and soft scientists hardly ever meet or exchange, not even in the science sections of sophisticated newspapers like *Le Monde* (“Science et Médecine”), *The New York Times* (“Science”) or *El País* (Ciencia)! Only hard scientists, including biologists, and paleontologists, make it there. Economists, historians, anthropologists or sociologists are mentioned elsewhere, but do not rate a special section! Hard and soft sciences are like the two banks of the Lethe (*Λήθη*), separated by a river of unmindfulness, of forgetfulness and of utter alterity!

Bridges between the two worlds have been launched by application disciplines, because of their more pragmatic bent. Thus Life Cycle Analysis, Material Flow Analysis, Material Flow Accounting or Sustainability Analysis have been bold enough to tackle some of these transversal, interdisciplinary issues. Engineering Sciences often couple technology and

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economics. Environmental Economics does as well, obviously adding an environmental dimension, as does Industrial Ecology. This author proposed to initiate a new discipline around Environmental Metallurgy [1]. Management Science, with its focus on sustainable development and Corporate Responsibility Reporting (CSR), adds another dimension to the effort. Additionally, some subsets of Economics, like Energy Economics, or Resource Economics, as well as of Geography also deal with part of the broad spectrum.

On the other bank of the Lethe, Sociology has been considering knowledge, science and technology as socially constructed disciplines that cannot be separated from the social context in which they are generated. Thus the Sociology of Knowledge, the Sociology of Science and the Sociology of Technologies have gained strength and recognition – probably more in the world of Social Sciences And Humanities (SSH) than in the “hard” scientific world, which is more focused on disciplines like Epistemology. And where such questions are raised, Philosophy lurks close by in the background.

There are also specific issues, which clearly and unavoidably call on the whole spectrum of intellectual tools available to deal with complex issues, thus on hard and soft sciences at the same time. Materials are rather emblematic in this respect. On the one side, there is the field of Metallurgy, of Material Science and, lately, of Nanomaterials Science, and on the other side there is the Sociology of Materials, a discipline in the making. In between, life cycle and sustainability thinking (LCT and ST) are exploring new methods and new approaches in an explosion of studies. It is probably interesting to recall that André Leroi-Gourhan, a prehistorian also known as an anthropologist, an ethnologist and a philosopher, published, over his whole career, a series of books on materials and technologies, which clearly places them at the core of the history of mankind seen over a period of no less than 60 000 years and which still constitutes seminal reference documents of relevance for today [2–5].

A series of conferences has been organized since 2004 to bring together the whole spectrum of scientists and thinkers interested in materials [6]. They go under the name of Society & Materials, abbreviated as SAM. SAM-8 took place in Liège in May 2014 and SAM-9 will in Luxembourg, in May 2015. The best papers of past meetings were published (after peer-review and/or revision) in *Revue de Métallurgie* and today are reviewed for *Matériaux et Techniques* (MT) and *Material Research and Technology* (MRT).

The present issue of MT proposes a series of articles from SAM-8 and a similar special issue of MRT with articles from SAM7 was published in the Summer of 2014 [7].

In the present delivery, the following key words are highlighted: Sociology of Materials, Sociology of Technology, Material Flow Analysis, data collection and data quality, prospective LCA, prospective SA, Energy & LCT, holistic life-cycle approach, LCA of glass mineral wool, LCA of car components, circular economy, recycling chains, new concepts and approaches to match materials and human needs, secondary raw materials from wood production, etc.

As the special editor of this issue, I understand that some of the papers will be difficult to read by some regular readers of this journal, as the articles cross the barrier of species, so to speak. On the other hand, the editorial choices of the journal had to be stretched somewhat, to accommodate a broad spectrum of interdisciplinary issues.

Hopefully, this will lead to more work in an essential and thought-provoking direction.

References

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