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Editorial: Society and Materials

"Bonnes feuilles" of SAM-7, Aix-la-Chapelle, 25–26 April 2013

Materials are a core part of our societies and of their activities, something that is so much taken for granted that it may sound like a truism.

This has been true since the dawn of time – thus since prehistory, and it will remain true for a long time to come. Many words have been used to express the special role of materials in society and the peculiar relationship they entertain with time: perennial, enduring, robust, ubiquitous, cumulative technologies, key technologies, core technologies of the technological episteme, or key enabling technologies. Thus, materials have been labeled as both old and new, as the historical continuity that they embody does not preclude a high content of innovation, with more to come.

There have been *many narratives regarding materials*. They are all valid and depend on the narrator, its culture, discipline or focus.

For example, engineers and scientists, who populate the world of technology, tend to tell a linear story based on the idea of *progress*, emphasized by expressions like *industrial revolution* – the first, second or third revolutions.

Economists project a different view altogether, with many variants from resource economists, macro- or micro-economists, business economists or environmental economists. While some concur on a vision of progress called *economic growth,* others focus on glitches, like disruptions, crises, paradigm shits or economic cycles.

Furthermore, *soft science* approaches tend to question the connection between technology, economy and society. Historians and sociologists here take the lead in telling narratives that may be post-modern or even post-human and thus differ completely from the linear stories mentioned before.

Political science and *management* have grabbed on the concept of *sustainable development*, as a narrative that accommodates the old idea of progress with the need of allowing a large population to live on a finite earth.

To make things even more complex, technologies have been developed to analyze the connection of technology with society and nature, i.e. the collision between the anthroposphere, the biosphere and the geosphere, another kind of narrative proposed by *industrial ecology*. They tend to focus on quantifying these connections in complex databases and analyses, related to stocks, flows, functions and functional units, environmental and societal impacts, positive and negative indicators, etc. *Life Cycle Assessment (LCA), Material Flow Analysis (MFA), Impact Assessment (IA) and Sustainability Assessment of technologies (SAT)* have thus been invented and are striving. They have developed into independent disciplines, with their own communities, journals and congresses.

These widely different narratives are told in different worlds, which coexist but do not have many occasions to intersect or to collide.

The purpose of the *Society and Materials* conferences is to make these collisions happen and to give opportunities to the very broad scope of disciplines involved to tell their own narratives to each other. At the very beginning of this series of conferences, which started in Seville in 2006, we thought that a "new metrics" could accommodate all of these various approaches and thus overcome the limitations of each one of them. But the complexity of the issue is such that it is already ambitious to propose a regular occasion to people from a

variety of disciplines, who are curious of others, to come and exchange ideas, results and methods.

This endeavor has been going on for about 10 years now and a small cohort of about 100 people comes to Europe regularly to deal with this complexity. More than 250 presentations have been made already and the outcome is that most of the agenda set forth initially to progress beyond the state of the art of the early 2000s has been achieved and new issues and horizons have been defined.

SAM conferences are unique in their trans-disciplinarity. They have been focused on materials, to make the difficulty and the ambition of the exercise more manageable.

All the presentations made at SAM conferences are available since the very beginning on the SOVAMAT website (www.sovamat.org) and many of the papers supporting the talks have been evaluated, reviewed and published by *Revue de Métallurgie*, now *Metallurgical Research & Technology*, and by *Matériaux et Techniques*, both from EDP Science.

The present issue offers a large cross section of the SAM-7 conference that took place in Aix-la-Chapelle at RWTH in 2013.

Whoever is interested to join this challenging exercise in the future is welcome to attend SAM-9, which is to take place in Luxembourg on 11 and 12 May 2015.

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