THE "TASK-FORCE" SYNDROM

System Engineering claims a scientific character, yet it finds hardly a role of its own among other disciplines such as Physics, Software engineering or Human Sciences. Actually, on one hand it may appear as an underneath unifying frame of thinking, but on the other, it looks more like a patchwork of local technics and tools dedicated to purposes that are not addressed by the disciplines mentioned (needs capture and analysis, requirements and functional engineering …). Moreover, how to connect both theses classical disciplines and answers to the needs they don't address?

To hide the vacuum, the failure of any scientific attempt to overcome these pitfalls, System engineering and its ghostlike scientific caution, systemic, boil down to a "state of mind", an "open-mindedness", a "common sense", looking for some rooting in constructivist philosophers such as Edgard Morin (La méthode - La Nature de la Nature, Points (Paris)(1977)). In the meantime, System Engineering tries to gain some operational credibility borrowing material to software engineering (e.g. SysML/UML), using specific tools (e.g. "requirements" traceability), setting up professional organizations and standards"… but all that doesn't make it up for operationally…

Theses subterfuges persuade nevertheless managers and decision makers that System Engineering does exist… This leads to situations that would be funny if consequences were not so harsh. In large bureaucratic organizations, it results typically in the "war room – taskforce" syndrome.

At the macro level, to set up system engineering organization-wide solutions, the "conceptual" work is organized in committees reflecting more or less classical system engineering related standards and/or technologies (functional architecture, requirement management, material architecture, production interface, MBSE, IA ….). These committees work in parallel, as if they were dealing with disjoint domains and their work should naturally converge towards "THE" solution. Any confrontation with representative operational situation is carefully avoided. After hundreds of millions and years

spent, this room work usually ends with the enforcement of some magic tooling, typically adapted from 3D CAO,… At the micro level, as such constructions do not solve any problem, come the "crisis" and the "Task force" to save Projects spinning out of control. It consists in putting all people involved in the same room so long as they don't come up with some arts and craft workaround… But this is the hidden face, once again, Simulacrum reigns supreme.

To live up to systemic ambition, to encompass both so called "natural" (ecosystems) and "artificial" (man developped devices) "reality", the challenge amounts to coming up with a scientific framework of general character, usable as an host structure for any conceptualization of scientific or technical character, either classic physics or not. The fundamental of such a construction must be its ability to connect conceptualization mechanisms and facts, as they are described. For sure, it may look like a fantasy far away from the daily problems mechatronic are facing for many reasons. It comes to questioning at a very fundamental level, what reality may consist in and how we can build knowledge and anticipations factually verifiable and leads to a complete upheaval in our most reflex ways of grasping reality. It upsets organizations, positions, corporate and personal interests…

Nevertheless, though hidden, such a framework has been silently constructed for years from the most fundamental physics and has operationally demonstrated all its added value in the mechatronic domain, from human, organizational, technical and economical viewpoints. However, it was too disruptive, it was unwillingly challenging too many interests, positions, organizations, legacy to emerge. Now that it is going to disappear with the people wo have devoted themselves to its construction and with the rare witnesses of its achievements, I come to fully understand the maxim of the last De Broglie's inheritor, Pr. M. Mugur-Schächter, I was lucky enough to work with for ten years. Social acceptance follows a process of its own; any rationality is secondary relative to the unspeakable motivations that move us forward.