Logist. Res. (2009) 1:67–68
DOI 10.1007/s12159-008-0008-z

WORKBENCH-REPORT

Three structural alternatives to "Supra-Adaptivity" in complex logistical systems

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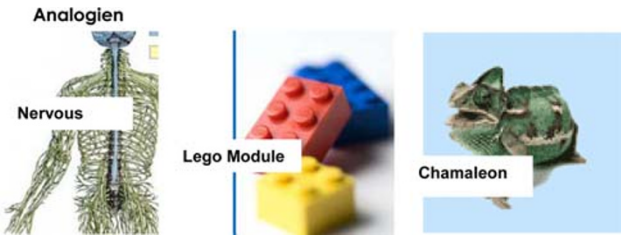
Received: 22 November 2008 / Accepted: 28 November 2008 / Published online: 10 February 2009

In a world which is ever more turbulent—due to environmental, political, technological, competitive events and disturbances—the ability to forecast and plan for the future is drastically reduced. Instead, the ability to react flexibly and quickly to unexpected, unplanned events becomes the major condition of survival for any organization.

This insight provided the stimulus to a major research effort by a consortium of academic and industrial partners based at Technische Universitaet Munich, Germany, to pursue the "Vision of Supra-Adaptivity"—a high level ability by complex business systems to successfully deal with the turbulences of the global economy. Special attention was paid to the global logistical networks of the automotive industry. Under the acronym FORLOG the consortium has been working since 2004 on the systematic exploration of potential drivers of organizational turbulence[1] which may require "Supra-Adaptivity", of organizational levels and arenas where turbulence may be played out, and of potential levers for management to successfully deal with turbulence.

Significant results of the FORLOG research initiative have been published in a volume of papers by Günthner, Willibald A. (Ed.) Neue Wege in der Automobillogistik: Die Vision der Supra-Adaptivität, Springer, Berlin 2007. Nearly simultaneously results of another research initiative taken in Austria "Successfactor Flexibility" have been published in the volume by Kaluza, Bernd and Thorsten Blecker, (Eds.) Erfolgsfaktor Flexibilität. Strategien und Konzepte für wandlungsfähige Unternehmen, Berlin 2005.

But the task of building a strong and convincing conceptual foundation of the structural options to build "Supra-Adaptivity" into complex logistical systems seems not to have been met in a satisfactory way. Members of the original FORLOG group are still working at this challenge. Among the hypotheses considered is a categorization of structural options to "Supra-Adaptivity" into three generic types, which have been labeled the "Nervous System", the "Lego Module", and the "Chameleon" types in respective analogies to their visual representations (Exh. I–III).



"Nervous System" adaptivity results from the availability of a very large, highly interlinked network of nodes and links, which accommodates a very large—ideally all possible—number of potential demands, such as a fully developed transport (or information or other) network which can meet any conceivable type of request and activate the respectively needed nodes and links.

"Lego Module" adaptivity provides sets of multi-functional modules at medium degrees of complexity, such as

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[1] A classical discussion of "turbulence" was provided by Emery and Trist,….

process modules or systems modules which may be combined according to situational demands in very many ways.

"Chameleon" adaptivity would refer to ways of adapting the system at a "molecular" level, such as people or technical devices with extreme flexibility and ability to learn and adapt.

A very important emphasis of current research efforts is also placed on the analysis and standardized implementation of lean logistics systems in automotive networks regarding OEMs, suppliers and logistics service providers. Pointing out parallels and similarities the FORLOG group tries to find strategies and procedural methods for different supply chain models based on part and supplier criteria.

The FORLOG group is interested in thoughts and discussion to deepen the understanding of the organizational roots of complex systems adaptivity.