Strategic Management Simulations: From Psychology Research to Medical Practice

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The more than 40-year-old behavioral complexity theory and the much newer science-wide complexity theory consider many observed phenomena as “open systems” that can only be sufficiently understood and (where possible) predicted at their current level of multidimensional functioning. Human behavior (in behavioral complexity theory) as well as all phenomena studied by science (ranging from atoms to economies in science-wide theory) constrain the options of lower-level components that make up a system.

For example, as ancient humans formed societies, they lost certain individual freedoms. Similarly, atoms in molecules lose capabilities to create molecules with yet other atoms and economies (as currently in the European Union) lose freedoms to make independent decisions. Therefore, reductionism to understand the concurrent functioning of a complex system is not useful.

Newtonian notions encouraging reductionism do permit an understanding of system components, but not of complex systems themselves. Theory and research must consider each system at its own level of complexity. If we wish to observe, score and predict behavior that is relevant to an individual’s (or a group’s) real-world functioning, the research setting must allow full systemic functioning to emerge. It should contain sufficient complexity to represent meaningful day-to-day experiences. Simulations, if appropriately designed, can accomplish that feat.

The Strategic Management Simulations we developed are quasi-experimental human-machine simulations in use for four decades to measure individual and group functioning in response to a host of task demands. Participants are presented with one of several scenarios (one to three hours in length) presenting events that closely approximate the demands and challenges in the real world. Subjects are free to engage in actions (within available resources) at any time. Most incoming information is preprogrammed to assure equivalent experience, allowing performance comparisons among participants, and performance comparisons with criteria of excellence based on normative data from thousands of prior participants across continents.

Several parameters of executive (pre-frontal) functioning are measured by SMS, including integration ability, sequencing, prioritizing, emergency management skills and more. Subsequent to SMS participation, the computer calculates 25 performance scores (validated factor scores based on 12 reliable factors and factor combinations). In addition, the computer produces a graphic “time-event” matrix where action types are plotted vertically and time is plotted horizontally. Within that matrix, each action point is located by type and time. Relevant incoming information is marked in the matrix as (time based) stars prior to action points. Strategic and opportunistic actions interconnect action points. Such “cobweb-like” representations of activity over time provide excellent visual impressions of an individual’s or a group’s functioning.

While the SMS was initially used for research and assessing and training white-collar employees, it has become useful as a means for aiding both patients and medical care givers. Initial work by Streufert and associates focused on the effects of prescription and recreational drugs, demonstrating that some medications diminish cognitive functioning and quality of life while others, with the same medical purpose, do little or no harm.

Our work has measured residual deficits in head injury patients, early schizophrenics and patients with mild cognitive impairment. Another use of the SMS distinguishes the unique cognitive functioning of residents across different medical specialties.

Editor's Note: This column is based on a presentation by Siegfried Streufert and Usha Satish at the 2003 annual meeting of the Western Psychological Association.