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In his continuing quest to bring a sense of order to the world, John Warfield may have met his Waterloo: The procurement process at the Department of Defense.

Warfield, a professor at George Mason University, likes to take large, complex organizations and improve their productivity by improving their design. He has been analyzing and bringing some degree of order to complex organizational structures since he worked for Battelle Memorial Institute in Columbus, Ohio, in the 1960s.

Warfield's work focuses on a large class of systems he calls sociotechnical systems, an area largely ignored by technology-oriented designers.

During the height of the Vietnam War, Battelle decided to study the interaction between science and human affairs and provided funds for such a study. Warfield was the principal researcher for the project, which sought a better understanding of how social conditions affect large-scale systems.

Warfield helped to design a "perfect city" to compare to a "sick city," one with all sorts of social problems. He and about 20 other individuals worked on the project off and on for about two years.

"It accomplished absolutely nothing in terms of the goals," Warfield said, but it did teach him an essential lesson: that in all organizations there are two types of people—convergers and divergers.

Engineers tend to be convergers in that they want a solution before they understand the problem. Divergers, on the other hand, include social scientists, who want to expand the scope and talk about things forever.

"With this kind of a mix, you never get anywhere," he said.

But Warfield was bitten by the philosophical bug that bridges theory and practical applications. His goal became to discover ways to not reinvent the wheel and to bring systematic design to huge organizations. He coined the term Interpretive Structural Modeling, a computer-assisted modeling of ideas to organize logically and structure massive amounts of information.

Warfield has advised numerous groups, including the Department of Defense as it attempts to sort out its acquisition process. In the last four years, Warfield has conducted 23 workshops on different DoD acquisition issues. He found that groups typically understand aspects of the issue, but not its actual organization. Through his studies, Warfield has determined "a pretty well-defined way of" reorganizing the acquisition process.

However, "what we cannot say is that we have resolved anything of a substantive nature in acquisition," he acknowledged.

Several core problems need to be addressed before the DoD acquisition process can be considered thoroughly renovated. One major problem is the lack of continuity at the top. Since Warfield began working with the department, it has gone through "three or four different undersecretaries for acquisition." Every time there is a new undersecretary, the process must start all over again.

Warfield's design processes, developed initially at Battelle and then at the University of Virginia and George Mason, provide the tools to deal with the world of large-scale systems.

"For better or worse, our society has accepted the idea of large and complex systems," he wrote in his book, 'A Science of Generic Design: Managing Complexity Through Systems Design.' "If we are going to have them, it behooves us to learn how to manage them. An excellent route to doing so is to learn how to design them."

—Lucy Reilly