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It Takes a Chemist

To create high-performing organizations, design knowledge systems that borrow more from organic chemistry than computer engineering

The work of planning and implementing knowledge management systems tends to revolve around making efficient the technological means of replicating the naturally efficient human processes of sharing and refining knowledge. It's true that technology can make the human process more effective, but it's going to be a long time before even the most sophisticated systems can function as effectively as mediocre employees.

The main reason is that human networks are highly evolved, adaptive communication mechanisms that operate on universal, mostly unstated, stochastic tendencies, while technologies operate on binary, explicit rules. In the last six months, I've heard one pundit after another comparing humans and computers—that "the brain is like a computer," "life is like a computer" and "organizational culture is like a computer network." Nothing could be further from the truth.

People are nothing like computers (though the computer was designed with the thought of emulating the brain), and organizational knowledge networks are nothing like telephone systems or wide-area networks. They're more like organic chemistry experiments, according to Dr. Karen Stephenson, whose understanding of both human knowledge networks and chemistry is implicit in the ability of her company's product to capture and map processes in organizations.

Stephenson is one of those extraordinary thinker-doers who only arise from the blending of multiple disciplines. Her product is NetForm, and companies use it to map their knowledge networks. Having diagrammed the operating structure, planners can design technology and business systems to work with it better or introduce effects to reshape an existing knowledge network to make it more effective.

Stephenson's insights are unique because her background is. Of course, technologists "discovered" that the brain is like a computer—when you use a CPU to solve all your problems, it isn't surprising that everything starts looking like a circuit. Drawing from her experiences as a chemist and an anthropologist, Stephenson synthesized an understanding of human networks that is both powerful and valuable.

In organic chemistry, there are certain combinations, shapes and bonds that naturally recur, no matter how complex the molecule. These pieces interact with other pieces in somewhat (but not absolutely) predictable ways. And if you break up a large organic molecule, the pieces recombine with other molecules or fragments in ways that are somewhat predictable. In sum, molecules behave precisely like people in groups, departments going through reorganization or companies merging.

VIEWPOINT

SATURATED SOLUTIONS By Jeff Angus

Stephenson's principles, she contends, scale from atomic structures to small human ones and well up to massive social ones. NetForm presumes that people play certain roles in human knowledge networks and a number of different kinds of connections, just as specific atoms play certain roles in organic molecules. Stephenson believes that human networks are made up of "trust-based relationships," and the networks are shaped by trust and betrayal. You can dictate any formal structure you wish, but the unseen hand will push people to operate in ways that work for them. According to Stephenson, "The path of habit is sown by trust."

Making these paths visible through mapping is a mixed process. NetForm started out by automatically tracking email and telephone contacts, but email itself evolved away from serving true communications needs to becoming a part of the

bureaucracy. Now, while NetForm still uses telephone records, it depends primarily on questionnaires and interviews to reveal the real map of trust. Equally important, it exposes the transmission of tacit knowledge Stephenson calls "apprenticeship," the most important and least visible form of diffusion.

The product has an unusual number of applications. One is in process re-engineering; if you can expose the way the actual process occurs, you are better positioned to institutionalize an informal success and clone it for other processes. It should be quite useful for identifying leaders who might be promoted (or isolating power-hoarders who should not be).

Several of NetForm's applications are unique. The product should be highly useful in post-merger integration where different flows and systems exist in the merging organizations. By exposing the human knowledge networks for each side, developers are better able to successfully integrate the two networks.

Finally, some architect/planners, such as The Digit Group's Paul Doherty, are using NetForm to design better facilities—workplaces that actually enhance, rather than diminish, productivity by recognizing real workflows and networks and using space forms that promote the flow of knowledge.

When teams are really functioning well, we say they "have chemistry." NetForm demonstrates just how observant that phrase really is. ☐

Jeff Angus is a cultural anthropologist hiding in the body of an information technology consultant and writer.



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