

Managing Editor's Desk

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From Quantum Physics to Organizational Change —Even at NEHA!

As many NEHA members know, my Bachelor's and Master's degrees each come from the hard sciences (engineering). A significant portion of my formal education involved the study of physics and its quest for scientific understanding of the universe and everything in it.

One of the more important lines of questioning within physics took me ever deeper into the realm of what matter was made of. The ancient Greeks, who liked to think about taking something and repeatedly cutting it in half until you could cut no further, probably started this line of thought. They argued that once you reached that final half, you would find the ultimate elemental ingredient of all matter.

When I found my way into physics, the prevailing belief was that those fundamental ingredients consisted of electrons, protons, and neutrons. By the time I had finished my studies, physics had defined the even more elemental ingredients of quarks and leptons—of which electrons, protons, and neutrons were made. Much more recently, physics has opened up the idea of Superstring theory (and M-theory), which suggests that all matter derives from the vibrational patterns of yet tinier strings (or blobs).

As fascinating and even bizarre as some of these discoveries (and theories) have been, they have nonetheless been fairly easy to accept. After all, from our earliest educational experiences, we quickly learn that the world is physical, that it is made up of things, and that everything fits together. In fact, until only recently, the mantra of physics has been that the universe is really just one big, well-oiled machine.

In a world that reveres science (and validates “truth” through scientific proofs), it is hardly

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surprising that we assimilate these scientific understandings and metaphors into our various life experiences and worldviews—often without even thinking about it. This is clearly the case in how we view, manage, and evaluate our organizations and businesses. With understandable pride, we talk about running our businesses and organizations like “well-oiled machines.” The principles that underlie and even define our organizations look and sound like machine concepts (structured, efficient, designed, operational, goal-oriented, outcome-driven, task-driven, etc.). We use organizational charts to describe the positions of people the way engineers use blueprints to describe the location of machine features. And so on.

In a world dominated by this type of thinking, try to imagine the sensibility of the following comment and all that it implies:

What if information is the basic ingredient of the universe? This is not a universe of things, but a universe of the ‘no-thing’ of information. And this information is organized by a second invisible element, meaning. Information and meaning-making do not obey the classical laws of physics that govern matter.

At first glance, this probably sounds like some new age gibberish no doubt written by someone light on science but perhaps heavy into poetry. Would you believe that these observations derive from concepts promoted by no less than the distinguished theoretical physicist and collaborator of Albert Einstein, John Archibald Wheeler?! Moreover, many other physicists share these ideas and have long since given up on the quest for that elemental something—be they strings or something else.

In all my years of writing these columns, I have never really offered a book review, despite the fact that I read many books. When I finished my last book, *Leadership and the New Science* by Margaret Wheatley, I vowed that I would write my first book review—I was so impressed with what I had read. More importantly, I felt that what she had to say about leadership and organizations had as much meaning for environmental health professionals as it did for an association manager like me. The lessons available from this book provide you, me, and just about anyone else from our era with a stunning opportunity to both heighten our understanding of the world and play more fulfilling roles within it.

Though her thesis is simple to understand, it is profound in its implications. In a nutshell, Wheatley argues that:

- We all pretty much understand (or at least accept) Newtonian science (i.e., that the universe is material and that it functions like a perfect machine).
- It therefore naturally follows that we have built, managed, and assessed our organizations on the principles of Newtonian science.
- With the emergence of quantum science, scientific understanding of the world has

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radically changed. Quantum science's view of reality differs markedly from the Newtonian view.

- Our organizations, however, continue to merrily plod along as if quantum physics had never been discovered. They continue to function within a Newtonian worldview.
- As a result, organizations (to say nothing of governments, institutions, conventional wisdoms, enterprises, etc.) seem to be having more failures, more breakdowns, more intransigent problems, and more stresses, because their ways of working seem increasingly out of sync with the world in which they operate.

Wheatley's book represents an effort to take some of the new insights from modern science and apply them to how we manage and evaluate our organizations. She points out the irony that while most of our modern-day organizations have aligned themselves with how physics sees the world, that particular science has dramatically changed. Unfortunately, our organizations haven't noticed that this change has occurred. As a result, a huge gap has opened

up between how science and how our organizations each see reality. This observation gives her a basis for explaining much of the chaos and dissonance in the world today.

The book makes for a stimulating, insightful, and thought-provoking read. Her reflections on the bumbling institutional responses to terrorism and Hurricane Katrina are especially riveting. Major discussion threads on self-organizing systems, the value of information, chaos theory, and the significance of "intent" push hard against conventional thinking.

By the time I had finished, I think that there were only 10 pages or so of the book's 200 pages that I hadn't written notes on!

Drawing heavily from the discoveries of quantum science, Wheatley lays out a fascinating way to look at the world, and by extension, our organizations and especially the relationships within them. She argues that the key to understanding any system lies not with a quest to define its essential parts but rather with an interest in understanding the relationships that exist between the parts. She cites the quintessential lesson from quantum physics that within the subatomic world, *nothing exists independently of a relationship*. A part without

context, which is to say, a part without a relationship, has no meaning: in fact, it doesn't exist! It is through relationships that events are brought into being from what is otherwise merely a sea of probability that includes everything that could happen.

She doesn't stop there. She goes on to explain that the most powerful force in nature is self-organization. (For a much more fun take on this concept, I would highly recommend Michael Creighton's entertaining book, *Prey*.) Lacking control and command systems, nature has proven itself to be remarkably adept at building successful systems through the process of self-organization. In such a system, parts act out through their relationships with other parts. These relationships give rise to an ability to process information. As information gets processed, a meaning to it all emerges. With meaning comes intention. The system then evolves into full-fledged functionality as a "field" of intention drives the system and every part (or person) in it to honor the system's meaning.

The organizations that we all work for are systems. Wheatley's book asks us to look at our systems to see if in fact we are all working together on behalf of some larger meaning.

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Letters to the Editor

Dear Editor:

NEHA E-news recently published results of a survey that asked if restaurant inspection results should be published or posted. A majority of respondents said “yes,” they should be published and “yes,” they should be posted, but . . . ONLY WITH EXPLANATIONS . . . (emphasis added). It is gratifying that NEHA members recognize the pitfalls of allowing the lay public to attempt interpretation of our complex judgmental process without fully understanding that process.

Because environmental health is a publicly funded function, our records, including restaurant inspections, are certainly open to the public, and that access should be encouraged.

However, that access should be supervised, for several reasons: inspection reports may contain proprietary information, such as recipe ingredients (remember “11 secret herbs and spices” ?) or material that is confidential and privileged, such as medical findings in an illness investigation, or employment data on establishment personnel. The inspection report itself should be accessible to the public, including the news media, on request, but that access must be supervised by a responsible environmental health specialist or other official who can protect privileged and proprietary information.

The same reasoning should call for supervision and explanation to help the lay reviewer understand the subtlety and complexity of the inspection process. That can never be completely captured in a “summary,” such as a letter grade, or numerical score, or especially in overly broad categorizations (e.g., “Safe to Eat Here”). Inspections and the reports that describe them are momentary “snapshots,” and their predictive validity evaporates as the inspector exits the establishment. Restaurants that are scored or graded as “safe” may have an ill employee or a defective piece of equipment that could cause illness immediately following the inspection. (Indeed, it might even happen DURING the report and the inspector may not be immediately aware of the situation!) Conversely, a non-compliant operation may have turned the proverbial corner and be well on the way to proper performance.

Neither of these potentials are captured by the “A” on the window, or the “89” score in the newspaper, or the “satisfactory/unsatisfactory” list released to the TV evening news.

Even posting the inspection report itself may not fully inform the public, unless someone explains and interprets our findings and comments. Does the person on the street understand what is meant by “Improper Cooling Technique” or why that is an important factor? When the report categorically states, without explanation, “Inadequate Hot/Cold Holding Temperature?” Is the risk of foods held at 50 degrees F the same as that of foods held at 98 degrees F? Does the lay person know how to incorporate “time” into the equation?

Environmental Health Specialists (OK, I’m the older generation, I prefer “Sanitarians”) possess the education, training, and experience to make reasoned professional judgments of these factors; the person on the street does not.

The FDA Model Code has recognized this conundrum and now uses no “scores” at all, but has moved to a categorical, risk-based inspection process. True, many jurisdictions still retain scores, and we all should realize that we need some sort of metric to track both the performance of individual establishments and the success of our own program’s performance over time.

Instead of repeating the “old” technique of informing the public through grades/scores/postings or other publications, we should be using our skill and time resources to EDUCATE the public about the ACTUAL risks of food safety in ALL settings, and how the public can avoid them. No one can ever completely eliminate all risks and guarantee that every bite of every food in every setting is “safe.” But we should be sufficiently confident of our own judgments that we can feel morally comfortable when we walk away from an establishment that it is reasonably safe to eat there.

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Is that meaning clear? Is it understood? Is it shared? And do we (within our many relationships) share an intention to see that meaning fulfilled? Or are we more focused on our individual agendas, or worse, some measure that glorifies performance but obscures the real meaning underneath our work? If we share a collective sense for why we exist and a collective intention to honor that mission, there are no limits to what we can achieve as we work through our relationships to make the right things happen (or come into being).

I don’t offer these thoughts lightly. On the one hand, I’ve seen too many local environmental

health programs constrained by structures that impose expectations and stifle a staff’s ability to understand and to pursue their organization’s mission or meaning. On the other hand, it is clear to me that NEHA can take even larger strides to foster relationships and give deeper meaning to what this profession is all about.

I’ve written about many of the changes that we are implementing at this year’s AEC. I’m proud to note that a lot of this effort stems from our desire to build relationships and to excite more people about the mission of environmental health. We are also moving fast to expand our offering of web-based tools to accomplish these same aims. Our vision is to see

greater interaction and richer relationships between the parts and a higher sense of meaning for every NEHA member in what we all do.

This column was written mainly to share the highlights of a reading experience with you. I wanted to convey in addition that our association is working hard to learn from the lessons of our times and to infuse into our organizational theory every opportunity for members to work together to advance the cause and practice of our important profession. 🐾

Jefferson E. Frazier