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# Against the Stereotype: A Talk with Johnnie Callahan

by Patricia Clark



As quoted in *Creativity: Flow and the Psychology of Discovery* by Mihaly Csikszentmihalyi, physicist Freeman Dyson says, succinctly, “Science is a very gregarious business.” And then he goes on: “It is essentially the difference between having this door open and having it shut. When I am doing science I have the door open. I mean, that is kind of symbolic, but it is true. Up to a point you welcome being interrupted because it is only by interacting with other people that you get anything interesting done.” The Dyson quotation was the starting point of a lunchtime discussion on February 13, 1998 with Johnnie Callahan, Professor of Health Sciences.

Professor Callahan obviously agrees with Dyson, since she begins our discussion by saying, “Despite the stereotype of the solitary scientist, most scientists are communicative. And microbiologists, in particular, tend to be very gregarious.” Microbiologists, too, are interdisciplinary figures. Callahan mentioned some of the areas of science they need to know: chemistry, biology, and physics, to mention a few. In fact, she pointed out that if you looked at the majority of research being done in biomedical sciences, it involves research teams. Research on AIDS, for example, might involve teams of twenty-five, thirty, or a hundred people, depending on the project.

Would Callahan like to see more emphasis placed on collaborative work, on teamwork, in high school science classes? Yes, she says, and adds that “anytime you have students working on problem-solving, and on real-life situations, you increase their intellectual involvement with the material.”

Professor Callahan often teaches 400-level courses in medical

bacteriology, and there are a number of projects on which students work in teams. "It's the discussion that is so good," Callahan said as she explained how she assigns students from different disciplines (pre-med, physician's assistant, and pre-med tech) to work together. Usually the students are quite happy to work together, she says.

Further evidence of the collaborative nature of science came out recently when Audelia Mungia, a student in the McNair Scholars Program, logged onto the Internet, according to Callahan. Mungia was working on a project and needed a formula for media to grow cultures. She e-mailed "all the big names" in microbiology and some sent back their suggested formulas. Callahan expresses excitement over an undergraduate student being involved in this project.

Professor Callahan repeatedly stresses the importance of her colleagues to her success with research projects. She mentions Bill Bell and newer colleague Tony Nieuwkoop. She likes to talk with others about projects, especially in the "thrashing around phase" early in a project. Talking to "the boys," to use Callahan's words, is a process that in helping her verbalize a problem, often helps get it defined. A cautionary note comes in when Callahan mentions "that whole cold fusion mess of a few years ago." Her questions bring us back to a discussion of the collaborative process of defining problems and, later, checking out results, testing theorems and data: "Who were they [the University of Utah scientists involved in the cold fusion project] talking to? Were they talking to anyone? They could have saved themselves some later embarrassment if they had talked with more people."

Finally for Professor Callahan, "microbiology is thicker than blood," to turn the old saw around. And in a quick segue, Callahan is talking about future travel to England in May 1998, to Kingston University, to work with Professor Susan Easmon on a project. Easmon came to GVSU on a visit and Professor Brian Curry in Health Sciences asked if people wanted to talk with her. She and Callahan met and simply "clicked right away." They are going to

combine classes on the Web in medical bacteriology.

Professor Callahan stresses that scientists need to put aside “petty jealousies and territorial behavior” and simply “talk to” other scientists. Surely Callahan would agree with another scientist quoted in Csikszentmihalyi’s book. Physicist John Wheeler puts it quite simply: “If you don’t kick things around with people, you are out of it. Nobody, I always say, can be anybody without somebody being around.” ♣