The Nick Cozzarelli I Knew

Nick Cozzarelli and I were born in the same year, and we both started working on DNA replication in the late 1960s. For nearly 30 years, Nick's laboratory focused on understanding the effects of DNA topology on biological processes (and vice versa). Demonstrating remarkable persistence and insight, he was able to develop this complex area of research into an incredibly rich and complex field—one that yielded astonishing biological insights in ways that I never thought possible (1–4).

From the beginning, a major symposium was organized every few years on the mechanistic aspects of DNA replication and genetic recombination, and we both would attend. I organized such a symposium in 1980, and Nick organized the next one in 1983 (5, 6). Before I left the University of California, San Francisco (UCSF) for the National Academy of Sciences (NAS) in Washington, DC, in 1993, we interacted at many such meetings. Nick's science was always original and impeccable, and he was a great communicator. Unlike most of us, he always had a smile on his face when he spoke, and I thoroughly enjoyed every talk of his that I heard and every paper of his that I read.

The last major scientific talk that I heard Nick give was at the symposium celebrating the 50th anniversary of the discovery of the DNA double helix, held at Cold Spring Harbor Laboratory in 2003. I had been focusing on science policy for a decade as the full-time president of the NAS and had not realized how fast my field had been moving. I found Nick's talk especially amazing. Instead of analyzing DNA molecules in bulk, Nick was measuring the behavior of single enzyme molecules on single DNA molecules tethered to beads and manipulated by either magnetic or optical tweezers (7). The elegance of this work bowled me over, and it was hard for me to imagine how he had managed to maintain his position as a pioneer in the highly competitive DNA field while spending half of his time as the Editor-in-Chief of the Academy's scientific journal, PNAS.

I know firsthand how much effort it took for Nick to run PNAS. The journal office was located immediately above my office at the Academy, and for 10 years I followed in great detail what Nick was doing to improve the journal. As described in the accompanying Retrospective (8), Nick was a transformational journal editor, just as he was a transformational scientist. He set high goals and constantly pushed to achieve them. He was fearless in confronting the difficulties in changing the journal, just as he was fearless in his experimental work. His lab motto, "Blast ahead," was much in evidence in his leadership for the Academy. It is not easy to tell a distinguished Academy member that his or her paper has been judged to be below the standards for publication or to modify the historical prerogatives that members have in publishing their work in the Academy's journal. In fact, few of the scientists I know would be willing to take on these tasks. But Nick was constantly pushing the envelope, and the results have been remarkable.

Nick believed that PNAS, as the journal representing the Academy, had a special obligation to lead the way in setting high standards for scientific publication. This principle led him to develop new policies designed to optimize the scientific enterprise through areas such as copyright and access (9–11). Nick often met informally with editors of other leading journals to encourage them to follow his lead—whether it be to promote an "open archive" policy, to permit authors to webcast their seminars without jeopardizing subsequent journal publication, or to allow authors to post a freely available PDF of their published paper on their own web sites. His highly principled leadership in these areas represents a great service to science, and it deserves to be long appreciated and remembered.

I have mentioned Nick's smile. There were times when Nick was pushing the Academy faster than I thought it could go. On each of these occasions, even though Nick almost certainly felt that I was being unreasonable, he was the perfect gentleman. Our conversations would usually start with him saying "Now Bruce, do you really believe that . . . ?" He said this in such a good-humored way that I could see him smiling, even at the other end of the telephone. In the end, because I was the President, I would generally prevail; however, Nick was always a joy to work with.

It is easy for me to understand why Nick Cozzarelli was so widely admired and appreciated by his many students and colleagues. He always saw the big picture, and he was never petty or small-minded. Recently, he agreed to be interviewed to provide advice to young scientists, a group for whom he felt a special affinity. He told them, "If you want to be a leader in science, you must be creative, think in an original way. The good scientist knows the literature, whereas the really good scientist knows when to forget the literature." [Howard Hughes Medical Institute (HHMI) "Ask a Scientist" feature in 2000 (www.hhmi.org/askascientist/meet-scientist/scientists/cozzarelli.html; accessed March 20, 2006).]

As a really good scientist, Nick knew when to forget the conventions and start in a new direction, both in science and in scientific publishing. I was an outside reviewer on the site visit that led to the National Science Foundation funding his new Program for Mathematics and Molecular Biology at Berkeley in 1988. The site-visit team was amazed at the synergistic interactions that he had generated. Nick was the first person I knew who successfully connected leading mathematicians to first-rate molecular biologists, resulting in valuable contributions to both fields. These types of connections between mathematicians, physicists, and engineers are proliferating throughout the biological sciences today, but they were quite novel when Nick began his collaborations in the DNA topology field in the 1980s.

Nick was an original, both in personality and as a scientist. He will be sorely missed.

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