PHOTOGRAPHY CHANGES OUR RELATIONSHIP TO TIME, THE UNKNOWN, AND TO OURSELVES

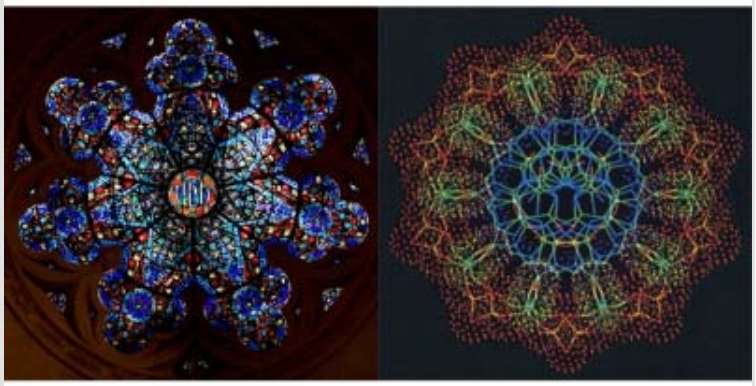
Story By
Robert Pollack [BIO]

Robert Pollack, director of the Center for the Study of Science and Religion at the Earth Institute at Columbia University, considers how images that stop the flow of time reflect aspects of both scientific prediction and religious revelation.

Click! And the photograph is recorded. Click! And a moment is captured. Photography is a stopping of time forever, a powerfully magical, wholly unnatural intervention in the flow of time. We are so used to the notion that an instant may be captured in an image, that we forget that the power to control time was—and remains—a central aspect of both scientific prediction and religious revelation. To illustrate my point I have chosen two photographs, one of which captures a religious articulation of this dream of mastery over time, while the other—more modestly perhaps but just as powerfully—captures our current capacity to hold the past and future in our hands through bio-chemical means.

One photograph is of the lower and smaller of two Rose Windows on the Western face of the Cathedral of St. John the Divine, on Manhattan's Morningside Heights, where I have lived and worked on DNA and its many meanings for the past forty years. The photograph of the window captures the imagery of the Book of Revelation of St. John the Divine: Click! And we have an image that conveys confidence in a fixed truth that is time-invariant in this world and that comes to fruition in another, wholly unnatural world to come.

The other photograph was taken from a computer screen some years ago. To create it, the genetic material DNA, in all its form-following-function, self-



[Left] Lower Rose Window, Cathedral of St. John the Divine, New York City, October 2009, Bernardo Núñez, Digital photograph, courtesy of Bernardo Núñez / Cathedral of St. John the Divine, New York City; [Right] B-DNA (seen end-on), courtesy of Dr. Robert Langridge [+]

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replicating glory, was first made into a crystal. That crystal was then subjected to a beam of x-rays which bounced through and left an image on a photographic plate. Next, and using computers, scientists were able to reconstruct the photographed image of the atoms of DNA, as they would appear if a long string of the genetic material were seen end-on. Click! And we have an image of the chemistry that is the informational fuel of the unstoppable engine of natural selection. This engine has churned out novelty for four billion years, always requiring the mortality of individuals and of species, never pointing toward perfection, nor immutability, only more change.

Two photographs, two images of time captured in a circle of sorts. But what could be more different than these two photographic representations of our wish to predict unknowable if not unnatural futures? The photographs appear to be of similarly sized circles, but the rose window is about 10 meters in diameter, while the cross-section of a DNA molecule is about one hundred-millionth of a meter. In reality, then, the images reproduced here capture structures whose diameters differ by about a billion-fold.

A billion-to-one is a big range, but it does resonate with ordinary life in at least two ways. First, each of us has been constructed from conception through the instructions contained in the DNA of a human genome that is—when considered lengthwise and not end-on as in this photo—a few billion letters long; and second, there are a few billion of us alive today, no two of us is precisely and exactly the same. That one-in-a-billion uniqueness is part of what allows us to live out the genetic potential of being a human being.

To me, these two photographs taken together warn us all not to make a religion out of DNA. The religious impulse to believe in something better than what one knows, is as powerful as the scientific impulse to know, but they are not the same, nor should one attempt to mimic the other. Both of these photographs tell us that we are members of a species whose powers of imagination are as unbounded as the powers of natural selection, which has, for billions of years and counting, been able to find a DNA sequence that will survive any change at all in its surroundings. Side by side, these two photographs teach us that since we

can have no way to be sure that our species' DNA will survive our imagination, it is the work of everyone —scientist, engineer, artist, photographer, religious leader—to help make sure we do.

In just the period between when that window was fashioned in New York and when the x-ray crystallographic data could be converted in a computer to make that lovely DNA photograph, we and the people we know have endured state-sponsored eugenics, racism, and genocide, and seen their ghastly effectiveness at causing pain, suffering, and death. Our DNA does not diminish our free will, nor our obligation to choose not to do evil. Let us resolve not to make that mistake again, when using the information we find in images of each other's DNA.

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