In the Image and Likeness Two Point Oh! (2.0)

A spiritual message given by Joy T. Barnitz at Hillside Community Church (Swedenborgian) on Sunday, 17 May 2009

Readings

- **Reading #1** - Genesis 1:26 - 28 (Revised Standard Version)

Then God said, "Let us make man in our image, after our likeness; and let them have dominion over the fish of the sea, and over the birds of the air, and over the cattle, and over all the earth, and over every creeping thing that creeps upon the earth." So God created man in his own image, in the image of God he created him; male and female he created them. And God blessed them…

Commentary on first reading – from True Christian Religion #34 (Ager) (God the Creator) From this (passage just read) it follows that man is an organic form recipient of God, … The human mind, which makes man to be man, and in accordance with which man is man, … is a receptacle of Divine influx; nevertheless, the Divine flows into it no further than man prepares the way or opens the door

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- Reading #2 -John 1: 1 & 14 (Revised Standard Version)

In the beginning was the Word, and the Word was with God and the Word was God …. And the Word became flesh and dwelt among us, full of grace and truth …

Commentary on second reading – from True Christian Religion #84 (Dole – New Century Edition) (the Lord as Redeemer) God could not have redeemed people, that is, rescued them from damnation and hell, without first taking on a human manifestation … Given Jehovah's inherent nature, despite his omnipotence he could not touch any individual devils in hell or any individual devils on earth and control them or their rage or tame their violence unless he could be as present in the farthest realms as he is in those closest to him. In his human manifestation he is in fact present in the farthest realms. This is why the Word refers to him as the First and the Last, the Alpha and the Omega, the Beginning and the End.

References (ver. 1.0 – given July 2007 @ SF):

- Nicholas Wade – Before the Dawn (book)
- Francis Collins – The Language of God (book)
- Jerome Groopman – How Doctors Think – Ch. 5 "A New Mother's Challenge" – Rabbi Rachel Stein & her daughter Shira (adopted from Vietnam) (book)
- NIH News June 13, 2007 "New Findings Challenge Established Views on Human Genome"
- Wikipedia "central dogma of molecular biology" – also Crick's 1970 paper
- www.genome.energy.gov – the human genome project *(no longer active May 2009)*
- Watson & Crick's 1953 papers - http://www.nature.com/nature/dna50/archive.html

Additional References (ver. 2.0 – given May 2009 @ Hillside)

- Francis Collins to Head Up NIH – news release (13 April 2009)
- Nicholas Wade – Genes Show Limited Value in Predicting Diseases – NY Times (16 April 2009)
- Nicholas Wade – Eden? Maybe. But Where's the Apple Tree? – NY Times (1 May 2009)
- Carolyn Y. Johnson – Do-it-Yourself genetic sleuthing: Pursuit may presage home-lab movement – Boston Globe (11 May 2009)

What does it mean to be created 'in the image and likeness' of God?

Shortly before I gave an earlier version of this sermon nearly two years ago, Rev. Rachel told the San Francisco church a story about a little girl who was drawing a picture using ALL of her crayons, who, when asked by her teacher what she was drawing, replied "A picture of God." When her teacher told her that many people didn't know what God looked like, the little girl told her teacher "They will when I am through with my drawing".

I invite you to close your eyes for just a minute: what is your image of God? what does God look like to you?

In May 2006, at the Gathering Leaves retreat for Swedenborgian women, the leader of one of the workshops I participated in asked us each to draw a picture of the Lord. We each had a large sheet of paper, a variety of colored markers and 10 minutes. In silence, the group members thought and then began to draw.

I strolled outside, wanting to postpone this as I'm a really terrible visual artist. There I was, surrounded by women busily drawing and using several markers to accent their images, usually faces, with colors.

I recall thinking that Einstein's famous equation ($E=mc^2$) and Newton's famous equation ($F=ma$) somehow didn't fit ***me***. Physics and math are the most fundamental and elegant language of the natural world, but I am not fluent in that language.

There I was, clutching a black marker and a large piece of newsprint. Time was running out. Just as we were recalled to the group, I scribbled something on my paper and went back inside.

We were asked to show our pictures. Everyone else had a human-like figure or a sun.

I had drawn the double helix. The structure of DNA. The chemical structure fundamental to life on earth.

One of the things I love about our faith tradition is that there has never been a contradiction for me between being a trained scientist and being a person of faith. As a child, I was taught in a New Church school that science is the study of the laws of order by which the LORD governs the universe. In a recent e-mail exchange with Rev. George Dole, he advised me that an alternate translation of 'laws of order' might be 'elegant design'. Thus science is the study of the Lord's elegant design. Just this small shift in wording made a profound shift in my perspective: I hadn't realized that the mathematicians and physicists who speak of "elegance" are using "New Church" language! How cool is that?

And how challenging: our scientific understanding of the world is constantly changing, growing, evolving. Just as our individual understanding of God's truth is constantly changing, growing, evolving.

Little did I know that my lifetime would encompass a revolution in our scientific understanding of how life 'works'. Just one example (which will date me!) illustrates this: I started graduate school just as 'genetic engineering' and 'recombinant DNA' were becoming the 'buzz words' of their time … before Genentech, before Amgen existed. One year it was impossible to sequence DNA, the next year I was taught how to do it and a few years later it was an automated process. Now we know the sequence of the human genome and we have the ability to measure small, but significant differences in the genes of each of us to enable us to know our risk of Huntington's disease, to know if the drug Herceptin will work on our sister's breast cancer, to understand why different people require different doses of the 'blood thinning' agent coumadin, and the examples go on and on.

Just this week (May 11th), the Boston Globe ran an article on "Do-it-Yourself genetic sleuthing" describing the efforts of a 23-year old former research associate at a now defunct biotech company who has determined, using a lab set up in her apartment closet, that she has a high likelihood of having the genetic disease that

her father has. Such capabilities raise a host of ethical questions concerning how knowing that you have a gene that increases the likelihood of such a disease can alter how you lead your life and your relationship with family, physicians. My point is simpler: thirty-five (35) years ago, we couldn't do this at all. Now it can be done by one person in their apartment closet. That's a huge change.

The rough draft of the human genome, that is the sequence of all of the DNA specifying a human being, was completed in the year 2000. In announcing this milestone, President Clinton attracted a great deal of attention with the following words: "Today … we are learning the language in which God created life. We are gaining ever more awe for the complexity, the beauty, and the wonder of God's most divine and sacred gift."

Let me repeat President Clinton's words: "Today … we are learning the language in which God created life. We are gaining ever more awe for the complexity, the beauty, and the wonder of God's most divine and sacred gift." One of the people who made that announcement possible, as the leader of the government's Human Genome Project was Dr. Francis Collins who just this April was named to head up the National Institutes of Health. Dr. Collins, a physical chemist and physician, is also the author of "The Language of God: A Scientist Presents Evidence for Belief" published in 2006.

The completion of the Human Genome Project, and "completion" was defined by scientists seeking to express ***precisely*** the limits of their knowledge, as 99% of the gene-containing part of the human DNA sequence finished to 99.99% accuracy, occurred in the spring of 2003 and was timed to coincide with the 50th anniversary of the publication by Watson & Crick of the fundamental structure of DNA.

The structure of DNA is elegant, in the sense that physicists use that word. The structure is easily represented as a ladder with the 'coding' chemicals as steps of the ladder. One of the most famous understatements in a scientific publication is at the end of Watson & Crick's first paper in April 1953: "It has not escaped our notice that the specific pairing we have postulated immediately suggests a possible copying mechanism for the genetic material." Once the structure was visualized as a ladder it was obvious how it replicates: the two strands that form the uprights separate, one half of each 'step' on the ladder remains with each 'upright' and a 'replicate' of the missing half is made by the cell.

Over the ensuing 56 years we have learned to decipher the genetic code, how to translate the detailed sequence of the DNA into the structures that comprise a living cell. There is a 'central dogma' of molecular biology which describes the manner in which this occurs: **DNA makes RNA makes protein**. And we have come to understand that, like many dogmas, it is incomplete. For example, sometimes RNA is the genetic material, as in the influenza virus we get vaccinated against annually and in the H1N1 "swine flu" virus recently in the news. Sometimes genes overlap. In many, maybe most, cases, the coding regions of the DNA in 'higher' organisms (we include humans in that category) are interrupted and that 'some assembly is required' to produce the final RNA message that is translated into a structural protein, receptor or enzyme. Mostly however, our simplified view, our 'central dogma' of **DNA makes RNA makes protein** works to describe how cells go about their daily business.

Among the many surprises is that only about 20,000 - 25,000 genes are required to specify a human being, down from the approximately 100,000 predicted in the mid-1990s when the Human Genome Project was begun.

How elegant: only 25,000 genes to completely specify each of us! Uniquely.

The DNA sequences of these genes are nearly identical between humans and chimpanzees. Indeed, many of these genes have changed but slightly from those specifying similar structures in the yeast that help make bread, wine and beer. As individuals, we differ from each other in very tiny ways, sometimes as little as a single one of those ladder steps in a very crucial location. One single mis-spelling in the DNA language can make the difference between having sickle-cell anemia or not, hemophilia or not, cystic fibrosis or not. These mis-spellings are the raw material for adaptation to new natural environments: one step of the ladder at a time.

How elegant: only 25,000 genes to make each one of us a completely unique 'one-of-a-kind' work of art. Only 25,000 genes to build what Swedenborg describes in True Christianity as "the organic form recipient of God". And it is in this organic form that the "human mind, which makes man to be man, and in accordance with which man is man … a receptacle of Divine influx" resides.

Swedenborg tells us that the Bible is written in the 'science of correspondences'. In particular, the first chapters of Genesis come to us from the first written version of His Word and were understood by those of the Ancient Church as more than stories. Biblical scholars tell us that the story in the Old Testament is related to many other creation stories.

Yet who among us would expect that there **WAS** an Adam. And there **WAS** an Eve?

There are two parts of the human genome especially useful for tracking back through our ancestry. One is the Y-chromosome, possessed only by men; the other is the DNA inside the powerhouse of our cells, an organelle, yes cells have 'organs' which scientists call 'organelles', called mitochondria which are derived solely from our mothers. From studying the DNA of these two structures, we can trace human journeys out of Africa and into all parts of the world. We can trace the genes of the "Y" chromosomes from our fathers back to an 'ancestral' population in Africa. And we can trace the genes of the mitochondria from our mothers back to the same place and about the same time.

Findings described earlier this month in the New York Times suggest that the origin of modern humans, thus the location for the 'Garden of Eden', is in southwest Africa near the Kalahari desert, homeland of the Bushmen or San people. The area is currently not very garden like, however it is also not clear that the San did not once occupy a much larger area, stretching from southern Africa to present-day Ethiopia. This research also suggests that a small human group, possibly a single tribal band of as few as 150 people, left Africa about 50,000 years ago near the mid-point of the African coast of the Red Sea. This group populated the rest of the world.

How strikingly like the creation story from Genesis is this scientific story of our origin and exit from Africa.

The intellectual work of human minds in understanding the human genome is far from over. In June 2007, just before I gave version 1.0 of this talk, a set of papers were published that challenged the then-'traditional' view of how our genetic blueprint actually gets 'used' by cells. In the words of Dr. Collins, who was then the Director of the NIH National Human Genome Research Institute, " …the scientific community will need to rethink some long-held views about what genes are and what they do, as well as how the genomes functional elements have evolved. This could have significant implications for efforts to identify the DNA sequences involved in many human diseases". This reassessment continues. In April 2009, a set of commentaries published in the *New England Journal of Medicine* focused on the limited value genetic analysis has in predicting common diseases such as diabetes and cancer. The era of personal genomic medicine may have to wait as we untangle the complexity of regulation of gene expression and the interactions among many cellular components which result in common diseases.

We've come a long way in the nearly sixty years since our fundamental 'aha' about the structure of DNA, yet we are only beginning to unravel the elegant design, the laws of order that govern the complexity of our organic, human form. We increasingly understand the mis-spellings that underlie or pre-dispose our organic form to dis-ease. We can screen for these mis-spellings, we can select suitable medications, but our understanding remains incomplete.

Our genetics is only one part of the story of our organic form. The air we breathe, the food we eat and the stresses we experience all contribute to forming the vessel through which our spirits encounter the physical world. Just as our bodies are shaped by these factors and by our biological responses, so are our spirits shaped by our experiences and responses to them.

Even God needed a human form to touch the hells and tame them. "And the Word became flesh and dwelt among us" because "despite His omnipotence He could not touch any individual devils in hell

or any individual devils on earth and control them or their rage or tame their violence unless He could be as present in the farthest realms as He is in those closest to Him."

God in human form is approachable, not aloof or scary. We can choose, each of us, to develop a direct relationship with the LORD. God is here for each of us, **now**, we are never alone, never cut off from the LORD's eternal, loving embrace. To me it is comforting to be able to call upon the LORD for the strength to deal with everyday challenges. To me it is exciting to study and apply the laws of order to improve human health. To me, this ever-deepening experience of the beauty and complexity of this ever so elegantly designed natural world is endlessly profound.

In his book***, How Doctors Think***, Dr. Jerome Groopman tells the story of Rabbi Rachel Stein. Rabbi Stein was a successful business woman who became a rabbi and, late in life, became the adoptive mother of a Vietnamese infant girl who was hospitalized for a nutritional deficiency that caused her to have a profound immune deficiency. The author describes Rabbi Stein's struggle to change the minds of the doctors who had mis-diagnosed her daughter as having a genetic abnormality. He asked her how she was "able to think clearly, assimilate complex medical information about her daughter's illness and press her requests that the doctors re-evaluate her daughter's illness? What kept her from breaking under the stress?"

Her response: was to " .. explain how she saw the world: 'God is like a best friend for me' A best friend. A friend you can always call upon. A friend who never deserts you. A friend who offers wisdom and resources without question. A friend you can bounce ideas off of with complete trust in his integrity. A friend you can reveal feelings to without fear that he might exploit your vulnerability."

The LORD made us in the image and likeness of Him and blessed us. God incarnate dwelt among us, full of Grace and Truth, not only to deliver us from the hells, but also that we may see God as Rachel Stein saw him: as our best friend.

Our organic form is a wonder, a tribute to the elegance that flows from the Laws of Order that created the natural world. It is to the extent that our mind, which in Swedenborg's words 'makes man to be man and in accordance with which man is man", welcomes the Divine influx, to that extent we become fully human. It is not the organic form – our body - however elegant, that is the image and likeness of God. It is our mind, our spirits, that are in the image and likeness of God, which are the receptacle of the Divine. We can choose to open our minds and hearts to Divine influx; to the extent that we do so seeking Divine Truth, to that extent we realize our full humanity

Rabbi Stein inserted the following prayer into her well-worn prayer book from which she read daily by the bedside of her infant daughter. It spoke to what she sought from her God:

Dear Lord,
Having been created in Your image
I am full of unrealized potential
The realization of which
Depends upon my acknowledgement of the potential.
My recognition of all the gifts from You with which I am endowed,
And my exploitation of the opportunities that lie open before me.
Please Lord, help me rise to meet the challenge.
Let me use those gifts for the benefit of all people.
Dear Lord,
For all that I am
And all that I can be
I thank You.

Amen.