MacDonald on Science: Delight or Disappointment?

Response by Tom Nurkkala

March 18, 2014

My qualifications to give this response are suspect at best. Someone has observed that if a discipline has the word “science” in its name, it’s not a real science at all. So physics, chemistry, and biology are in, but political science, the social sciences, and—in my case—computer science are out.

Historically, computer science was a sub-discipline of applied mathematics, itself a sub-discipline of mathematics proper. If applied mathematics is the country cousin of the highly vaunted theoretical mathematics, then computer science is the crazy uncle who lives by his wits out of a cave in the bottomlands of the next county.

Of course, the notion of what constitutes science has been somewhat fluid over the centuries. Thirteenth century divine Thomas Aquinas (1225–1274) christened theology as queen of the sciences and philosophy her handmaiden. Trained as a theologian, it is here, perhaps, that I regain a modicum of credibility, even though I resemble the crazy uncle in the cave far more than I do St. Thomas.

My task is to suggest whether MacDonald viewed science as a delight or a disappointment. Because I can only speak credibly of my own discipline, I’ll contemplate MacDonald’s conceivable reaction to computer science.

Perhaps unexpectedly, this endeavor is more than an exercise in applied anachronism, for MacDonald may well have known a computer programmer personally. Dr. Neuhouser notes in his monograph that Lady Byron was MacDonald’s “friend and benefactor” and that her daughter “was an accomplished mathematician.” Lady Byron’s daughter was none other than Ada, Countess of Lovelace (1815–1852), widely regarded as the world’s first computer programmer. Ada collaborated with English inventor Charles Babbage (1791–1871), who designed the first computer: a mechanical contrivance known as the Analytical Engine.
Science is fundamentally a human activity. As such, our ideas on the nature of humanity—our anthropology—should figure prominently in our understanding of science. As Christians, we are especially interested in theological anthropology and raise the question, “What does the Bible have to say about us as people?”

The fundamental basis for a robust theology of humanity is the fact that humans are created in the image of God—the *Imago Dei*. In Genesis 1.26–7, we read:

> Then God said, “Let us make man in our image, in our likeness, and let them rule over the fish of the sea and the birds of the air, over the livestock, over all the earth, and over all the creatures that move along the ground.” So God created man in his own image, in the image of God he created him; male and female he created them.

What are the implications of the *Imago Dei* in us? Theologian Wayne Grudem writes that our creation in God’s image means two things: that we are like God, and that we represent God. We represent God in that he has placed us in the created order as his stewards. We are like God in that we mirror his *communicable* attributes, such as showing love, entering into relationships, and exhibiting knowledge and rationality. (Of course, we possess only in part what God exhibits in perfection. And by definition, we cannot mirror God’s *incommunicable* attributes—such as omniscience and omnipotence—which are exhibited by God alone.) Critically, we are like God in that he created us to be creators.

My guess is that most people, when asked to name “creative jobs,” would give responses like painter, sculptor, author, poet, playwright, composer, designer, musician, photographer, actor, or film maker. Of course, George MacDonald himself fit nicely into this panoply of creative vocations. However, I would argue that no less creative are the inventor, architect, builder, engineer, mathematician—or scientist.

MacDonald himself embraced the necessity of creative imagination in the work of the scientist.

But how does the man of science come to think of his experiments? Does observation reach to the non-present, the possible, the yet unconceived? It is the farseeing imagination which beholds what might be a form of things and says to the intellect: “Try whether that be not the form of things;” which beholds
or invents a harmonious relation of parts and operations, and sends the intellect to find out whether that be not the harmonious relation of them—that is, the law of the phenomenon it contemplates.

Referring to my own scientific discipline, the computer scientist certainly "beholds or invents a harmonious relation of parts and operations," creating worlds of sometimes uncanny elegance and even beauty within the computer. Most human creators are constrained by a physical medium that is subject to the laws of physics: the sculptor faces a block of unyielding marble; the architect must defy gravity with steel and glass. The computer scientist, however, works in a medium constrained only by mathematics and weaves worlds almost from nothing: ex nihilo. Yet these computational worlds are neither ethereal nor insubstantial; they are often made visible, tangible, audible, mobile, and interactive.

Echoing the complexity of nature herself, computer programs rival the most complex artifacts created by humans. The Space Shuttle is regarded as the most complex machine ever constructed, having some 2.5 million interconnected parts. Yet it is not uncommon for a computer program to comprise millions of lines of software code—the computational equivalent of moving parts.

Like all the sciences, computer science, then, is a profoundly satisfying expression of human creativity. For the Christian computer scientist, who acknowledges that human creativity springs from the Imago Dei itself, science is an act of praise and delight—even of worship. Perhaps no one has captured this sensibility more clearly and playfully than legendary computer scientist—and devout Christian—Fred Brooks, when he asks, "Why is programming fun? What delights may its practitioner expect as his reward?"

Note in Brooks' answers to these questions the connections he draws between computer science and nature, beauty, delight, joy, pleasure, creativity, imagination, novelty, design, complexity, learning, and even mythology. He writes:

First is the sheer joy of making things. As the child delights in his mud pie, so the adult enjoys building things, especially things of his own design. I think this delight must be an image of God's delight in making things, a delight shown in the distinctness and newness of each leaf and each snowflake.

Second is the pleasure of making things that are useful to other people. Deep within, we want others to use our work and to
find it helpful. In this respect the programming system is not
essentially different from the child’s first clay pencil holder “for
Daddy’s office.”

Third is the fascination of fashioning complex puzzle-like objects
of interlocking moving parts and watching them work in subtle
cycles, playing out the consequences of principles built in from
the beginning. The programmed computer has all the fascination
of the pinball machine or the jukebox mechanism, carried to the
ultimate.

Fourth is the joy of always learning, which springs from the non-
repeating nature of the task. In one way or another the problem
is ever new, and its solver learns something: sometimes practical,
sometimes theoretical, and sometimes both.

Finally, there is the delight of working in such a tractable
medium. The programmer, like the poet, works only slightly
removed from pure thought-stuff. He builds his castles in the
air, from air, creating by exertion of the imagination. Few media
of creation are so flexible, so easy to polish and rework, so readily
capable of realizing grand conceptual structures....

Yet the program construct, unlike the poet’s words, is real in the
sense that it moves and works, producing visible outputs sepa-
rate from the construct itself. It prints results, draws pictures,
produces sounds, moves arms. The magic of myth and legend
has come true in our time. One types the correct incantation on
a keyboard, and a display screen comes to life, showing things
that never were nor could be.

Programming then is fun because it gratifies creative longings
built deep within us and delights sensibilities we have in common
with all men.

Surely this enthusiastic portrayal would have resonated favorably with
MacDonald’s scientific sensibilities. I imagine MacDonald would have been
particularly intrigued by the connection Brooks draws between the work of
the computer scientist and that of the poet.

Nevertheless, MacDonald was less sanguine on science in some cases,
particularly when it tended toward reductionism. Wrote MacDonald:
Ask a man of mere science, what is the truth of a flower: he will pull it to pieces, show you its parts, explain how they operate, how they minister each to the life of the flower, he will tell you what changes are wrought in it by scientific cultivation; where it lives originally, where it can live; the effects upon it of another climate; what part the insects bear in its varieties—and doubtless many more facts about it.

Key in this disparaging quotation is MacDonald’s initial qualification: “Ask a man of mere science.” MacDonald has in view a scientist who fails to acknowledge his or her debt to the Creator, who vacates science of its connection to the Imago Dei, and who “does science” as a purely secular activity.

We recognize MacDonald’s caricature of the scientist as prototypical of many—perhaps most—scientists practicing today. Science has ceased to be epistemological—a way of knowing that can lead us toward a deeper understanding of God’s good creation, and been recast as metaphysical—a way of being that arrogantly pretends to extricate itself from the God-infused world in which we are all irrevocably embedded.

MacDonald’s writing challenges us to return science to its rightful scope and purpose. Summarizing his analysis of MacDonald’s views, Dr. Neuhausser writes that MacDonald felt science and mathematics could “only delight if there is a loving Father God behind it all. But if there is, then they can be a great source of joy.”

My experience as a Christian and a computer scientist confirms this assertion. Especially when practiced by Christians who acknowledge that the source of their creativity is the Creator himself, science is indeed a great source of joy: not a disappointment, but a delight.