WORKING DRAFTS

ENVISIONING THE HUMAN GENOME

27 September – 11 January 2002

Two Ten GALLERY
science & art exhibitions

To: Denna Jones
From: Mark Lythgoe
Subject: RE: The human genome: An e-mail conversation

Denna, Curator of 'Working Drafts'
Mark, research scientist, RCS Biophysics Unit, Institute of Child Health, London

Just to kick-start our conversation, I'll ask you a broad question: Why should we be excited about the mapping of the human genome?

"It is humbling for me and awe inspiring to realise that we have caught the first glimpse of our own instruction book, previously known only to God."
Francis Collins (Human Genome Project)

The 'book of life' - the human genome - contains more than 3 billion letters. And it could be said that it is the most incredibly boring read. So why should we be excited? Cloning and Dolly the sheep; organ transplants and limb regeneration; IQ and sexuality; designer babies; new therapies for children with a life-threatening disease called severe combined immunodeficiency; gene therapies for neurological conditions; farming, crops and the developing world; and why you have blue eyes or part of your brain missing when you are born - are to name but a few of the many reasons why the understanding of the 'manual of man' has had such an impact.

One lunchtime, Nick Greene, lecturer in neural development, emphasized that it was important to remember that: "Our knowledge of the genome can help us to understand the factors that shape us, both beneficial and harmful. But our relationship with our genes does not need to be a passive process. As we piece together the role of each gene, we can begin to understand how our cells and organs work, rather like using a dictionary (the genome) to understand a library of books (our cells). With this knowledge we have the possibility to design interventions when those cells and organs malfunction or are attacked by disease."

But it's not even a real map yet, is it? It's a working draft. Which strikes me a bit like comparing a memory map by the artist Mariele Neudecker to an A-Z. Is this a fair comparison?

To: Mark Lythgoe
From: Denna Jones
Subject: RE: The human genome: An e-mail conversation

There is a comparison between the two. Mariele Neudecker, as far as I am aware, transposes a standard image via the prism of human memory into a consensual illusion. Perhaps then, the human genome is our consensual atlas, which via the biological or environmental prism refracts into our individual genome. I guess this is understanding of individualism from the consensus, rather than the inverse effect that Neudecker would seek - a consensus from the individual.

And you're right, the human genome is a working draft map in that it is not complete in its understanding. Although many of the locations for stations (genes) are known on the underground map (human genome), it is not known where they are connected to the world above ground (functions). Even so, we should not underestimate the value of even a 'draft' plan - previously we did not even know where the stations were.

So, why can it be difficult to be excited? Perhaps I can use a rather strong quote from a Danish physicist Niels Bohr, which may also be applicable to the human genome. "Those who are not shocked when they first come across quantum mechanics [the human genome] cannot possibly have understood it."

Niels Bohr: his quote is somewhat dismissive isn't it? I mean most people won't understand quantum mechanics the first time they come across it. Isn't it the responsibility of scientists creating the science to make it approachable and understandable to the general public?

Is the quote dismissive? It's not meant to be dismissive, but to say that appreciation of potential fruits from the human genome or quantum mechanics may not be possible unless one is to embrace the culture and science that goes towards the understanding.

Perhaps this has a parallel with contemporary art? Sometimes it is not possible to be excited about a piano hanging from the ceiling or a strip of copper on the floor unless there is a level of dialogue between viewer and object. We must learn the language of the code of life, before we can see its beauty.

To: Denna Jones
From: Mark Lythgoe
Subject: RE: The human genome: An e-mail conversation

Yep, it is in part the responsibility of scientists "to make it [science] approachable and understandable to the general public". Here, I think there has been a realization of the need to explain ourselves. In fact some might say there is a little overkill at the moment. What with certain TV and radio presenters becoming the voice of science, scientists becoming TV presenters, racks of pop science books in book stores, new science centres popping up in Bristol and Birmingham, art and science initiatives everywhere, funding bodies dedicated to the understanding of science, societies for the advancement of science, and of course who could forget Tomorrow's World. But is this enough? As a scientist I rarely hear people complain that they do not have access to information, only perhaps how to interpret it, as science at the coalface is never black or white.

I had lunch with Dr Ted Bianco yesterday. He raised several interesting ideas. One was should scientists tailor their science to the expectations of the society they live in?

Yes and no. Yes, science must answer some of the burning questions of the hour. In fact, guided by the powerful embrace of funders, sexy science, vogue topics and politics, a large majority of biomedical research does just this. But one mustn't forget that just because a scientist is not embroiled in answering a question of direct importance, it doesn't mean that something useful will not result.

Science is "...an imaginative adventure of the mind seeking truth in a world of mystery" (C Hinshelwood, Nobel Prize winner 1956). A scientist must be allowed to investigate what may seem from an observer's point of view as mundane. Who could have predicted, from such humble origins, the effect that one friar at an Augustinian monastery with a garden full of peas would produce.

But are scientists and artists guilty of the sensational? Sensational science and sensational art make the news.

To: Mark Lythgoe
From: Denna Jones
Subject: RE: The human genome: An e-mail conversation

Yep, I have no doubt about this, although I don't think it's a bad thing. Sensational comes in many forms with science. Gynaecologist Dr Schultz of University Hospital Groeningen in The Netherlands persuaded eight couples to have intercourse inside an MRI [magnetic resonance imaging] scanner and observed never-before-seen physiological changes. He discovered that, in the missionary position, the penis is shaped like a boomerang. Yet in his defence: "This is basic science," says Dr Schultz. "Based on this knowledge, doctors and sexologists can better understand their patients' problems and find new ways of therapy."

It is also sensational when new research demonstrates that certain embryonic cells, known as stem cells, have the potential to become any type of cell - brain, heart, liver, bone and so on - and may help lead to cures for diseases such as Alzheimer's and Parkinson's.

Even though science is sensational it should still have its foundations in "... the systematic classification of experience" (G Lewes), which is the essence of good scientific practice and new discovery. Yet, is this the case for sensational art? Is all sensational art good art; in the same way that sensational science is underpinned with good science practice?

Certainly not all sensational art is underpinned by either good practice or good concepts. If only.

Many thanks to Nick Greene for his contributions, and to Sally Dowsett and David Gadian for their suggestions and editorial skills.