Conquest of life and the conquest of space

by Chibli Mallat

Scientific advances belong to a realm which neither government nor industry can anticipate. Invention is by definition happily mysterious and elusive, if not miraculous all the way from Archimedes in his bath to e-mail resulting from the Pentagon.

Before addressing the domestic dimension of a scientific policy, a caveat is in order. As in other issues, American science operates chiefly within the received, prevailing logic of the nation state. The nation's scientific progress gets protected in ways which are sometimes reminiscent of the rigorous ways monks preserved the secret of beer brewing in the 17th century. If a leap of faith is allowed, however, the scientific multiplier can be increased several-fold. For this, national scientific hubris must be tempered in favor an international scientific solidarity, perhaps led by an American president, rather than the continued assertion of nationalistic competition.

The groundwork for global science has been laid, and comes with the global village and the e-mail revolution. But the new frontier of American science is one where research becomes willingly international, and formats of cooperation are imagined beyond the nation state. The model has had some success in the European Council and among member-states.

If the system is used properly, the internet places the news of scientific research and breakthroughs within reach of the rest of the scientific community. Straitjackets of conventional competitiveness remain, however, in terms of research proper, and are pulled tighter by outdated intellectual property laws. There is still the risk of more childish fights like those which occurred over the paternity of the HIV-virus identification between American and French health units, each claiming to have discovered the virus to the detriment of cooperation.

Regardless of the international dimension, which is still searching for a full working relation between competing nation-states, a US president can do a lot on the domestic scientific scene.

First, he can appear at the head of scientific advances across the board, by finding a balance between state interventionism, including procurement contracts and support grants, and the private sector, namely leading universities and high-tech companies' labs. With some 2.5 per cent in the US budget allocated to research and development, America ranks among the leading nations. This trend deserves support and enhancement.

The president must also anticipate the areas in which moral values are upset by scientific achievements, and equip the nation with the intellectual tools to decide better when a decision must be made. I argued last month that the time has come to instill a new approach to the problem of abortion. There are other areas which biological advances are turning into pressing issues like cloning and the genome.

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Responsibility in the matter is not only moral, as could be seen of the freefall of the Nasdaq index (the main market indicator for high-tech stocks) upon the Clinton-Blair statement of 14 March 2000 on the Genome Project. It was sufficient for them to declare that "raw fundamental data on the human genome, including the human DNA sequence and its variations, should be made freely available to scientists everywhere," for the value of bio-technology stocks to fall 12 per cent in the few following hours. The economic, moral and legal fuse ignites much more quickly in the global age.

While the staggering progress of science has already been made manifest with the temporary victory over Aids in rich countries, lost were the voices which warned, already in the mid-1980s, over the impact of the HIV-virus worldwide. By then already, Africa was facing one of the most dramatic challenges for its history because of the Aids pandemic. Fifteen years later, one-half of the adult population in some countries in Africa is afflicted with HIV. With the so-called triple therapy unavailable because of high cost and callous marketing policies, Sub-Saharan Africa is facing a growing crisis in maintaining its population numbers. Real American leadership in 1985 would have made a difference, and tens of millions of lives saved.

Such leadership is needed more than ever. The African pandemic must be addressed squarely by the rest of the world.

Again, only America can lead such a fight. Pharmaceutical companies are mostly driven by the market, and so unable to respond to the Aids crisis in Africa. This should offer the parameters for the direct commandeering by the American leader of wide-scale scientific programs, nationally as well as internationally.

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A rarity nowadays, US administrations had in the past done wonders to shortcut history. No success is better associated with the history of science than the Manhattan project and the landing on the moon.

It is true that governments can promote enthusiasm and achievement, and at the same time err dramatically. It is also true that, with a few exceptions, scientific revolutions have not always been government-led. But the market is not always ahead. Suffice to look back to predictions in the 1950s, including forecasts of man's place in space – which haven't moved far ahead of Neil Armstrong's first footsteps on the Moon – to suggest some sobering caution. Neither has commercial air transport become significantly faster since the Concorde breakthrough in the late 1960s, despite the huge boom in travel. One would have thought a London-New York trip would take half its current length of time as a matter of course.

Still, "woman landing on Mars" captures the imagination so grippingly, and with such good scientific cause, that the president who gets associated with the phrase will outdistance the association of John Kennedy with the Apollo program.

The other exciting field for presidential leadership is the conquest of life. In recent months, we have been bombarded with the Human Genome project, with the genetic map of a human being brought to completion months before its expected timetable. For those who are uncertain of what the deciphered map means, let us put it graphically as the conquest of life, that is the end of disease and the reproduction of cells. With cells protected, with the help of science, from getting ill, more dramatically from aging, even more dramatically from becoming irreplaceable, humans are contemplating for the first time in history, the prospects of non-death. Already a US genetic engineering company is working on a "technique that would immortalize stem cells so that they are forever young."

Superlatives come easy in the infinitely large, as Pascal used to say, and the infinitely small. Let us not get carried away. It is too early to predict life eternal, and it may be too early to embark on a Mars program. But here is where the chief scientific advisor to the president comes in. In my view, the scientific advisor ranks next to the president in terms of responsibility for the future of America (and the world), and this acknowledgment is also part of leadership.

The new president may not see the conquest of space, or the conquest of life during his term in office. But lucky is the president whose name will be associated in history with the initiation of one conquest, or both.

This is the eighth article in a series on American presidential choices: a view from the edge. The next article begins an assessment of the legacy of President Clinton's foreign policy.